

The Commissure Vol. 2

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Kathryn Ko, M.D., MFA

@doc_ambidexter

Art brings to neurosurgery what words cannot express. Neurosurgery provides artists with images and stories that even the most creative imagination fails to summon. The artist's temperate eye paired with the surgeon's calculated acuity enables the most faithful rendering of a subject.

Surgeons and artists have unique observational skills. Dr. Harvey Cushing, who was also a talented artist, may have argued that it is natural for a neurosurgeon to also paint and draw. Surgeons interpret visual cues with objective scientific lenses to ensure they are making accurate assessments, skillful incisions, and fostering optimal outcomes for their patients. In contrast, in guiding the brush, an artist reacts subjectively to the subject matter in order to achieve the intended composition. Dr. Cushing surely understood the vital connection between these two disciplines during his lifelong pursuit of both.

In more detail, "value or tone" is the measure of how light or dark an object is. Although we can clearly see the difference between black and white (Figure 1), the creation of less stark, medium range tones is a challenging concept to sense even for the artistic mind.



Figure 1. CT scale grey-scale. Linear value scale

It is value, not color, that is the basis of artistic practice, and its subtlety turns an artistic attempt into a successful artwork. Both surgery and painting require a keen awareness of these ethereal tonal relationships. Neurosurgeons are masters of grey-scale analyses in the interpretation of colorless CT (computerized tomography) or MRI (magnetic resonance imaging) scans. These radiological scans are the value scales of complex organs and diseases.

Consider the CT scan of a subacute subdural hematoma. An untrained student may not be able to delineate the interface between blood and brain parenchyma. Yet to make a diagnosis, neurosurgeons must learn to detect slight value shifts that are more intricate than in a single painting. The same ability applies when it comes to discerning tonal variations as light strikes an object. By accurately translating this pattern, an artist can create the illusion of three dimensionality on a flat surface.

My neurosurgical practice has enhanced my ability to assess tonal relationships in my artworks. An example is the charcoal drawing of surgical instruments with the intricate highlights and shadows. To capture the weight and glint of the metal, careful attention to value changes is important (Figure 2).

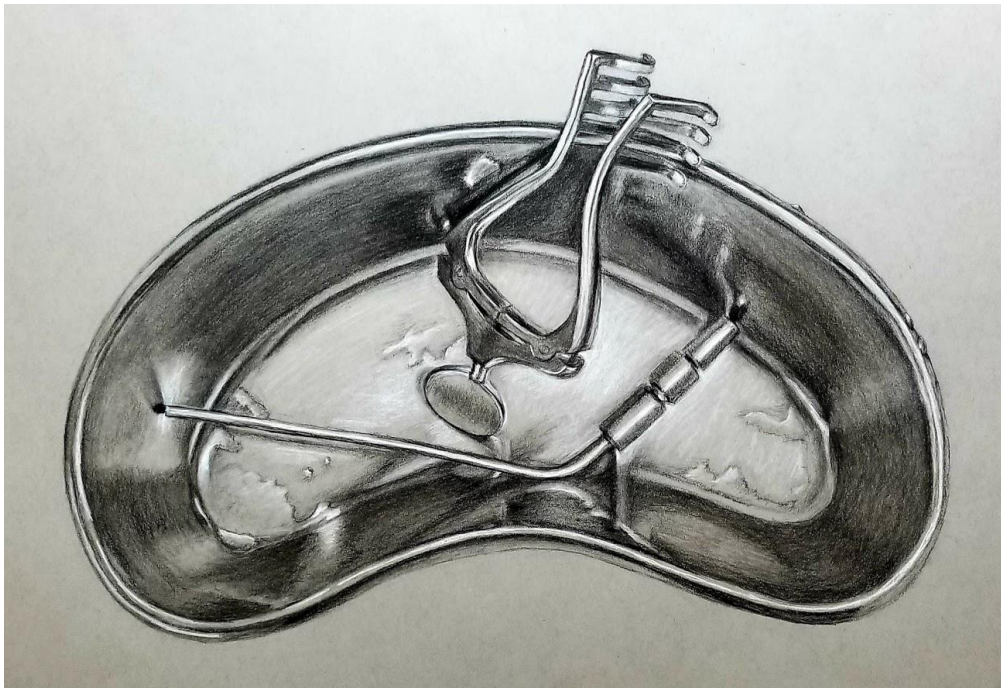


Figure 2. Surgical Tools in Charcoal

Similarly, training as an artist has influenced my color perception on the operating field particularly in recognizing the junctional plane between normal and pathologic tissue such as in a low grade glioma. This dualistic method helps me creatively solve challenges in both the operating room and the studio. At this stage of my career using both these two approaches simultaneously for painting and operating yields the most fulfilling outcomes.

The notion that neurosurgery-themed painting or drawing can be directly copied off an intraoperative photo is naive. Creating a drawing or painting of this scene is not trivial and requires subjective editing. Artists must minimize harsh contrasts and exaggerate shadows to avoid calling attention to distracting details in favor of the overall, cohesive impression. By leaving out select elements and controlling the light, the painting appears more accurate than a photograph. That is because in art, optimal light and shadow comes from a single source positioned above the object. Extraneous light is removed to improve contrast and create the artist's illusion. Conversely, the operating room requires maximal brightness and minimal shadows. The lighting in the room is chaotic with competing wavelengths and trajectories. The fluorescent tube lighting, the overhead halogen lights, the LED headlamps, and the xenon-lit microscope are compulsory to enable precision and accuracy for surgery. Therefore, the operating room lighting must be curated when envisioning an artistic undertaking (Figure 3).



Figure 3. Hinge Craniectomy acrylic on canvas

I strive to explain the chief complaint in a visual statement by converting a life experience from the medical narrative into images. Each encounter starts in the clinic and concludes in the studio forging a visceral collaboration between the blade and the brush. The quiet of the studio has a metabolism ideal for reflection. Some outcomes are worth reviewing outside the hospital setting and these events cast shadows onto my paintings. During such times, my brush is an effective dissecting tool and the canvas serves as the diagnostic instrument. Painting and other mediums are a bloodless opportunity to facilitate an intervention and offer a brushstroke cure. What I have learned in the studio and has influenced my neurosurgical growth and is a tribute to this process.

Neurosurgery is a lonely destination and an art practice is a consolation during this journey. In using the brush to express what it is to be a neurosurgeon I found myself. Embracing both art and medicine keeps my mind dexterous and opens a new perspective in which to regard neurosurgery. Becoming an artist helped me accept that surgery & art are a joined passage. Therefore, drawing and painting are ideal methods to show our humanity to those on the other side of the blade.

Words scarcely describe what it is like to view a living human brain much less to operate on it. Remaining objective in its presence is impossible. At the heart of it, the brain is a medical masterpiece that no artistic creation can ever match. Gazing at this e is organ, responsible for our creativity, affects the observer emotionally and I am honored at this privilege. In this instance, medicine conveys deeper significance to the viewer than art.

It is unconventional to inhabit the zone between subjective and objective thinking, between art and medicine. Just as Dr. Cushing invited the medical artist, Max Brodel (3), into the operating room we may one day welcome artists into our departments. In that same manner, the art institutions can include scientists and doctors. When artists and physicians begin to trust each other, we will witness a burst of creative collaboration. Even though I am my best living with both practices, in an emergency I would save my artwork over my stethoscope. But, for the rest of my days, I would never forgive myself for leaving it behind.

References:

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Key terms: Dr. Harvey Cushing, Max Brodel, Art, Painting, Drawing

Points: Neurosurgery and Art in one career.