THE *ART* AND APPLICATION

A Visual Journey into the Study and Reproduction of Natural Dentition

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I'm not trying to copy Nature. I'm trying to find the principles she is using."
~Buckminster Fuller

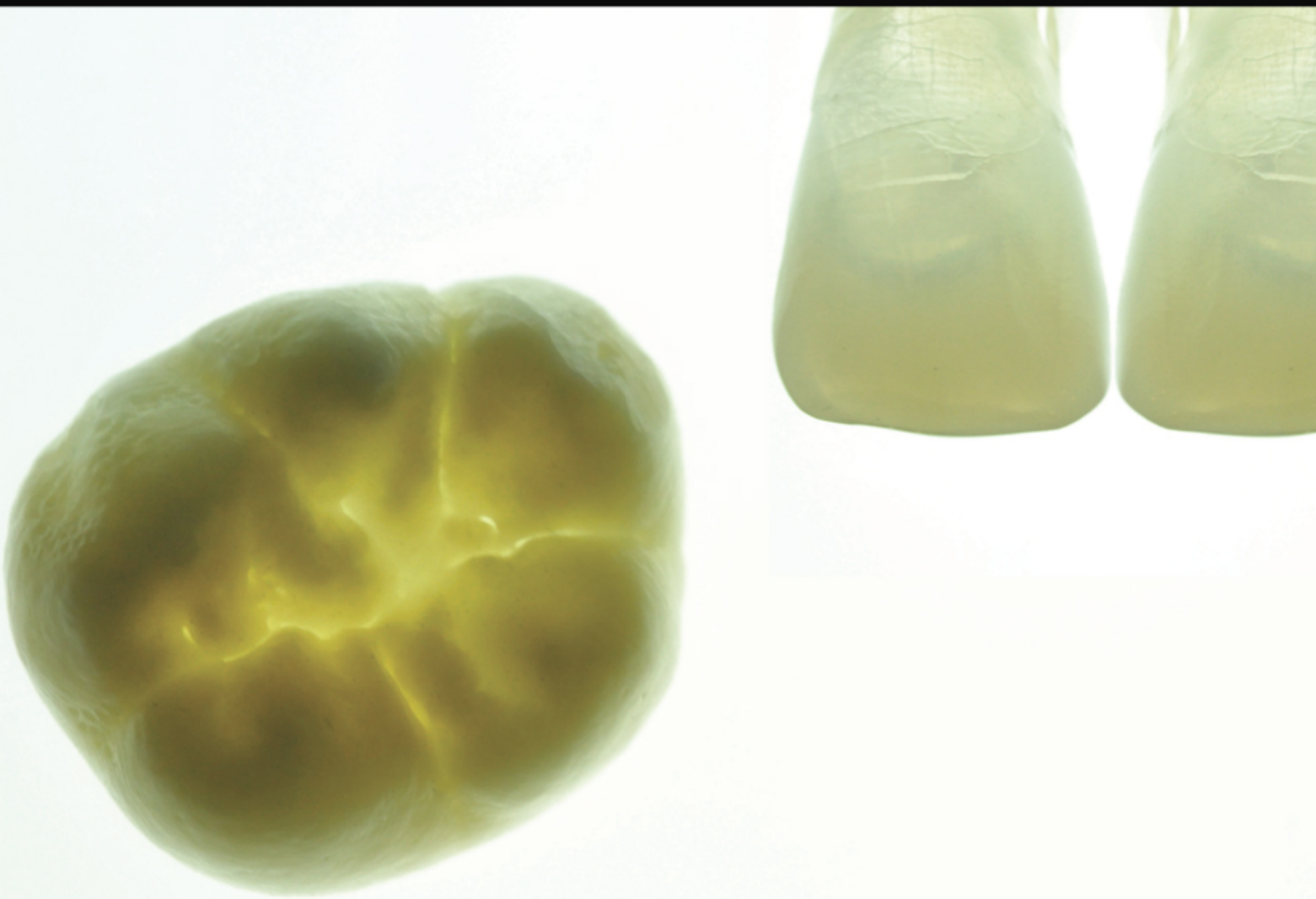
Introduction

Teeth are far more than objects of beauty. Their purpose is to sustain human life through proper function, and nature, very efficiently, makes them beautiful as well. To study esthetics is to study the science of beauty and nature. It is our task to protect nature and provide patients with the most efficient and functional restorations possible.

Architect, designer, and philosopher Buckminster Fuller said it best in his quote above. His geodesic dome is an example of perfect design. From studying nature, he developed his philosophy of sustainability. He believed that by exploring nature's principles we can find design solutions. These are not new ideas: da Vinci and Michelangelo studied human anatomy and produced art that has endured for centuries.

Above all, our work must fulfill certain criteria: beauty, function, predictability, and sustainability. The exploration of nature is where our work begins.

OF STUDYING NATURE



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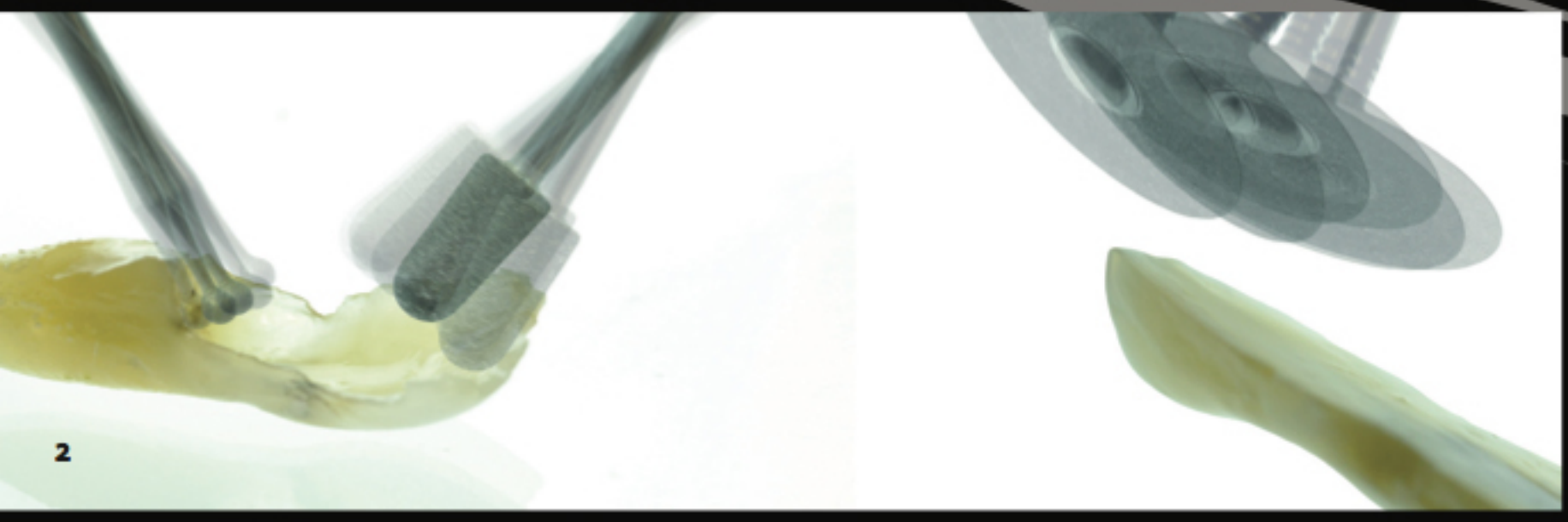
Everything one needs to know lies within nature. Careful observation of natural dentition is necessary for growth in the area of restorative dentistry.



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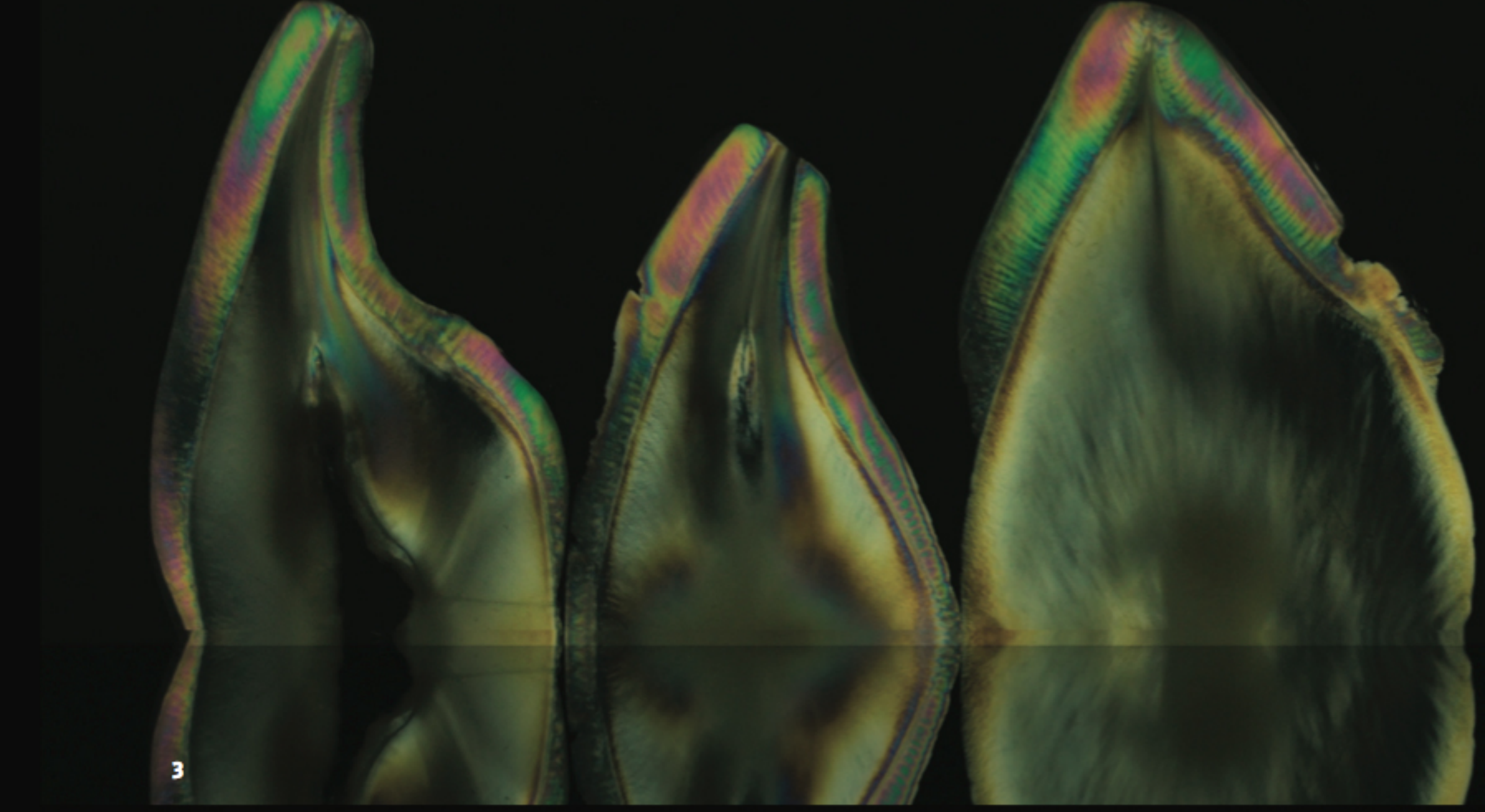
Items should be studied not only from a macro view; they also should be studied three-dimensionally, including the insides. Going deeper into nature will uncover invaluable information.



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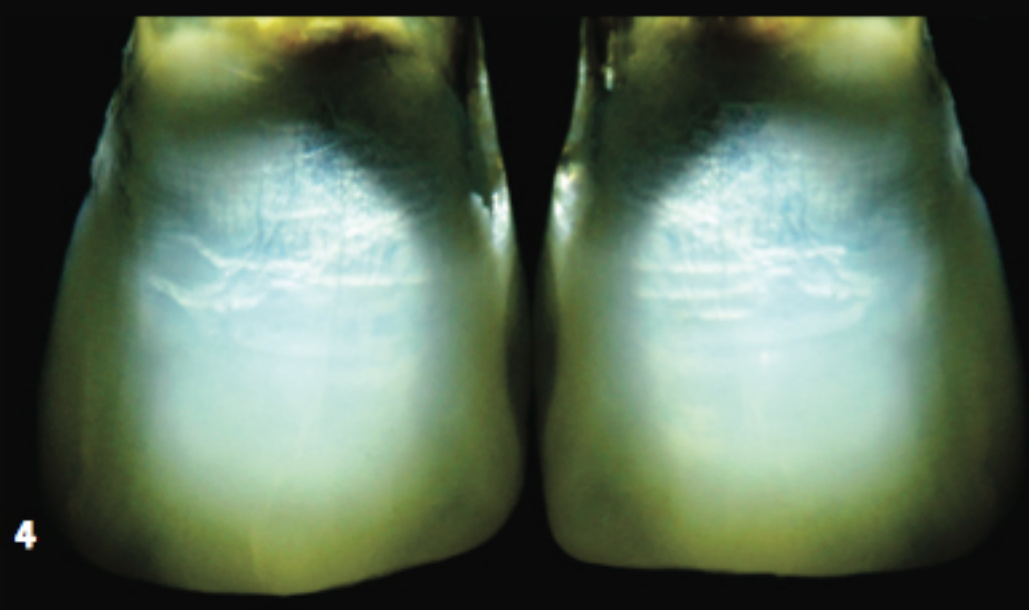
Once inside natural dentition it is possible to observe the light refractive index of nature and see how light interacts with natural dentin, enamel, and pulp. This proves just how complex nature truly is and the challenges we face in our restorations.



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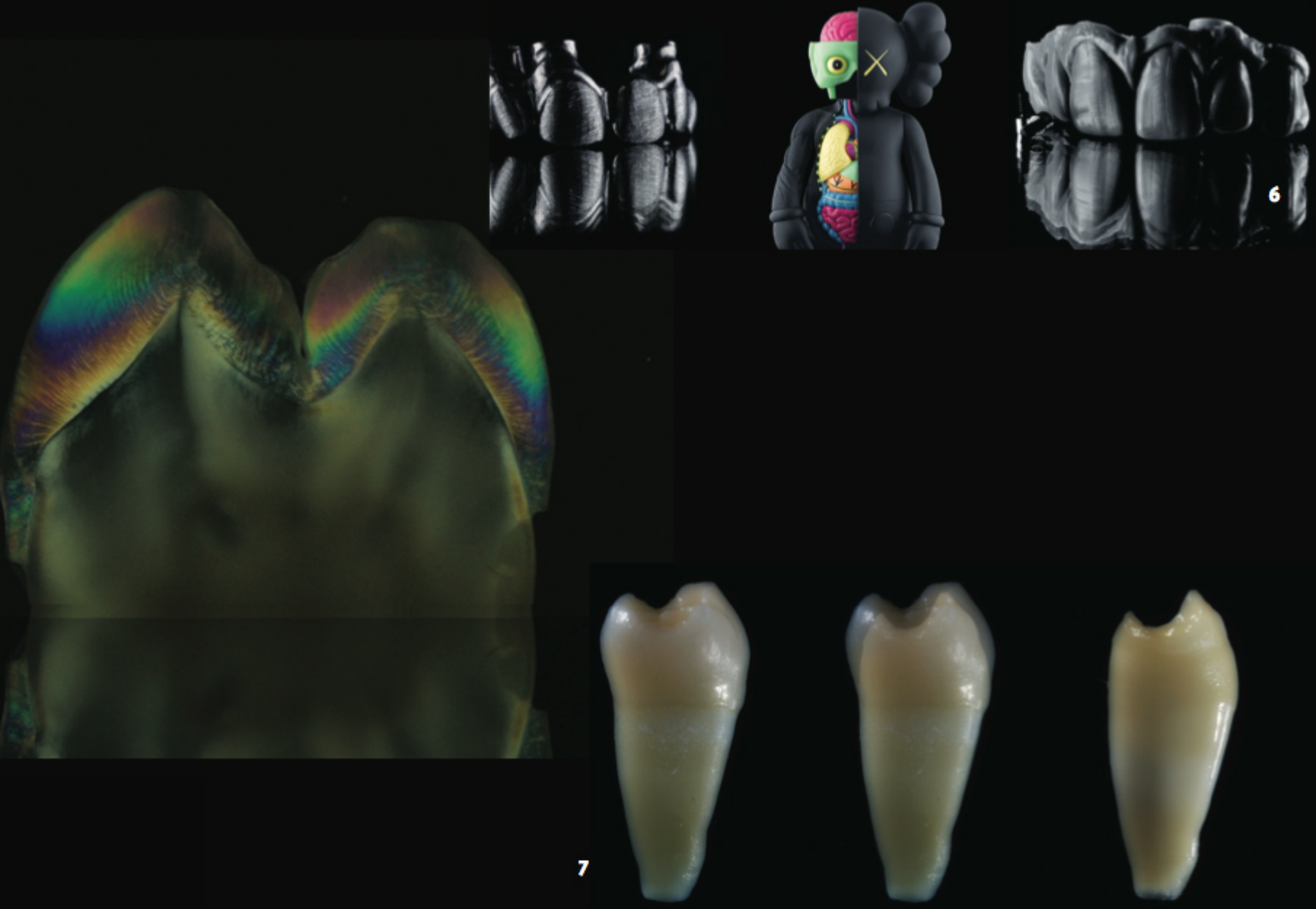
The concept of studying nature from the "inside out" can be traced back to the forefathers of modern art, including da Vinci and Michelangelo. They understood the value of observing the object as a whole, recognizing that in order to have what lies on the outside we must also have what lies within. This concept is easily applied to any creative field. These concepts will allow for proper frame support when fabricating the design of the framework with a definitive vision of the final restorations achieved first.



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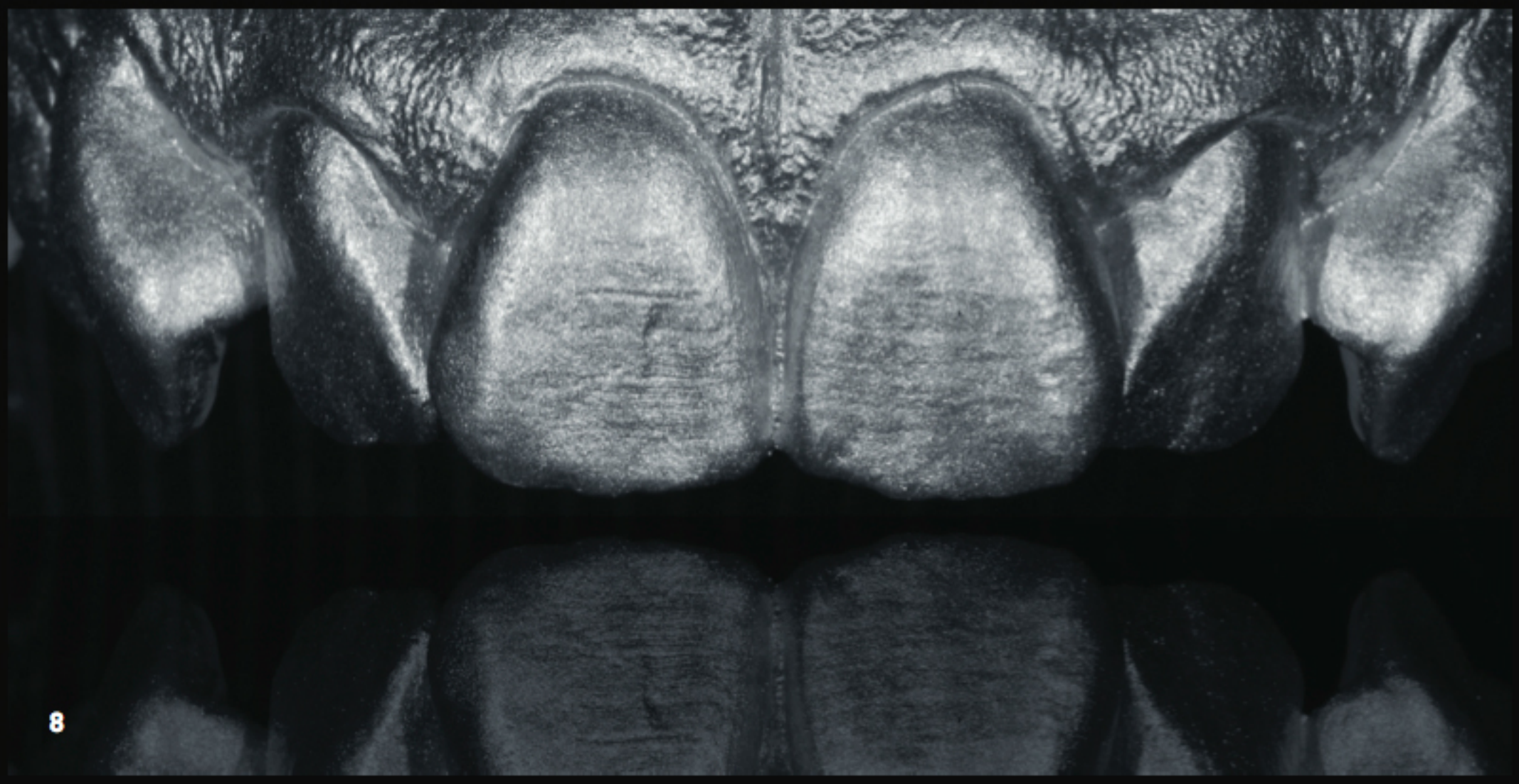
Natural teeth can also be "reverse-engineered" by de-enamelizing with hydrochloric acid. With a 10-30% hydrochloric acid bath in an ultrasonic unit (Renfert USA; St. Charles, IL) for 20 minutes, enamel is stripped from the natural tooth, leaving only dentin exposed. This gives a clear view of where dentin truly lies in nature and how it should be mimicked when layering ceramic.



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Once the interior is observed one can clearly see how the interior relates to the exterior. Dentition can now be seen in a whole new light. Details such as surface texture become clearer with this complex understanding of the composition.

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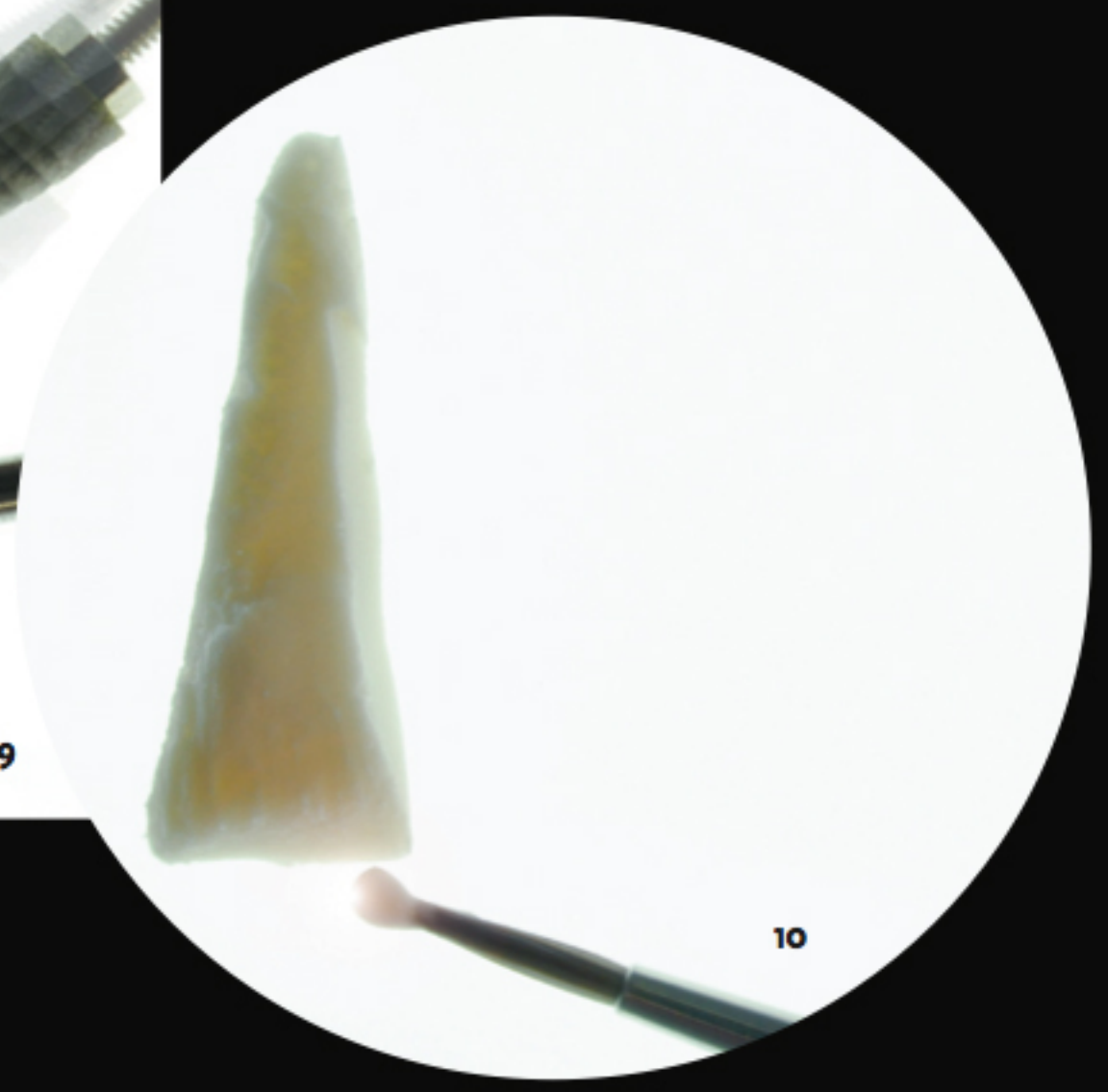
Concepts in studying nature can be directly applied to ceramic layering and detail work such as form and surface texture when creating restorations.



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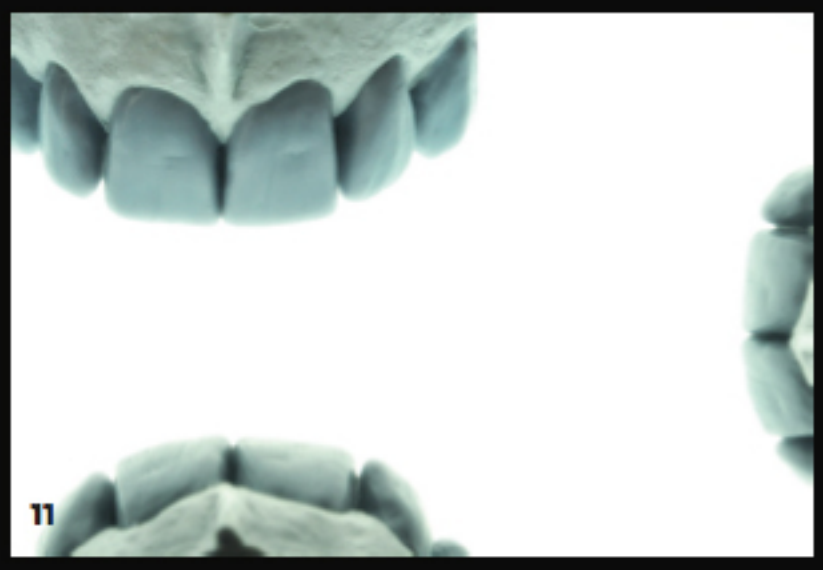

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Nature will always guide the medium, whether one is working with wax, ceramic, or acrylic.

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With the studies laid out, the skills must be translated to the mouth. The mouth poses new variables that must always be considered, such as lips, lip line, tissue, etc.

Mastering natural dentition and color will prove worthwhile when one is faced with the task of layering and fabricating a single central incisor (#8 veneered utilizing GC Initial's Mc ceramic system [GC America; Alsip, IL]). Dentistry by Dr. Barry Polansky (Cherry Hill, NJ).

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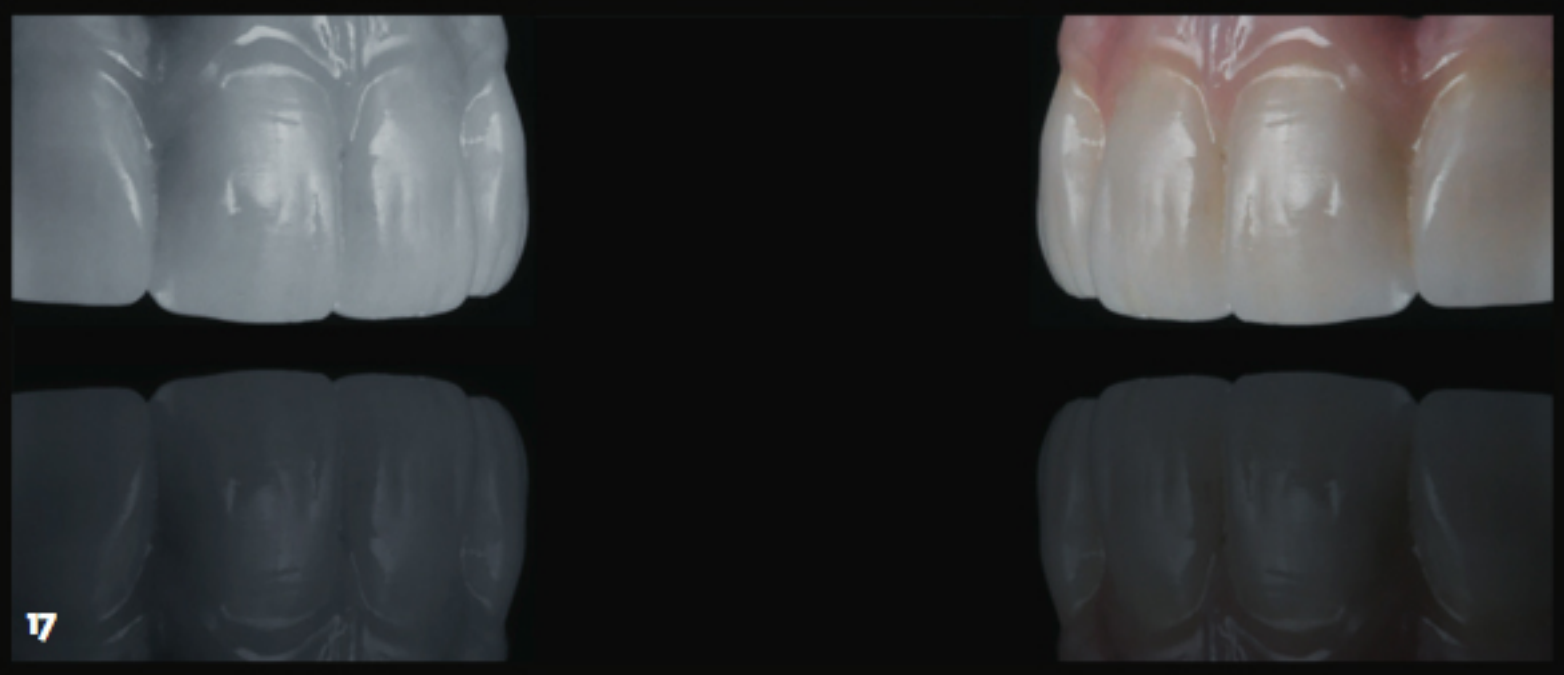

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The ability to translate knowledge from brain to brush to mouth is becoming a lost art with the advances in CAD/CAM technology. Being able to recreate nature is not only limited to dentition; the study of tissue and tissue color is imperative to creating natural restorations as well. (Fig 16: #8 and #9 restored, #8 zirconia custom abutment with zirconia layered crowns over #8 and #9 using GC Initial zirconia ceramic system. Dentistry by Dr. Barry Polansky. Fig 17: Metal ceramic pink-and-white bridge over four custom-milled abutments using GC initial Metal Ceramics system and GC Initial gums shade ceramics Dentistry by Dr. Jamie Laviola (Atlantis, FL).

Mr. Polansky owns and operates Niche Dental Studio in Cherry Hill, New Jersey.
Disclosure: The author did not report and disclosures.