

By affirming **"you push the button, we do the rest"**, George Eastman created the photography industry. Today the future of that industry lies in extending its partnership with users to enable them with a true synthetic eye — an image capture device that forces no compromises compared to human vision — and with the full complement of tools needed for the coming age of pervasive visual communication.

As Eastman's successor, Kodak CEO Antonio Perez, quipped in his recent CES speech, digital cameras have been "like horse-drawn carriages with the addition of a motor instead of a horse" (or "digital analogues of analog cameras" as we at Future Image have been saying.) To be fair, that is hardly surprising: As a rule, a new technology begins by emulating another technology; then it equals it — and only later does it develop into its own medium. There are technical reasons for this: the new technology needs development and scale to catch up first to the raw performance, then to the price/performance, of the older one. There are also psychological reasons: users — and often product developers — learn only gradually to think "outside the box" of what the older technology defined as "possible."

**Recently a twenty-something asked me how come his digital camera produced blurred images in low light. I looked at his pictures and pointed out they were superior to what he would have obtained with a film camera. Then the irrelevancy of my statement hit me: He had no film-based reference — he had probably never used film. He was comparing the performance of his camera to the only standard that made sense to him, the only standard that makes sense today: his eye.**

The eye, or to be more accurate the human visual system, is the performance standard that digital camera designers should have in their sights for the immediate future. There's a lot of work to be done just to equal it. Our best cameras do not have our ability to see fine detail (therefore, don't expect the resolution race to end anytime soon), or to hold detail at both ends of high-contrast scenes. They do not match even our limited ability to see in color in low light. In anything less than full daylight, cameras produce blurred images if they are not held completely steady, or if the subject itself moves. (We are starting to see progress in preventing camera blur with a flowering of anti-shake technologies, but nothing yet that helps with subjects that won't hold still.)

**And there are less obvious ways that cameras don't match human vision: cameras don't have peripheral vision. They don't perceive and record depth and dimension information. And they don't record anywhere near as much "metadata" as we associate with our visual memories.**

Rising to these capabilities is a huge challenge. But ultimately, whether we realize it or not, we as users expect nothing less from our cameras than to equal what we see with our eyes — and we won't be satisfied until we get it.

# Beyond the Camera First Match Human Vision. Then Surpass it

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