The State of TVs Today

by Steve Sechrist

Stepping back to assess the state of TVs today, one cannot help but be amazed at the evolution from bulky CRT picture tubes to the current mass-produced flat panels that now dominate the large-display landscape. And the evolution continues, with goals remaining more or less the same: realistic image quality (higher pixel density), razor thin design, growing display size, and, of course, lower cost.

In this month’s issue, we ask if we are beginning to reach the limits of LCD technology in moving us to new levels of large-display performance. We explore the fundamental and structural limits of the now dominant backlight and gating crystal technology with an eye toward what large-display emissive OLED TV can offer as the heir apparent to living-room TV technology.

But beyond the materials used to build the display, what is ultimately unleashed from these evolutionary forces are expanded-use models and new applications often unintended by design. It is the unleashing of these new forces that drive development further forward in a new cycle of creativity that perpetuates its own evolution.

One such example is the growing trend of UHD and higher-pixel-density displays that go well beyond the limits of human visual acuity. Despite the critics’ commentary that this is being done “simply because we can,” enhanced 4K displays and beyond are providing a brand new canvas from which to paint completely new viewing experiences. These are perhaps the next killer applications that will go beyond the full-screen (UHD content) image with the advent of display-screen real estate and the multiscreen living-room experience. They hold the promise of creating a staggering ripple effect on content creation and display innovation (including new models of content monetization).

And what new unintended consequences will this future hold? We already have Amazon’s Dynamic Perspective technology, a type of internal 3-D effect that uses all those spare (imperceptible) pixels along with parallax viewing to go deep into the display, revealing sub-folders, data, and content buried deep within the file structure. This technology is empowering HD phone displays by addressing the fundamental mobile-display problem of more imagery than can be handled on a limited-sized screen. This paradigm surely holds for all display sizes.

Finally, the frontiers of displays also include human interactivity because visual perception is simply the genesis of an ultimate human–machine interface that eventually will extend to all manner of human perceptibility. As leading interface display expert Dr. Jennifer Colegrove from Touch Display Research recently forecast in her “Touchless Human-Machine Interaction Market Report,” up to one-third of TVs will adopt voice control by 2020, and gesture control and motion sensor fusion will also increasingly penetrate TV applications.

One thing is certain: the state of large-screen TV continues to evolve, whether it be UHD and curved OLED screens, new content display paradigms, or interactivity that discerns user intent. And it is the development itself that will continue to push us further and beyond as the technology continues to reflect the true nature of its origin – the marvelous human mind.

Steve Sechrist is a display-industry analyst and contributing editor to Information Display magazine. He can be reached at sechrist@ucla.edu or 503/704-2578.