Come on, admit it: is there anything more awesome than miniaturization?

The Walkman put a stereo system in your pocket and changed the game forever. A modern digital watch has the computing power of a roomful of 1950s computer gear. And people are watching TV shows these days on iPods about the size of a business card.

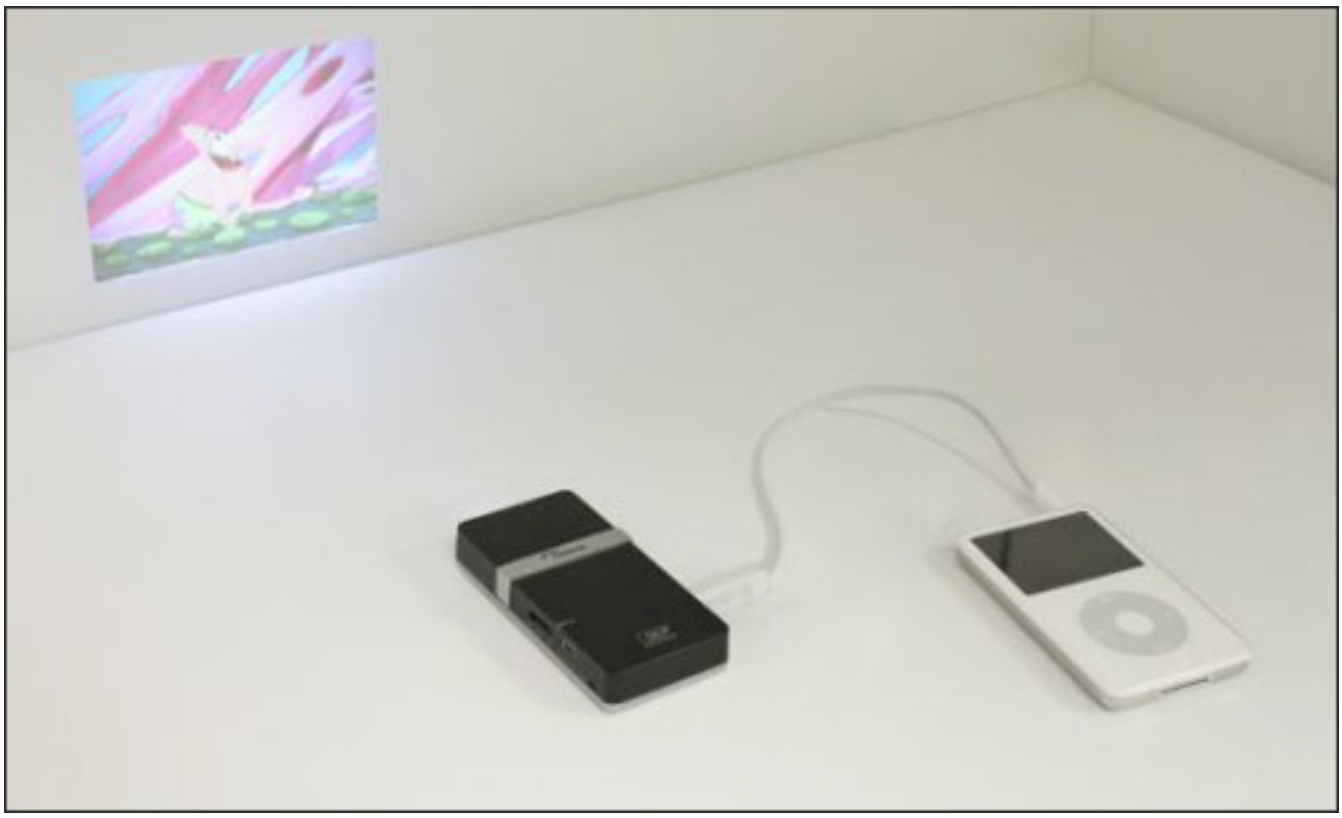
Enormous feats of shrinkage like that don’t come along very often, though. So when they do, you sit up and take notice -- as you will the first time you see the Optoma Pico Projector ($430 USD list price). It’s a long-awaited, much-rumored projector about the size of a cellphone: 2 by 4.1 by 0.7 inches, weighing 4.2 ounces.

A pocket projector? Are you kidding? This isn’t just a new product -- it’s a whole new product category.

Regular projectors, of course, are big, heavy, expensive, sometimes noisy machines. They’re standard equipment in corporate boardrooms where PowerPoint jockeys hold sway, in

classrooms or auditoriums, or mounted to the ceiling in home theaters, where they provide extra-large movie-watching goodness.

But there are lots of times when a 100-inch screen is overkill -- and yet a 2-inch iPod screen doesn’t quite cut it. Those are the times when you need something in between. In those situations, a completely silent, ridiculously simple micro-projector like the Pico really shines.



You'd have to be a jaded gizmophile indeed not to be impressed the first time you turn on this tiny, shiny black box. In the center of the short end, there's a very bright light-emitting-diode lamp. Inside, there's a miniaturized Texas Instruments digital-light-processing (D.L.P.) chip, similar in principle to the ones that drive some full-size HDTV sets. Together, they produce an astonishingly bright, clear, vivid video or still image. That's right -- from a projector you've pulled from your jeans pocket.

There are no footnotes for that jeans-pocket statement, either (like, "not including enormous power brick"), because the Pico can run on battery power. Each charge lasts for about 90 minutes -- longer if you use the lower brightness setting or when you're playing video without sound. You can recharge the projector either from its power cord or from a computer's USB jack. A spare battery comes with the projector, and so does a little drawstring carrying bag.

A pocket-size, self-contained projector changes all the rules. An iPod and a Pico -- that's the entire setup. Now, for the first time, a tent wall can become a movie screen when you're out camping. (So much for roughing it.)

Now, let's be clear: no pocket projector is going to produce as much brightness as tabletop projectors 10 times its size. The Pico manages 9 lumens (that's how they measure the brightness of things like projectors), compared with, for example, 2,000 lumens for a $900 USD tabletop projector. That may not sound like much, but it's plenty bright at the Pico's shorter distances and smaller "screen" sizes.

The minimum distance for this projector is eight inches from your “screen”; the maximum is 8.5 feet away, at which point you get a 65-inch image. And it really, really helps if you dim the lights or use a properly reflective movie screen.

You can sit this little gizmo on your airplane tray table and project onto the seat back in front of you. (Yes, I tried it.) You get a dazzlingly bright, sharp, vivid video image about a foot across, so that you and your immediate seatmates can all watch.

(Or shine the projector onto the plane’s ceiling. The three-foot movie image completely baffles everyone within several rows; nobody can figure out where it’s coming from. I tried that, too. It was fun.)

Or you can park the projector on a little tripod -- it comes with a tiny, screw-in tripod adapter -- and project tonight’s dorm-room Wii marathon onto a bed sheet or someone’s T-shirt.

Or you can lie in bed and point the thing straight up. In a dark room, you’ll have yourself a huge,

bright movie playing on the ceiling.

There’s no keystone adjustment to compensate for when the projector is facing the screen at an angle. The 20,000-hour bulb is not replaceable. And the picture resolution is only 480 by 320 pixels -- on paper, much coarser than the 1024-by-768-pixel (or higher).

But you know what? Pixels are overrated. Nobody will complain about the sharpness of the Pico’s image, especially after you find just the right spot on its little Focus dial. Over all, the Pico does surprisingly well.

So what can you watch on this thing?

It comes with a special composite cable. On one end, there’s a special, tiny audio-video pin that goes into the projector. On the other end, you’ll find the familiar three-headed, red-white-yellow RCA cables. These are female jacks, made to mate with the male composite cables that come with just about every DVD player, VCR, game console, digital camera and camcorder ever sold.

So in a pinch, the Pico projector could replace a TV set when you're using full-size gear like DVD players or game consoles.

But the true mission of the Pico's miraculous miniaturization is connecting to fellow micro-gadgets: digital cameras, cellphones, iPods or iPhones, for example.

The necessary adapter for the iPod or iPhone comes with the projector. Old video iPods require only the short black cable, which goes into the iPod's headphone jack but carries both audio and video. You also get a plastic nub that snaps onto the bottom of the iPhone or more recent iPods; the short black cable connects the nub to the projector. (The projector produces an image only when videos are playing. It doesn't show, for example, the iPhone's Web browser, e-mail program or other applications -- a shame for instructors or anyone else who might like a way to demonstrate the iPhone's workings to more than one audience member at a time.)

To connect a digital camera, so you can show off your stills or your videos, or to connect your camcorder, you use the composite TV cable that came with it. Optoma plans to make adapter cables available for other smartphones in the coming months, starting with a Nokia cable for $10 USD.

The Pico projector does so much so well with so little, it might sound ungrateful to bring up its one really embarrassing shortfall. But somebody has to say it: What about the sound?

The Pico has a built-in speaker, yes, but it’s about the size of a hydrogen atom. With the iPod volume cranked to full, the Pico puts out about as much volume as you ordinarily hear leaking from earbuds on somebody sitting next to you.

In other words, the projector is as bad with audio as it is good with video.

If you’re using an iPod, iPhone or cellphone, your last, best hope is the headphone jack. You can listen through earbuds, of course, although that’s not much of a communal experience. (A headphone splitter would at least let you invite a friend.) Or you can connect that headphone jack to a portable speaker -- but now, of course, you’ve got a much more complex rack of gear, and you’re way beyond the realm of jeans pockets.

Even so, the Pico projector is the first of its kind -- other micro-projectors are on the way -- and over all, it’s awesome. When it goes on sale in two weeks, it will give parents a completely portable backseat-of-the-minivan movie theater for the kids. It will let photographers display their portfolios with much greater size and impact than they’d get with a scrapbook -- right from the digital camera, if need be. It will permit spur-of-the-moment demos or pitches for corporate presenters or independent filmmakers, wherever they happen to be, without having to set anything up or reserve a room.

Miniaturization: it’s a blast, man. Gotta love those engineers. Just wait till they get their hands on air-conditioners, TiVos and jet engines.

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November 2008

http://zonezero.com/magazine/articles/projector/index.html