Disappointment of Dazzling Displays

Your digital screen has more pixels than ever, but all that visual detail comes at a cost

When Apple unveiled its Retina screen on the iPhone 4, the world gasped. “There has never been a more detailed, clear, or viewable screen,” read a review on the tech Web site Engadget. “Staring at that screen is addictive,” said Wired magazine.

What they were reacting to was the super high resolution. The iPhone 4 packed in 326 pixels per inch (ppi)—pixels so tiny that you can’t discern them at standard viewing distance. Apple went on to incorporate Retina displays into the iPad (264 ppi) and MacBook Pro laptops (227 ppi).

So began the Resolution Wars. Recent phones from Samsung, Nokia and HTC pack in 316, 332 and 440 ppi, respectively. Google’s Nexus 10 tablet leapfrogs the iPad with 300 ppi.

And now the television industry has joined in. It is pushing 4K sets—that’s four times the resolution of high-definition TV.

Now, up to a point, higher resolution really does look better. Yet there are some footnotes.

Low-resolution graphics look no better on a high-resolution screen.

If you’ve programmed an iPhone app, you know that it doesn’t look any sharper until you reprogram it for the sharper screen. Until then, the phone just applies pixel doubling (substitutes four pixels for every one on the lower-res screen), which doesn’t improve sharpness.

In fact, they look worse. You may remember that when HDTV came out, standard-definition broadcasts actually looked worse than they did on standard TVs. (They still do.) Well, guess what? Same thing happens on other screens.

In theory, standard-res graphics on a high-res screen look exactly as sharp as they always did, thanks to pixel doubling. Yet as many MacBook purchasers discover with dismay, pre-Retina graphics look worse on Retina screens. This might be because a standard screen smooths out gaps between pixels, but on a Retina screen the gaps are so tiny, the subtle smoothing goes away.

In any case, the problem is especially severe on the biggest app of all: the Web. Few Web sites have been rewritten to accommodate Retina-type screens, so their graphics usually look awful.

Bigger = slower. Even if Web designers do get around to designing high-res versions of their graphics, those files will be bigger and therefore slower to load. On cellular phones and tablets that dole out Internet service by the megabyte, they are also more expensive. Do we want to wait longer and pay more to have those sharper Web sites? Shouldn’t we be able to choose?

Already our Internet providers impose monthly data limits. Do we really want each Web site to eat up, say, four times our monthly data?

Sharp text should be automatic but isn’t always. The previous points do not apply to text. Text is not graphics. Whenever a program or Web page displays text, Apple’s Retina software automatically delivers extremely sharp characters to your screen.

Unfortunately, that’s true only if the software companies use Apple’s prescribed text-handling routines, and not all of them do. For example, documents in Adobe’s InDesign layout program look horrible.

4K TV broadcasts? Forget it. The Retina-zation of television is particularly absurd. No cable or satellite company will send out 4K broadcasts because, in the bandwidth space of one 4K channel, providers could send out four HDTV channels. (Companies already send out low-res versions of HDTV channels to conserve bandwidth.)

The data required for a 4K video is also too great for DVDs, Blu-ray discs or Internet streaming. So what, exactly, will you watch on a 4K set?

If you buy a Sony 84-inch 4K set ($25,000), the company will loan you a hard drive containing 10 Sony movies in 4K.

That’s it? We’re going to ship hard drives? The hardware we need for our superhigh-resolution future is here. Now we need to figure out—on our phones, Web sites and TVs—how we’re going to squeeze in all that high-res content.