

Digital Clinic

BY DAVEY ALBA



Behind the Curve

I've noticed a lot of curved displays appearing on phones and televisions. Why are big-name manufacturers investing in this feature, and why would I even want it?

Curved-screen technology started in movie theaters, and the rationale is simple. When you throw an image onto a flat screen from a projector, the light has to travel farther to reach the edges of the screen than it does to reach its center. This creates a distortion known as the pin-cushion effect—the picture appears bowed inward, toward the center. Incorporating curvature counteracts this deformity, bringing the edges of the screen closer to the projector to produce an image that the audience perceives as flat. What's more, people discovered that when they sat in the theater sweet spot—in the central section of the row of seats level with the middle of the screen—they benefited from a more expansive field of view.

Television manufacturers claim that putting curves on TV displays replicates this field-of-view widening effect in the living room, giving spectators an immersive IMAX-like perspective. The problem is, your living room's sweet spot is much smaller than a large movie theater's. Only people sitting on your couch directly in front of the TV, with the middle of the screen at eye height, perceive a widened field of view. People sitting off to the sides won't benefit from the curve—in fact, they'll actually get a distorted picture. And if you sit beyond a certain point at a wide enough angle, the image cuts off completely at one edge.

Besides all that, TVs simply don't need the curvature that theaters do, because they emit their own light. Curvature does accomplish one other thing, though: curtailing ambient light reflection. When living room lighting hits a curved screen, it's reflected away from viewers instead of bouncing straight back at them.

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The same advantage exists in a curved smartphone display. If you turn your cellphone screen off and look at that glass display, you'll see a lot of reflected light. That light washes out the digital image your phone produces, making you enhance screen brightness and drain your battery quicker.

So, no, curved screens aren't just a gimmick. But with the cheapest curved TV costing \$3000 (Sony's 65-inch LED TV), and LG's G Flex smartphone selling for \$300 with a carrier contract (the Galaxy Round, from Samsung, is even more expensive), the value manufacturers have assigned to curves may be too high for consumers, at least for now.

Smart Watch Out

I think it's finally time for me to get a smart watch. What are my options?

The smart watch is on the rise—again. There were early models back in the 1980s, when Casio was marketing a line of "computer watches" called Databank—the devices allowed users to store telephone numbers and email addresses, and they even incorporated a calculator. But that product waned along with permed hair. Now a new breed of smart watch is on the rise—one that's firmly situated in the smart-phone-centric present.

The main job of today's smart watches is to push notifications from your smartphone to your wrist. A great smart watch provides convenience through efficient alerts and offers options for personalization. Pack it with too many features, though, and it can feel like an unfocused product, or just a duplicate of the computer that's in your pocket.

Currently, there are four big companies—Samsung, Sony, Qualcomm, and Pebble—in the smart-watch space, with more coming on. Both HTC and Motorola have

announced that they will be coming out with smart watches in 2014. Google may introduce its own soon as well, likely to be manufactured by LG, which also makes its Nexus 4 and 5 smartphones. And Apple is still widely believed to be working on an iWatch.

But in general, the decision points have to do with platform compatibility, battery life, price, and personal taste. For instance, the original Galaxy Gear is the most feature-rich of smart watches on the market: You can take pictures with it and even make phone calls. But the tradeoffs include a high price (\$300), short battery life (a little over 24 hours), and a limited list of compatible phones (just four). New models released in April—which include the Gear 2, the budget-conscious Gear 2 Neo, and the fitness-focused Gear Fit—work with dozens more devices and extend battery life to two to three days.

Sony's SmartWatch 2 is a similar product, but, at \$200, it's less expensive and has fewer features—it lacks a camera and a microphone for making phone calls—as well as a reputation for sluggishness. On the other hand, it does have solid support for social media alerts, and it boasts a longer battery life (two to three days) than other alternatives.

Some of the watches with a lot of buzz in tech circles have E ink-like displays, which make electronics look great in sunlight. In that arena, there's the Toq from Qualcomm, and two timepieces from tech startup Pebble. Battery life is exceptional on these watches: three to five days for the Toq, which uses colored Mirasol display technology, and five to seven days for the black-and-white Pebble. But the Toq, at \$250, is a bit pricey—and it doesn't even link up with an iPhone.

Of all the options, the tech community's consensus seems to be that Pebble smart watches are the most accessible and generally use-



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ful option on the market right now. They play nice with both iOS and Android, boast an ever-growing ecosystem of third-party apps, and are highly customizable. The original Pebble has a more informal, candy-colored look, but it is cheaper (\$150) than its successor, the Pebble Steel (\$250), which has a classic wristwatch look.

Back on Track

Is there a way to turn Track Changes on in Google Docs, so I can view changes the same way I do in Microsoft Word?

Revision history has been a feature of Google Docs since 2010, but changes were only periodically captured—it wasn't very helpful. In March Google introduced add-ons for Google Drive files; by far the simplest and most useful of these is Track Changes.

Open up a Google Drive document, navigate to Add-ons in the menu and select Get Add-ons. From there, you can scroll through to choose Track Changes. Approve permissions, and the feature will appear in the Add-on menu.

When you open the Track Changes panel, you'll be able to track changes automatically, highlight changes, and accept or reject revisions, just as in Microsoft Word. Letterfeed, the third-party developer that created the add-on app, doesn't retain your files in its own system—just as with any Google Doc, the data resides on Google's servers. **PopMech**



GOT A TECHNOLOGY PROBLEM? ASK DAVEY ABOUT IT.

Send your questions to pmdigitalclinic@hearst.com or over Twitter at @PopMechDigital or to Digital Clinic, Popular Mechanics, 300 W. 57th St., New York, NY 10019-5899. While we can't answer questions individually, problems of general interest will be discussed in the column.

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