SPIE Medical Imaging: Content within Context

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It was twenty-six years ago. I was attending my first SPIE Medical Imaging meeting in Newport Beach, California, reporting on creating anthropomorphic models of lung nodules.[1] As a junior PhD student, I was nervous about how the audience would receive my work. I was relieved when, after the applause, Hal Kundel, literally the father of medical image perception, commented that "we have certainly made progress since early days of simulating nodules with ground beef!" That was followed by David Gur, a leading medical physicist commenting "great work, but your nodules are too *clean*. You got to look at real nodules to see how variable they are."

The following year, I was before the same audience reporting on measuring the Detective Quantum Efficiency of digital radiography detectors.[2] In the work I assumed an ideal detector to be *energy-integrating* as opposed to *photon-counting*. The effect on the results is very small, yet philosophically, what should we consider an "ideal detector?" Bob Wagner, the legendary imaging scientist, stood up and challenged my assumption. A debate ensued. With no resolution in sight, Bob turned around to the audience and asked them "what do you think?" That led to additional comments from Rich Van Metter and Ian Cunningham, two primary authorities on the subject, mostly siding with Bob referencing his own paper,[3] though acknowledging that my assumption could be entertained as well. They were being nice! I was simply terrified, assuming my short career was over.

I am sure many of us who have been "regulars" at SPIE Medical Imaging can recall many such interactions. From its inception some 50 years ago on the sidelines of RSNA, the symposium has provided not only a venue to exchange the science of medical imaging, but more importantly a space to engage with it. The luminaries that launched SPIE Medical Imaging, the likes of Bill Hendee, Ken Hanson, Harry Barratt, Bob Wagner, Hal Kundel, Rodney Shaw, and Art Burgess, not only founded an exceptional conference, but created a space in which seasoned experts were invited to provide *context* for the *content* of the science being presented. If our science gives SPIE Medical Imaging its "brain," they gave it its "heart." And that heart has continued to beat through the generations that have come after, through likes of Norbert Pelc, Maryellen Giger, Steve Horii, Jim Dobbins, John Boone, Elizabeth Krupinski, John Rowlands, Michael Flynn, Kyle Myers, Steve Rudin, Craig Abbey, and I am leaving out many many other names.

I do not wish to underrecognize the *content*, the amazing advances that we have seen and presented at SPIE Medical Imaging. We have learned of technologies there five to ten years before they were showcased in clinical meetings: the transition from analogue to digital, the birth of tomosynthesis and CBCT, the standardization of image quality, the transition through CT generations, moves towards photon-counting and phase imaging, the transition to digital pathology, and the relevant use of AI in imaging. And these are just to name a few among many. But science does not happen in a vacuum. We are humans first, and scientists, physicians, or engineers second. Where we have come from, makes us who we are now.

So, let's think of the history of SPIE Medical Imaging and the legacy of its founders as a part of our scientific heritage, not unlike the cultural heritage that each of us carries. Those legendary scientists are our scientific "grand-parents." Invoking Faulkner, "the past isn't dead; it isn't even past." SPIE Medical Imaging history is our history—it is what makes us who we are. Let us steward and cherish this legacy for the next 50 years!

References

1. E. Samei et al., "Comparison of observer performance of real and simulated nodules in chest radiography," *Proc. SPIE* **2712**, 60–70 (1996).

2. E. Samei and M. J. Flynn, "Physical measures of image quality in photostimulable phosphor radiographic systems," *Proc. SPIE* **3032**, 328–338 (1997).
3. M. J. Tapiovaara and R. Wagner, "SNR and DQE analysis of broad spectrum x-ray imaging," *Phys. Med. Biol.* **30**, 519 (1985).