Beauty is Truth, Truth Beauty

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This issue of the Journal of Refractive Surgery inaugurates a new phase in the Journal’s life—a closer integration of truth and beauty: scientific truth as reflected in the peer-reviewed articles and artistic beauty as reflected in the paintings that now grace the cover. How John Keats could pen our title as the memorable last line in his poem “Ode to a Grecian Urn” while still in his mid-20s mystifies any observer of contemporary college students in an English class, but his familiar poignant assertion embodies the broad editorial philosophy that underlies the Journal.

In its essence, the creativity required to generate new scientific ideas and realities emerges from the same inner wellspring that generates artistic beauty, whether in the visual arts, musical composition, or literature. Creativity is assembling things in a way that they have not been assembled before, a new juxtaposition of ideas, colors, information, materials, structure, shapes, notes, technology, or rhythms that result in a fresh and unanticipated outcome. Both scientists and artists bumble along the same path—a winding path filled with chaos, uncertainty, and repeated failure; both are energized by child-like joy, excitement, and deep emotional pleasure that spurs their creative impulse to reveal what has not yet been seen or understood. Isaac Newton expressed the simplicity of the process: “I do not know what I may appear to the world, but to myself I seem to have been only like a boy playing on the seashore and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary.” Their result is often challenged and destroyed, only to be reinvented yet again.

Not only is creativity core to both science and art, but so is verification. Every student of science knows that scientific hypotheses must be proven and verified by repeated experiments, testing, and replication—but art? How does one verify art? That verification is a longer, deeper, and more intuitive process, a process in which human spirits—often in different cultures at different times—accede to the timeless beauty of a given work of art, thus verifying its validity. The tranquility of a towering statue of Buddha in Tibet, the power of Michelangelo’s Sistine Chapel ceiling in the Vatican, the impeccable balance of the Taj Mahal in Agra, the engulfing emotion of the Ode to Joy in Beethoven’s Ninth Symphony, the timeless stark abstraction of Greek Cycladic statues (as seen in the 2004 Olympic Opening Ceremonies): humankind has verified their beauty. And the term “verify” is apt, stemming from the Latin verit, truth.

Science and art may emanate from the same creative impulse, but they generate different kinds of truth. Science seeks to clarify, explain, systematize, and invent—usually with some potential application as its goal, an application that can be objectively repeated and again. Art seeks to express and stimulate powerful feelings in those who experience it—enjoyable feelings of beauty (aah, Monet’s Water Lilies) or repulsive feelings of disgust (oh, Picasso’s Guernica). Artists strive for individuality and distinctiveness: works of art are unique and cannot be repeated.

But, science can be as emotional and intuitive an undertaking as art. Leonardo da Vinci (who never knew about a “code”) certainly saw no division in his creativity when he was designing war machines and flight apparatus or when he was laying down the fresco of the Last Supper in Milan or the oil of the Mona Lisa.

How does all of this apply to refractive surgery? The history of refractive surgery is replete with scientific creative genius: the observation of William Bates who put together traumatic lacerations of the cornea with intentional transverse incisions to create transverse astigmatic keratotomy; the insight of Tottori Sato who reasoned that if a spontaneous tear in Descemet’s membrane in the hydrops of keratoconus can flatten the cornea, an intentional incision must be able to do the same; the dogged determination of José Barraquer to pursue the preposterous idea that a piece of human
cornea can be excised, frozen, ground to a new shape, and replaced to correct refractive errors; the prescient insights of Stephen Trokel and John Marshall who understood that a laser designed to etch computer chips could also reshape the cornea; the practical creativity of Jan Worst who was bold enough to attach an intraocular lens directly to the iris to correct aphakia and ametropia; and the list goes on. Putting things together in a new and unexpected way, connecting the previously disconnected—that’s the essence.

But there is another essence: defying known dogma, even as Galileo defied the Catholic Church by propagating Copernicus’ heliocentric cosmology. “You can’t operate on an anatomically normal eye just to get rid of glasses and contact lenses” was the dogma that plagued refractive surgeons for years, until the cumulative voice of enough grateful patients rose to a loud crescendo, drowning out the naysayers. We can be assured that similar repressive attitudes greeted Pablo Picasso’s early cubism; the fantastical undulations of Frank Gehry’s free-form buildings such as the Guggenheim Museum in Bilbao, Spain; the atonal compositions of Phillip Glass; and Vincent Van Gogh’s wild expressionism (remember, Vincent sold only one or two paintings during his lifetime).

The beautiful artwork that will grace each cover of the Journal speaks loudly to the habit of truth that is embodied in both science and art. The paintings on the cover emerge from the “Miradas” program, created by Dr Jorge Alió and Maria Lopez in 1996, whose purpose is to create a platform in which science and society can join together with a common understanding. “Miradas” means sight. Sight is essential to observe paintings and the loss of sight deprives the blind human being from this pleasure. Miradas was created to attract the attention of society to the importance of the prevention of blindness by creating a competition among artists who are encouraged to submit paintings with only one condition: their meaning and main topic must involve some aspect of sight.

The biennial competition is managed by the Jorge Alió Foundation in Alicante, Spain, which oversees the professional, independent juries that judge the paintings. The winners receive cash awards. The paintings are displayed in the clinics where the competition is held. Artists are recruited through the media; both the well known and the emerging are welcome. Previously held only in Spain, Miradas has become international, joining eight Hispanic American countries in the contest—each contest being held separately in each country. The international Miradas awards are announced at the Gala Dinner of the International Society of Refractive Surgery of the American Academy of Ophthalmology biennially. The covers for the Journal are selected from the Miradas paintings by members of the Foundation and the Journal board.

In the realm of science, medicine is unique because it is the only profession in which technology, science, and humanism combine to relieve the suffering of a human being. This humanism encompasses the feelings that bond doctor to patient; this humanism embodies the emotions that respond to the beauty of art; this humanism is expressed through the Journal of Refractive Surgery. Refractive surgery is now the most frequent surgery done in the United States, allowing ophthalmic surgeons to improve the quality and enjoyment of life of millions of patients. The creativity and constant evolution of refractive surgery resemble the creativity and ever-changing face of the paintings; both enhance the wonder and joy of life. Svyatoslav Fyodorov’s favorite aphorism was “We [refractive surgeons] make beautiful eyes for beautiful people.” The beauty of the cover of the Journal is an invitation to enter into the truth of the science inside.