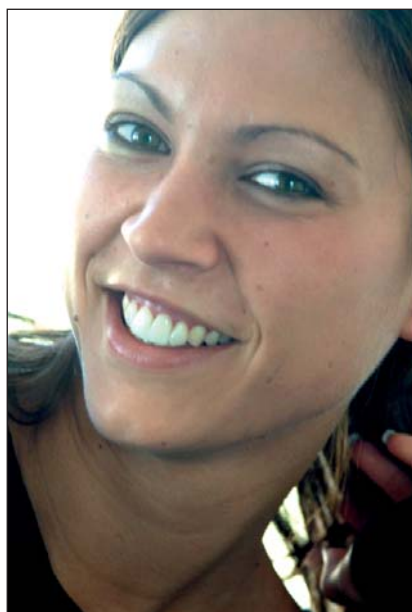


Aesthetics: art or technique? Knowledge - an essential tool for interpretation

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Much has been done over the last 20 years to improve aesthetic materials, but far less has been taught about the perception of aesthetics. This article is based on readings that I began about 20 years ago, on composition and visual perception, motivated partly by my love for painting and the visual arts but mainly by the great passion I have for my job and the beauty of nature. Questions are asked to facilitate an understanding of how we can improve facial vitality and emphasise patient personality with our restorations.

Figure 1



Nature creates its forms according to material, function and environment. Consequently it appears that a beautiful thing is also perfect and this is why study and observation of natural forms turns out to be very useful for those of us who would like to understand nature. There is a way to copy and a way to understand; just copying probably won't help us understand, because it only shows us how things usually appear. Careful observation of nature and the evolution of forms gives us the ability to understand more about nature and how it works.

The desire to capture aesthetic perfection has existed through the ages. We are able to use a variety of tools to 'stop time'. Aesthetic surgery and cosmetic procedures exist, but dentistry also has a contribution to make. Not long ago, aesthetics was defined as 'a science of beauty'. Many in the past, and perhaps some still today, believe that an 'aesthete' is one who teaches others the art of beauty and how to create it.

Fortunately the aesthete has stopped dictating not only the rules of beauty but also the rules of taste. Today, aesthetics has an important role not only in art but also in the life of the individual and in society. Any object and any fact (both natural event or human action) can be bearers of aesthetic function. My opinion is that between the aesthetic and the non-aesthetic form there is no clear and precise boundary; because of nature or constitution, no object or fact exists independent of the age, time and the observer. (Figure 1).

When something is in conflict with accepted aesthetic understanding we find it ugly. If it is something man-made we say or indicate that it is in 'bad taste' where it is clear there was some attempt to conform to aesthetic rules, but this has been unsuccessful. Natural phenomena may be called 'ugly' but they are not referred to as being in bad taste.

Figure 2: The patient presented with discolouration of the left central incisor



Figure 3: At a previous consultation we planned for a metal ceramic crown



Figure 4: After tooth whitening we decided to build in veneers. Ramona is the delightful patient treated as part of a course I conducted in my laboratory



Figure 5: Ernesto, a participant in the course has done two resin veneers



Figure 6: We decided to add two veneers to the laterals in order to create the most harmonious smile for her face



Figure 7: Antonello, another course participant has done other veneers



Any reproduction is first of all a visual interpretation

The creation by an unskilled designer, based only on what he knows and sees in that moment, can

easily veer off to 'wrong' or 'inaccurate'. Creativity is the reorganisation of concepts or elements already known and therefore it requires the knowledge to restructure and reuse. (Figures 2-19).

Since nature creates its forms according to material, function and environment, it follows then that the study of natural forms is very useful for us if we are to understand nature. Copying nature can be a form of skill and mental ability, but it may not

Figure 8: After several mock-ups, Ramona agreed to have four additional veneers, a decision supported by her friends and family who thought she looked more bright and attractive

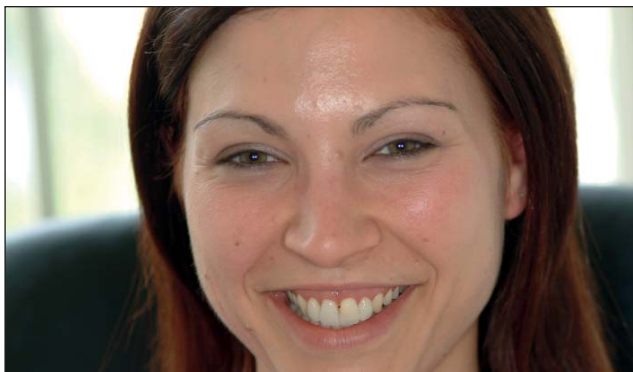


Figure 9: The basis of my work: Application of a platinum sheet



Figures 10 and 11: Visualisation aids knowledge



Figure 12: We can appreciate the new length as well as the beauty of the technique and that of the ceramic creation



Figure 13: The palatal view



Figure 14: Right side view: Please note that the teeth have not been prepared



Figure 15: Left side view: The layering is done with very little space



Figures 16 and 17: Since we have lengthened the anterior teeth, we have added composite to the lower canines for guidance and we will place veneers on the upper canines



Figure 18: Today an attractive appearance is essential

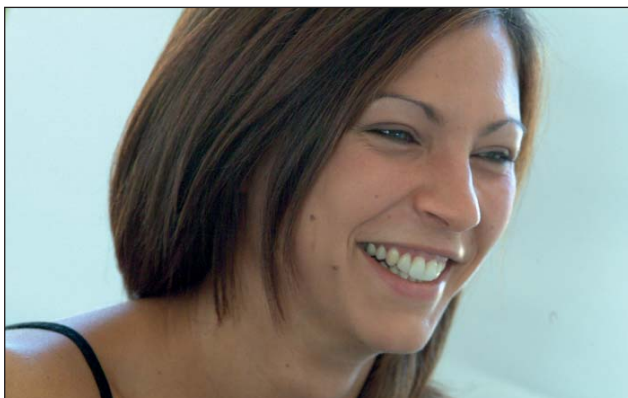
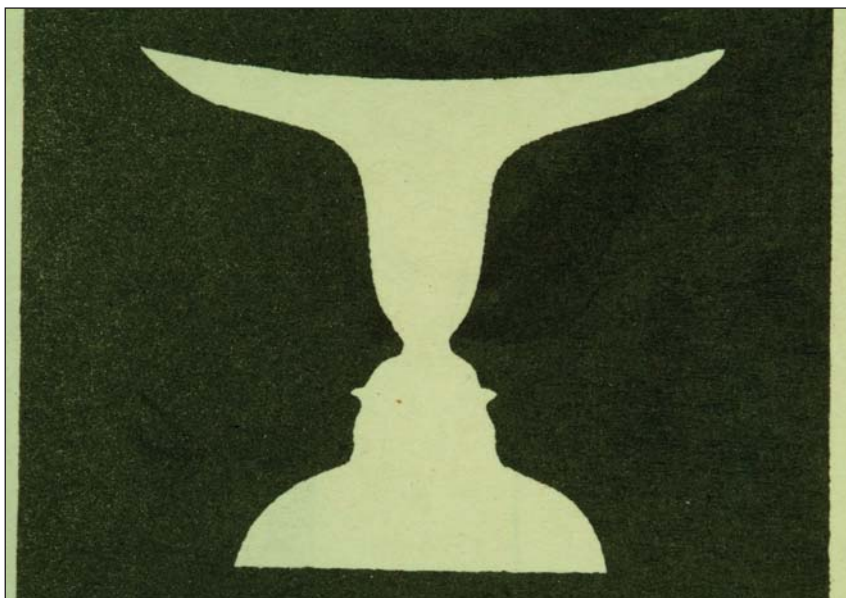


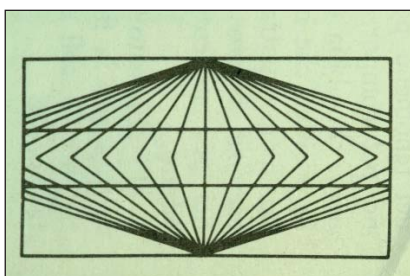
Figure 19: Aesthetics equals Beauty
(Clinical work carried out by Dr Rea)



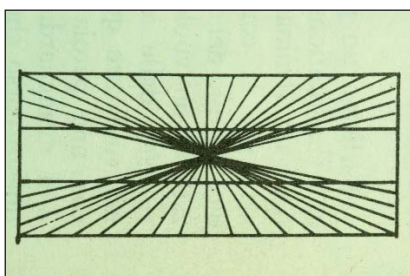
Figure 20: Ambiguous figures: if we pay attention to the black background we will see two profiles, but if we focus on the white background we'll see a cup



help us understand things in depth because the fact is that we see only in a superficial way. Therefore the study of natural structures and the observation of the evolution of forms will give us the potential to understand more and more about nature and how it works (*Figures 20-22*).



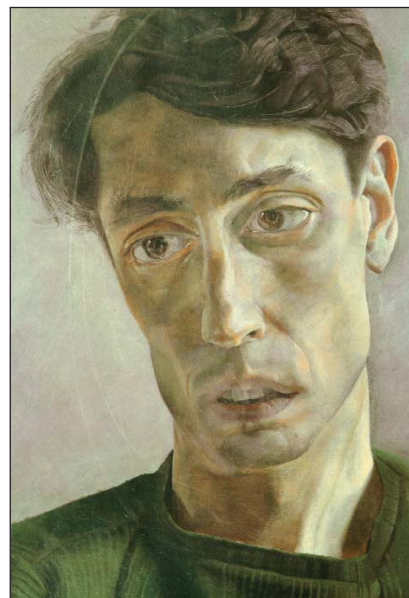
Figures 21 and 22: The parallel lines are horizontal even if we see them curved because of the weight of the diagonal lines



We see only what we know. In the last 20 years there have been many innovations in the dental world: new materials and new technologies (Empress, diacor, CAD/CAM, Cerec, etc) but little has been said or written, on two, in my opinion, fundamental aspects in this profession: the philosophy of aesthetics and visual perception.

It is common to believe that we see with the eyes; and certainly the eyes are essential to see. Yet we see how many people, sometimes the majority of people, despite having good eyesight, see very little. In a sense they don't really see what they are looking at. So, we don't see only with our eyes, or rather, eyes alone are not enough to see. We can say that in order to see, the binomial eye-brain is essential; but then again this is not entirely true because there are people who have good eyesight and an acute intelligence and yet they still do not see. What makes us really see is visual perception. Eyesight is a natural sense that we have; animals also look but don't always see in depth without the assistance of

Figure 23: Painting by Lucian Freud



natural instinct. Eyesight implies an education, through our own internal training course, similar to that of a student of piano music, working for years on sol-fa tones and musical scales. Eyesight and thinking are not independent acts. Saying "I see what I think" isn't a puerile game of words, but indicates a very real connection.

If we look at a painting for the first time we will have a global perception, more or less rich in detail but always falling short of the reality of what is being portrayed. This initial pictorial impression will be true knowledge, but then in subsequent cognitive reviews we will complete the scheme, filling in more details and more structures (figures, background, dimensions, relations between objects, etc) in relation to our culture. Often mentally we select in what we see, just what we need to subjectively assess reality. For this reason, different people can see different things in the same subject, changing the meaning as the mental attitude changes. If we examine this painting of Lucian Freud (*Figure 23*), we will notice how, keeping in mind

Figure 24: The patient shows the pictures of when she was young



Figure 25: The picture of her actual smile



Figure 26: The patient tells us what her dreams are



Figure 27: Also this case was conducted during a course and together with the participants we tried to find an individuality of color and form. For this reason we have built several provisionals to understand what was the most harmonious in the face of the patient



Figure 28: Today an attractive appearance is essential



Figure 29: Aesthetics equals Beauty
(Clinical work carried out by Dr Rea)



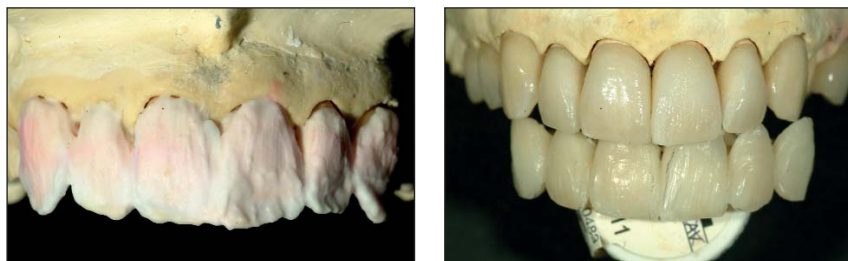
components of composition, artists are able to highlight all these details.

We wonder why artists are able to perceive so much detail in the things that they reproduce and the only

answer we have is that they have trained themselves to develop this visual perception. We then start to try to develop our own perception and see things in greater intensity. Therefore, if we learn to observe in a different way and perceive things

with a greater intensity, we will be able to build teeth with different forms to those that we were able to conceive before (*Figures 24-29*).

Figures 30 and 31: It is important to know, before we begin our layering, what will be our final design so that we do not lose the colour and formal balance



Figures 32 and 33: We compared the new job with the old one: You can notice the difference of volume and colour.



Figure 34: We decided on a brighter colour and more prominent shape



Figure 35: Creating individuality in the teeth



Teeth are our centre of interest

In our case, the teeth are our 'centre of interest' and the composing logic of structure, form, colour and other features meet within them, and when they exist in and interact with the global vision that is the lips and facial expression, they emphasise and underline the most obvious features of the patient. The elements previously analysed and the formal and chromatic interactions are able to generate tension and movement in continuous transformation with the global vision and between

themselves. Therefore, in order to interpret the balance in dental aesthetics we try to find tricks to avoid a flat composition (*Figures 30-31*). The impression received by our sense organs in the presence of some stimulus is normally called feeling.

Perception is something more. It is seen as the organisation of all the data that the sensations relay; by this organisation we become aware of the presence of received items. One of the many studies that covered the psychological aspect of perception is Gestalt. This

psychological view asserts that each object is similar to a puzzle piece, while the complete construction is the overall perception of each piece. In Gestalt psychology each piece is a whole form in itself, while the complete form or construction is the sum of all the pieces. For example, each puzzle piece put together creates a new whole object, just as a series of trees in close proximity make up a forest.

If we consider a musical melody we realise that the musical part considered as a whole is not simply the sum of the notes (*Figure 32-39*).

Figure 36: Minor defects and irregularities in harmony with each other help our crowns to appear more natural and less artificial



Figure 37: Harmony with the tissues



Figure 38: The smile before treatment



Figure 39: Line of the smile: notice the harmony with the lower lip



Gestalt's psychology demonstrates scientifically that human and animal psychic functions act in accordance with the criterion of wholeness.

Perception is the phenomenon that more than others gives immediate and spontaneous awareness of structures that are learned as an indivisible wholeness and not as juxtaposition of their parts. In accordance with Gestalt, we therefore don't mentally assemble previously isolated feelings and we also don't perceive elements individually and then build and associate them into something. Instead these are immediately organised in our mind into a form. Similarly in aesthetic dentistry we can say that teeth should not be considered in isolation but rather as

one element within the surrounding that is the face of the person (*Figure 40*).

Four phases of seeing

Our way of observing can be divided into four phases. We see the teeth, not analysing their structure, but considering them only from the geometric intuitive point of view. The visual perception is objective: for all of us they are teeth within that physiognomy. Each of us sees those teeth from a different perspective and with different feelings and states of mind. Therefore someone may like what they see while another won't. This will also depend on things like personal taste and on personal culture of the forms and of

colour. This type of observation is Gestalt and the visual perception is psychophysical. We see the teeth also in their context, that is, in connection with the mouth and the face of people, with which they form



Figure 40: The beauty in a composition is the harmony

Figure 41: Right side view. Please note that the teeth have not been prepared



Figure 42: Left side view. The layering is done with very little space



Figures 43-44: Elongation of the teeth



Figure 45: Today an attractive appearance is essential



Figure 46: Aesthetics equals Beauty
(Clinical work carried out by Dr Rea)



a 'wholeness'. In this case we see them from a topologic point of view.

Then we observe the materials of which they are made and the particular features that distinguish them. They are observed from the

phenomenological point of view. This perception is a characterisation type. Each of these aspects is dependent on the other and when we see something, we always see it through the four types of visual perception: this is called synchronic

development. We can summarise that all of us perceive in different ways; as a matter of fact, when we reproduce what we see, we are always affected by many psychological and personal elements; therefore each of us sees

different things in the same objects (teeth-composition, etc), alternating the significance if our mental attitude changes.

It is known that a good printer when he picks up a beautiful new book, looks at it with care, he browses through it with care, observes the reproduction of the typographic characters and also what type they are. He notes and criticises the paper, the binding and the back of the book, whether it is round or square and many other things. A reader who knows nothing of the press, notes the title and the price of the book, buys it and reads it, but if he is asked what font was used in the title, he will not know because he was not interested. In his world, deprived of images, there are no points of contact with these things that he doesn't know. The same thing happens to our patient who knows nothing about teeth: in his or her vision teeth are all white and all the same size. Interacting dynamically with the patient through mock-ups, provisionals, etc gives him or her the chance to expand their knowledge about dental aesthetics. This exchange of

information enables us to enter the world of the patient and make them an active part of the process. Perception means knowledge: we cannot carry out something that we do not know.

Leonardo da Vinci studied in depth the structure and the function of things that he reproduced and he knew how to reorganise even the most complex pattern with maximum clarity. How can we break things down in order to know more? If we look at what we have to reproduce for our patient the need to know and understand the relationship that exists between face and teeth becomes evident. (Figures 41- 46).

We will explore the structure concerning the shape of the face (oval, triangular, square), the composition of the objects that affect the structure of the teeth, including their form and color. We will also explore the object-field interaction (face, lip, age and personality of the patient). In a well-balanced composition, in our case the mouth, all the factors such as the form, the direction and the location are determined in relation

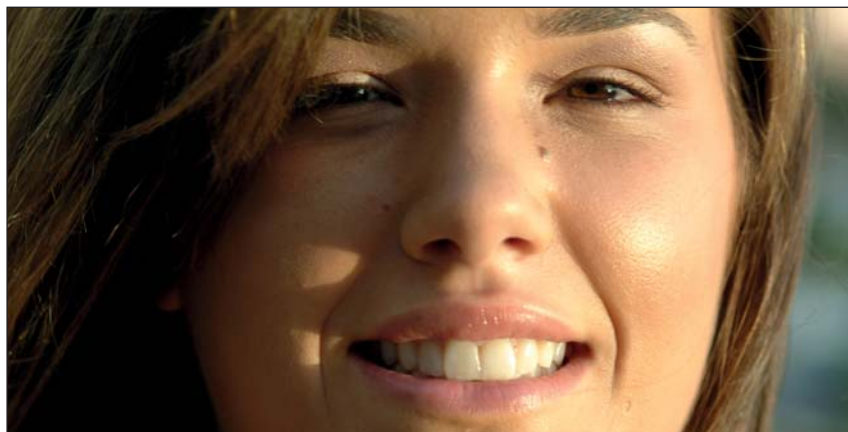
to each other. In order to make impossible any changes and to give everything a character of necessity in all of its parts, this means balance and harmony but does not mean proportion or symmetry (Figures 47-48).

What is 'balance' then? Balance is the stabilisation resulting from the precise adjustment of opposing forces. When something is perceived by the eye as having 'uncomfortable tension', balance within the composition is not achieved. The eye perceives balance when the physiological forces correspondent within the central nervous system are distributed in a way that they counterbalance each other (the most elementary way is similarity). Of course, balance does not require symmetry but we must know that an inequality is convincing only if underlined by factors that counterpoise (Figures 50-51). We think that symmetry has little to do with dental aesthetics. What we find in nature is balance and harmony, so harmony in a composition equals beauty.

Figures 47 and 48: Connection face-lip-teeth



Figures 49: Personality (Clinical work carried out by Dr Canegallo)



Conclusion

The basic principles of aesthetic dentistry are essential in order to obtain good results, but nature does not read textbooks; only a careful observation and sensitivity to things around us can help us make our work less artificial and allow us to follow nature more closely.

Harmony, balance and asymmetry are fundamental aspects if our work is to be compatible with the personality, style and individuality of the patient and at the same time be able to improve facial vitality.

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Special thanks to Doctor Luca Dalloca for his enthusiasm and the sharing of this philosophy of work.



Figure 50: Form follows function



Figure 51: Harmony with tissues

Figures 52: Oral Design implementation of the clinical phase by Doctor Canegallo). The composition in Odontology is the face, lips, tissues, teeth and the personality



Figures 53: Before treatment



Figures 54: Individual and unique smile (implementation of the clinical phase by Doctor Dalloca)

