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DECIPHERING HTC'S DROID DNA

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DISTRO

112312 #67

engadget

Mary Roach

THE BESTSELLING AUTHOR ON WEIRD SCIENCE, STRANGE MEDICINE AND THINGS THAT GO POP!

ISSUE 67

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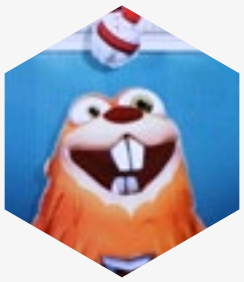

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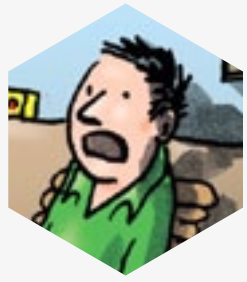

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REIMAGINED

DISTRO
11.23.12

EDITOR'S LETTER

WE'RE PUBLISHING EARLY and that means a busy week for the designers, but it's been a busy week for everyone at Engadget as we took the final step to deploy a redesign that's been on my mind for over a year now. Work began in earnest over the summer and now, finally, it's live. If you haven't swung by in awhile I'd encourage you to check it out, as we poached a few design cues from Distro, finally creating a consistent design language that spans anywhere you consume Engadget ... and there are even more ways coming.

We weren't the only ones launching this week, with Nintendo unleashing the Wii U on an at least partially unsuspecting populace. After the insanity surrounding the Wii launch a few years back, I've been shocked at how low-key this release has been. That's at least in large part thanks to the console not really being ready for launch — in my opinion, anyway. Out of the box the thing lacks key pieces of online functionality, requiring a lengthy update the first time you turn it on.

The pack-in game, *Nintendo Land*, similarly has an update waiting. It's an agonizing process of applying both that I think will have some parents swearing under their breath on Christmas morning. Forward-thinking Santas will want to apply those updates the night before — unless they really want to torture the little ones.

"We took the final step to deploy a redesign that's been on my mind for over a year now."

We got word via one of Windows expert Paul Thurrott's trusted sources that folks at Microsoft are not happy with Windows 8 sales; expectations are not being met and blame is being placed on OEMs. Apparently Microsoft expected a broader selection of interesting devices available for the holidays and what we have is generally a bunch of mildly tweaked Ultrabooks. Of course, some companies are trying more drastic changes, but their results — like the Lenovo Yoga, which you'll read about in this issue — don't typically offer enough added appeal to make up for their prices, which are noticeably higher than those mildly tweaked Ultrabooks.

On the smartphone side, Microsoft is retiring the punchy "Smoked by Windows Phone" advertising campaign that created some embarrassing PR fails over the past year, when it was the WP device that got smoked, but still the marketing lackeys doing the testing refused to accept defeat. The new campaign, called "Meet your Match," has much the same concept but a little less angst. Perhaps that will be more palatable to cross-platform shoppers.

HP is suffering its own woes, taking a massive $9 billion hit due to accounting "improprieties" at Autonomy, a software firm the company acquired in October of last year. At that time the deal, largely brokered by then-CEO Léo Apotheker, cost the company $10.4 billion. So, yes, almost the entire value of the acquisition has just been decimated by this misstep, yet still HP managed a $2.3 billion profit in Q3, down 3 percent from last year.

Amazon's Kindle celebrated its five-year birthday this week, an impressive span that has seen the line progress from that first wedge-shaped device that looked like a 30-year-old vision of the future into something rather more modern:

EDITOR'S LETTER

> "HD in-car cameras are currently being evaluated for use in the 2013 [Formula One] season and I, for one, hope they're mandatory."

the Kindle Fire HD series, two very nice-looking tablets with very nice HD displays. I still have my first-gen Kindle and I can never decide whether I find it very bland or very beautiful. Either way, I still miss physical buttons for turning pages.

Amazon also released a major overhaul of its Appstore on Android, visually refreshing its content portal to bring some of that Kindle Fire look to other devices. It also fixes a number of annoying bugs.

Comcast expanded its Xfinity TV Player app on iOS and Android to allow one interesting new feature: downloads of certain content. The selection is incredibly limited, just some programs on Showtime, Starz, Encore and MoviePlex, but it's a promising first step for those of us who might want to watch some premium digital content without having a connection — and without having to buy or rent it through a digital marketplace.

Finally, there's hope that next year one of my favorite sports, Formula One, might finally go fully HD. The sport's organizing body, the FIA, only recently moved some of the broadcasting to proper high definition, but still the in-car camera angles have remained SD, a disappointing thing given the body's purported stature as the pinnacle of motorsport technology. HD in-car cameras are currently being evaluated for use in the 2013 season and I, for one, hope they're mandatory.

In this week's Distro, Brian Heater sits down with the one and only Mary Roach, one of our favorite authors and a true enthusiast of weird and often disgusting stuff. On the review side, Brad Molen will give you a deep-dive on the HTC Droid DNA, the amazing 1080p smartphone that wowed me when I got a brief chance to play with it last week. We also have the Lenovo IdeaPad Yoga 13 and the Samsung Galaxy Camera, the answer to the question of what happens when someone puts a smartphone in a compact camera body. Ross Rubin talks Wii U in Switched On, Joshua Fruhlinger explores those who love the latest tech but bemoan change in Modem World, and we have Q&A with photographer Ryan Russell. Enjoy the latest issue and, if you're in the US of A, I hope you have a wonderful Thanksgiving.

TIM STEVENS
EDITOR-IN-CHIEF,
ENGADGET

ENTER

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EYES-ON

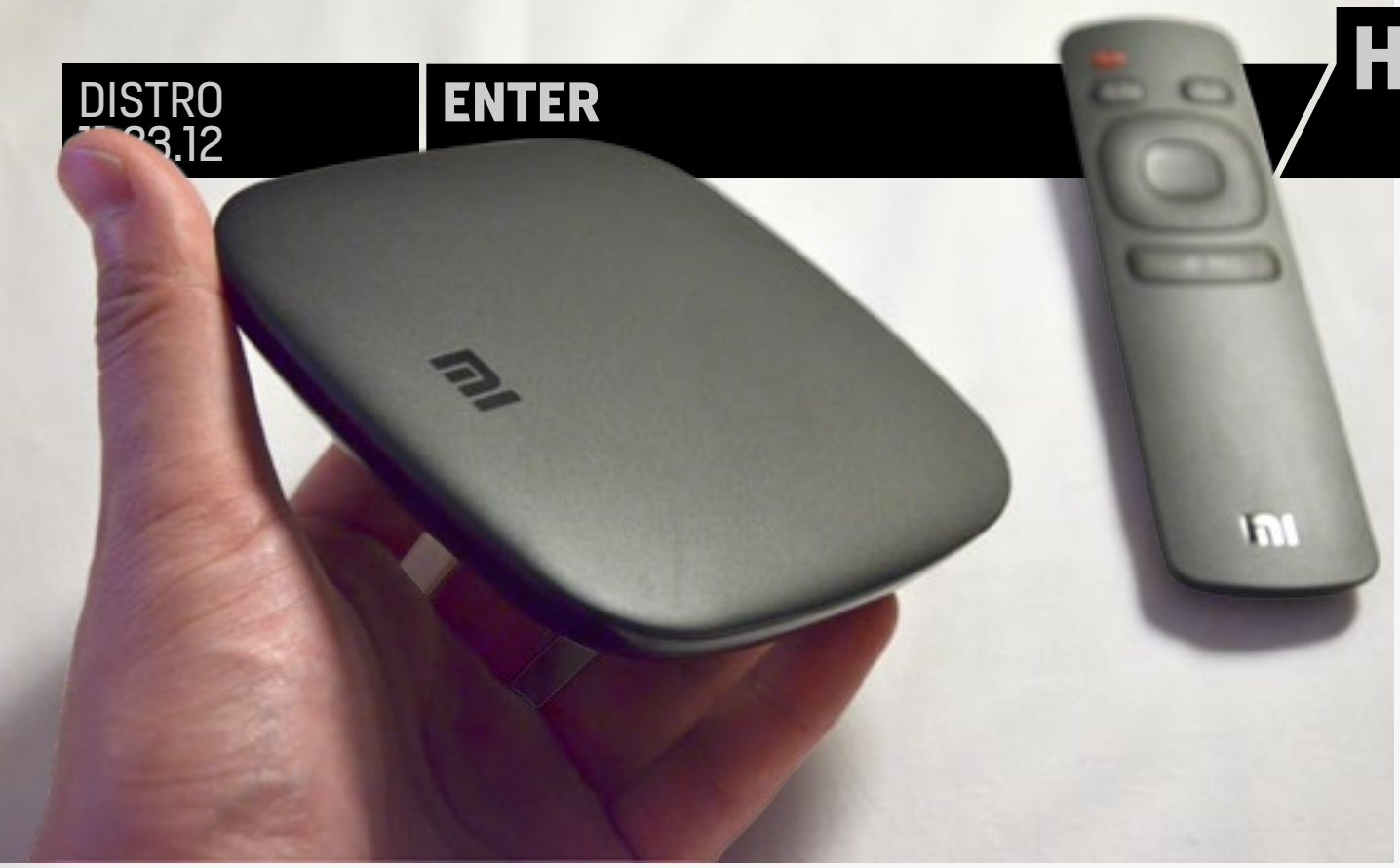
FINE-TUNED GAMING MICE

THERMALTAKE LEVEL 10 M & MAD CATZ CYBORG M.M.O. 7

New gaming mice are announced on the regular, however a select few wield design details that nab our attention like this ferocious duo. The Level 10 M and M.M.O. 7 not only sport dashing good looks, but they put those compact frames to good use, too. An onslaught of customizable presets and adjustments is the icing on the cake for this PC gaming combo.

THE DAMAGE: $100–$130

PHOTOGRAPHS BY WILL LIPMAN



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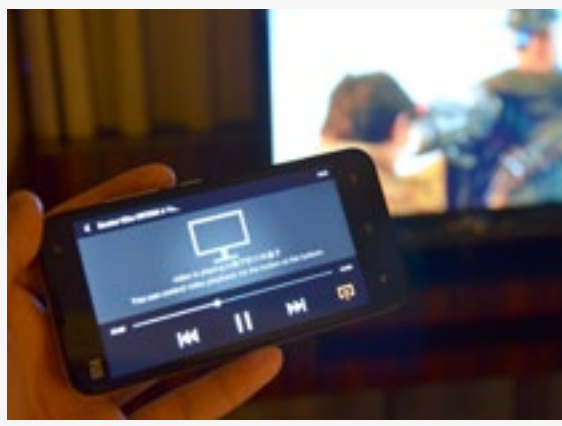

XIAOMI BOX

Having just launched the much-anticipated Xiaomi Phone 2, the Chinese startup recently announced that it had acquired digital content provider Duokan some time ago, and the first fruit is this conveniently named Xiaomi Box. Even with the bundled one-meter HDMI cable, the pebble's priced at a competitive ¥399 (about $64), and we've been told it'll be available in mid-December. Better yet, it claims to be compatible with AirPlay right out of the box! We were lucky enough to have an Apple TV at the launch event for a quick size comparison, and it turned out the Xiaomi Box is basically a flatter but more rounded version of Apple's counterpart.

The interesting thing is that in addition to Apple's AirPlay, the Xiaomi Box is also compatible with DLNA and Miracast. Xiaomi packages this trio of protocols as "MiLink." But just as expected, we could only stream non-protected content from iTunes to our Xiaomi Box during our test — that's still rather fun and handy, nonetheless. Don't worry, we haven't forgotten about the Xiaomi Box's native UI and content. The menu's grid layout is rather elegant and easy to navigate with the slim remote control. Despite the lack of access to Google Play, the selection of multimedia content — both local and foreign — is rather decent. Even *Dexter*, *The Big Bang Theory* and *Mad Men* are available in 720p quality for free, courtesy of Sohu.

PRICING:
¥399 ($64)

AVAILABILITY:
DECEMBER 2012 (CHINA)

THE BREAKDOWN:
WITH TOP-NOTCH CONTENT AND WEEKLY UPDATES, THE XIAOMI BOX EASILY GIVES THE COMPETITION A RUN FOR ITS MONEY.

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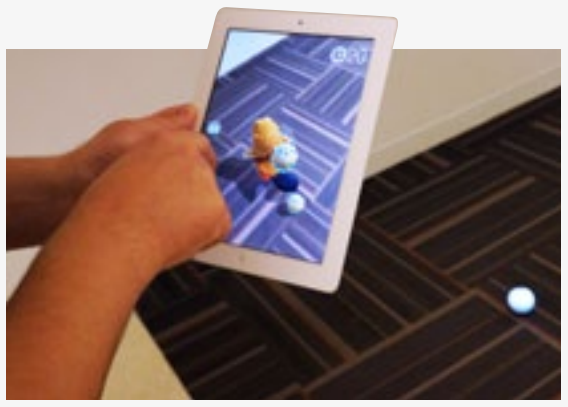


SPHERO SHARKY THE BEAVER

Been keeping up to date with the quirky robotic ball named Sphero? We've been wondering when its Augmented Reality Engine would finalize into a full-fledged app since we first witnessed it at E3 as a simple 2D tech demo. Well, the Android and iOS-controlled ball has made its first official steps into the world of AR — the engine has grown up, powering Orbotix's latest free app, *Sharky the Beaver*. While the game itself is still admittedly silly and demo-like as we saw in an early adaptation in August, there's no question that the engine is now in a polished state.

As a refresher, unlike other implementations that require a stationary marker, Sphero serves as one that can move around your area, while also relaying information about its position. The 3D character on screen rotates its direction as you spin Sphero, and, as you can see above, it even allows you to pick the ball up while it's being tracked. The framerate of tracking in the app itself looked very smooth, and it does an admirable job keeping track of the ball, even if it ends up off-screen. At this point, gameplay is limited to flicking cupcakes on the ground that Sharky goes to automatically, and there's no word on if and when we'll see the features shown off in the early version.

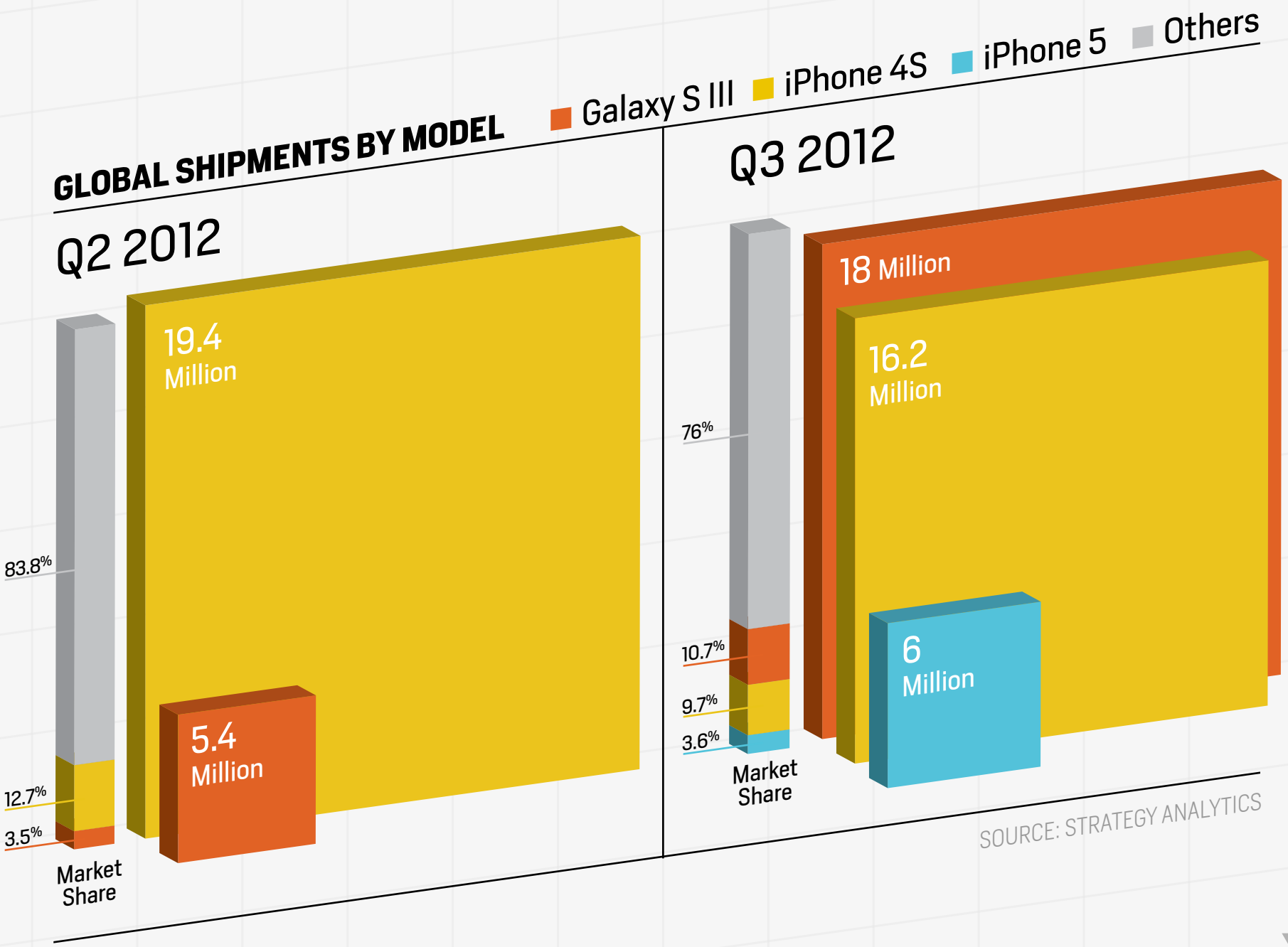
PRICING: FREE APP

AVAILABILITY: NOW AVAILABLE

THE BREAKDOWN: ORBOTIX LAUNCHES ITS AUGMENTED REALITY ENGINE FOR SPHERO WITH THE HELP OF A 3D BEAVER.

King of the Smartphone Hill

The Galaxy S III has overtaken Apple's iPhone 4S for the first time ever to become the top-selling smartphone for Q3 2012, according to Strategy Analytics. Samsung claimed the pole position by shipping 18 million copies of its flagship handset during the quarter, compared to Cupertino's 16.2 million iPhone 4S units. Of course, serendipity is also likely at play, as the iPhone 5 hit shelves towards the end of that period, likely cannibalizing 4S sales — in fact, the market research firm thinks Apple's new top handset will likely trump Samsung in Q4. That means the Korean giant may have to step up its game, or it'll just be keeping the top spot warm for its arch-competitor. — *Steve Dent*



PHOTOGRAPH BY CHRISTOPHER DILTS

When the Nerds Go Marching In

By Alexis Madrigal, *The Atlantic*

As with any presidential election, the weeks since Election Day have seen endless post-mortems written about both the winning and losing campaigns. With this most recent one, though, there's been an especially high number focusing on their use of technology — and data, in particular. Many are worth reading, but one of the most in-depth to date comes from *The Atlantic's* Alexis Madrigal, who spoke with a number of key members from the Obama technology team to paint a picture of how they built a "new Chicago machine" that ultimately far outmatched the Romney campaign's tech efforts. That, naturally, goes all the way back to the beginning — the 2008 campaign — and looks at how they've done things differently this time around, starting with the hiring of Chief Technology Officer Harper Reed, who's profiled extensively in the piece. As extensive and informative as it is, though, one gets the feeling that there's still plenty more to be written about this side of the 2012 race, and its implications for future elections.

Click on headlines to read full stories

Kill the Password: Why a String of Characters Can't Protect Us Anymore
By Mat Honan
Wired
Mat Honan has written extensively about hacking and computer security since he was himself hacked in a major way earlier this year, and he's now back with an in-depth look at a key piece of anyone's security: the password. It includes a look back at their history, and a look ahead at why they may ultimately need to be replaced.

You Can't Say That on the Internet
By Evgeny Morozov
The New York Times
Censorship on the internet (or anywhere, for that matter) is an issue that's always bound to get plenty of attention, but this piece suggests that there's another form that's slipping under the radar: algorithms that police everything from videos to search results and alter or remove content before humans even enter the picture.

The Hackers of Damascus
By Stephan Faris
Bloomberg Businessweek
As Faris notes in this article, only 18 percent of Syrians use the internet, but that hasn't prevented it from becoming another battleground in the conflict there, with protesters using it to organize themselves, and those on the Syrian government side turning to malware and other measures to track their activities.

Open University: Joi Ito Plans a Radical Reinvention of MIT's Media Lab
By David Rowan
Wired UK
It's been over a year since Joi Ito was named the latest director of the MIT Media Lab and it's already clear he's making his mark. As is also clear from this *Wired UK* profile, he also has bigger plans in the works, which center around the idea of making the lab more open.

The Three Cs of Wii U

BY ROSS RUBIN

IN THE PRE-POST-PC ERA, life was simpler for Nintendo and other successful competitors: Sell console. Sell discs. Repeat until wildly profitable. Six years ago, as Microsoft and Sony were taking part in a game of specification leapfrogging, Nintendo embraced casual and family gaming with the Wii even as it mostly ignored online play and convergent entertainment features. More than half a decade later, Sony has surpassed the original Wiimote with its Move controller and Microsoft has created a motion anti-controller with Kinect, but the Wii retains an advantage in that developers can assume the motion control is there.

Today, everyone in the games business still adheres to the basic notion of compelling software selling hardware, but the source of that software and the manner through which it drives revenue has changed via models such as digital distribution, downloadable content, free-to-play, subscription and advertising. In addition, Nintendo has launched the Wii U into living rooms in which game consoles must compete not only with each other but with Blu-ray players, TiVos, Rokus and Apple TVs for physical connections as well as smart

The Wii U is blazing the trail of multi-screen gaming, but it is traveling along a bumpy road.

TVs and tablets as other sources of connected entertainment experiences. How it has addressed these challenges reveals much about what the company has held dear from the Wii, what it has reluctantly accepted and what it has now embraced.

CONTROLLER

As it did with the original, less expensive Wii, Nintendo has banked on a unique controller to differentiate from its competitors. But the philosophy behind the Wii remote and the GamePad (which complement each other in the Wii U) could not be more different. The original Wii remote, like multi-touch on the iPhone, was designed to simplify gameplay by creating a more natural experience that reduced button anxiety. With the GamePad, the company has not only brought buttons back to the controller with a vengeance (and in a layout that may anger console fans used to other platforms), but added an infinite set of controls and gestures via its resistive touchscreen. "Look at the TV. Now look at the GamePad. Now look at the TV again," smacks of user interface design by the Old Spice Guy.

Whereas most Wii games essentially took advantage of the Wiimote in a relatively similar way, all bets are off with the GamePad, which can either mirror the TV display or serve as an adjunct to the main screen with the system often alerting you to shift your focus between the TV and the controller. The Wii U is blazing the trail of multi-screen gaming, but it is traveling along a bumpy road.

CLOUD

Along with the final embrace of HD (and mercifully via a standard HDMI connector), Nintendo has stepped up its support for online game functionality with the Wii U. Of course, as with the Wii, the e-store should provide plenty of back-catalog nostalgia. Nintendo, though, has moved to enable day-and-date releases of Wii U titles along with their disc counterparts. Furthermore, it has created an infrastructure for developers to create the same kind of multiplayer and game net-

Unlike with use of the controller or cloud, Nintendo has taken a consistent, thoughtful approach with its TVii feature.

work goodies that developers have come to expect on a modern console.

But when Nintendo talks of these features, it's clear that it has mostly implemented them to accommodate developers who have come to expect them on rival platforms. To wit, the company has stopped short of having system-wide achievements a la the Xbox 360 so that developers can implement the kinds of game goals that they desire, not necessarily the ones Nintendo deems important.

CONTENT

Nintendo may have extended a lukewarm greeting toward online play with the Wii U, but it seems to have finally embraced other forms of entertainment with TVii, taking advantage of the GamePad's second screen to act as a remote control and interface to various entertainment services. It blends remote control and consistent access not only to various online streaming services, but also to TiVo DVRs via the GamePad, lessening the pain of having its relatively large footprint on one's coffee table, along with second-screen programming for sports and other movies.

Unlike with use of the controller or cloud, Nintendo has taken a consistent, thoughtful approach with its TVii feature, creating a solid user interface. One challenge for the TVii offering is that its value increases as you subscribe to more broadband TV services, not to mention TiVo with its own monthly fee. TVii looks so promising, in fact, that Nintendo might consider licensing it to other tablet companies so that the functionality isn't limited to the person who happens to hold the one GamePad bundled with the Wii U.

That said, even when paired with all of its compatible subscription services, it is not likely to fundamentally change the TV experience. However, if the original Wii set a bar for intuitive control of a wide range of video games, TVii takes once TV-shy Nintendo and puts it in the driver's seat when it comes to defining a console's second-screen approach to television viewing and interaction. D

WE'RE ALL A BUNCH OF CRANKY OLD MEN

DISTRO 11.23.12 | FORUM | THIS IS THE MODEM WORLD

BY JOSHUA FRUHLINGER

I'VE BEEN STUDYING ONLINE communities since 1994, believe it or not. My master's thesis was called "Escape to Cyberia: Subcultures as Agents of Change." Go ahead, make fun of me for the title. It's cool.

But back then, no one — or at least, very few people — studied online communities as fodder for social science. I set out to prove that people could actually form social bonds and even social structures — in this case subcultures — online. I then went on to show that what happens online can affect what happens in the "real world." Several professors at the University of Chicago thought I was insane — "Real world vs. online? What is this, 'Tron?!'" — but I aligned myself with a forward-thinker named David Laitin who, too, was ready to accept our future robot overlords.

At the time, Usenet wasn't the dark, gritty back alley of the internet that it is now. Newsgroups were full of discussion, moderation and netiquette. They were, if you will, "where it was at." I was a daily contributor and reader of alt.mountain-bike, where at least 100 new messages about trails, bike maintenance and burritos kept my attention. It was, you might say, just like *Reddit*. Sorta.

We were a tight group, and we had little to complain about. Then the World Wide Web showed its colorful, graphical, sexy self and changed everything.

"Mrrrh!" we groaned. "This newfangled web with the clicking and the mouse will never replace Usenet! Keystrokes and text forever! Who needs pictures? Mrrrh! Mrrrh, we say!"

Change is hard. We get comfortable with something, get used to it and then someone moves our stuff, and we get

This newfangled web with the clicking and the mouse will never replace Usenet! Keystrokes and text forever!

annoyed. I used to indulge in a bi-weekly housekeeper because I was never good at the whole cleaning thing, but I eventually let her go when she moved my towels from under the sink to the linen closet. The closet was the right place for the towels, of course, but I had no interest in change.

I realized that the reason I was so insistent on keeping the towels under the sink was because all through college and my years in Manhattan I never had a proper closet, so I put the towels wherever I could.

I've since re-hired her and my towels go in the closet. My silverware also goes in a kitchen drawer, but that's another story for another time.

When Apple moves an icon, we tell them it was better where it was before, even though we've had that app running in the background for six months anyway. When Google takes away background images, we decide that we loved them all along even though we never changed them. And when Engadget launches a new site, our first reaction is, "Where's our stuff?!"

Then we're right back at it, doing what we do, and we eventually learn — hopefully — that the designers knew what they were doing all along.

This isn't always the case. When *Digg* tweaked their design and formula, millions of users ran, flocked to *Reddit* and rediscovered animated GIFs to the horror of those of us over 30. When *Reddit* redesigns — and they will — you can bet that throngs of angry, old 20-somethings will be at it again.

As consumers of consumer electronics, we complain when things change, yet change is exactly what made us all nerds in the first place. We tell our friends and relatives to get with the program, update their devices and change with the times. We look forward to exploring new operating systems and hunt for bugs and glitches like little gophers in a giant green field of code.

Do I want to go back to chatting on Usenet instead of *Reddit*? Heck no. I'm good with the kittens and rage faces, thank you very much. D

REVIEW

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Samsung Galaxy Camera

Lenovo IdeaPad Yoga 13

HTC Droid DNA

REVIEW

SAMSUNG GALAXY CAMERA

The Samsung Galaxy Camera offers a new connected experience beyond the classic compact, but is this pricey shooter worth the extra cash?

By Sharif Sakr

There were no heckles, boos or crickets for Samsung's reps back at IFA. But it's fair to say that the atmosphere following its unveiling of the Galaxy Camera was as muted as it was polite. It didn't help that most journalists in that meeting room were there primarily to see the Galaxy Note II, which was undoubtedly the show's headline act. It was also worrisome that Nikon had recently released a half-hearted Android camera of its own — the Coolpix S800c running on lowly Gingerbread. And finally, some folks in the room — ourselves included — may have been put off by

Samsung's talk of "convergence," in reference to the fact that the Galaxy Camera has a micro-SIM slot for HSPA+ cellular data. After all, the whole notion of converged hardware has lost the sheen it once had. Hybridized, perhaps. Modular, maybe. But please, not a camera-phablet.

Here's the thing, though: the Galaxy Camera is *not* a converged device. It's a camera, plain and simple. It just happens to be one that's hooked up (in a multitude of ways) to the glorious world of Android. More specifically, we're looking at full-throttle Jelly Bean sitting astride the same optically stabilized 21x zoom lens and almost half-inch 16-megapixel sensor that have already been deployed in Samsung's WB850F WiFi camera. These are components which far exceed anything you'd find in even the most image-conscious smartphone. If you want to put a label on it, it's probably more meaningful to describe all this as *software* convergence. The same OS and cloud-connected apps that have so radically transformed phones, tablets and TVs are now also being deployed in a camera — and there's no reason why they shouldn't be just as invigorating in this new role.

At the very least, don't dismiss this device as a curiosity until you've read our take on it.

HARDWARE

Just so we're clear: the Galaxy Camera has more heft than a regular compact, and it feels nothing like a phone. The 35mm maximum thickness (with the lens closed) means it'll just about fit into a breast pocket or baggy shorts, but the 305g weight may compel you to invest in a case, belt clip or strap. At the very least, you'll want to attach the bundled wrist strap, because even with a Gorilla Glass screen there's no way this camera will withstand a fall — and its surfaces are scarily smooth indeed.

In fact, the lack of protruding dials and buttons is one of the biggest differences between this and its non-Android cousin, the WB850F. As you'll see later, most camera controls are handled via the huge 4.8-

Outside of WiFi range? You can add a SIM card for connectivity.

You'll want to attach the bundled wrist strap, because even with a Gorilla Glass screen there's no way this camera will withstand a fall.

inch touchscreen display, such that the physical realm only includes a power / standby button, pop-up flash button and combined zoom knob and shutter release.

Of course, there's also a bunch of ports and other inputs. These include a mic at the top of the camera and a speaker on the left side below the flash button, which together allow you to use the camera like a VOIP phone. On the right side we have a 3.5mm audio jack and a handy micro-USB port for charging the device from the mains or a travel charger. Finally, on the underside of the camera you also get a tripod mount and battery compartment flap, which opens slightly too easily if the device is left to tumble about in your bag. Open that flap and you'll find the SIM slot — which, if you have a data plan, provides a uniquely direct way of sharing your photos when you're out of the reach of WiFi.

Sure, that SIM slot is interesting — but it's just one of many ways to get images in and out of the device. Whereas regular cameras generally shoot on full-size SD cards, the Galaxy Camera can shoot to its own 4GB of internal storage or to a microSD card that can readily be transplanted to a smartphone or tablet with its own data plan. More conveniently, since the Galaxy Camera also has WiFi, you could simply tether it to your smartphone or MiFi — which is actually how we preferred to use the device. If you happen to own a phone that does WiFi Direct, then you can also beam photos and video straight from the camera at very high data rates. All of these connectivity options boil down to the same question: why would you spend extra for a SIM with a data plan that only works for this camera?

No doubt some professionals and power users will decide to invest in a dedicated SIM, if they're likely to need to file photos over the internet daily and to tight deadlines. Over time, remote control apps for the camera may also be developed that will benefit from a direct cellular data connection — and frankly it's impossible to anticipate all the ways in which this hyper-connected camera could be put to use. But nevertheless, for regular use, the SIM slot feels like an unnecessary expense. One of the biggest joys of this camera for us was actually using it to browse, edit and share photos while at home or in a hotel, in which case the camera was simply connected to the local WiFi network. If a version of the Galaxy Camera without a modem would have been cheaper, then that's a missed opportunity to make the device more mainstream.

DISPLAY

One feature that will cause little debate is the big, bright and extremely rich HD Super Clear LCD. It's only when you start taking photos through a window of this size — perhaps on a Galaxy S III or a Galaxy Note II — that you realize how much a large screen helps with framing and composition. Moreover, the 1,280 x 720 panel does a good job of fending off direct sunlight, which means you won't especially miss the presence of an electronic viewfinder — even though the Galaxy Camera feels almost large enough to have contained one. One unusual omission is auto-brightness, which means you'll occasionally find yourself burning the battery with a stack of lumens that you don't necessarily need.

As you'll see when we delve into the camera's software interface, this huge display is essential for taking creative control of the camera, since pretty much every aspect of an exposure is dictated by tapping the screen. It's also a requisite of making full use of Android — not only the ability to play back and edit your photos easily, but also having a decently sized on-screen keyboard with which to type in captions, messages and so on. In other words, this heavy, power-hungry component isn't only justified by the photography, but also by what you're going

The 4.8-inch LCD allows for an immersive experience.

to be doing with your photographs after you've taken them.

All told, the panel on the Galaxy Camera isn't the best we've seen for all-round use, because it's entirely geared towards brightness and outdoor viewing. When displaying text, either the pixel or sub-pixel density makes the characters slightly hazy at their edges. Compared to the HTC One X's LCD panel, for example, the irregular placing of the dots actually makes this look strangely like a PenTile display. However, this component is intended for viewing images rather than words and it does an excellent job.

IMAGE QUALITY

What do we stack the Galaxy Camera up against? Although it's priced right at the top end of what a compact camera should cost, much of that outlay is going on the display, quad-core processor and connectivity options. If we were to remove these costly elements, we'd end up with the WB850F, which has the same 21x zoom lens and 1/2.33-inch sensor, and which currently sells on Amazon for just $260. This simple fact tells us much of what we need to know: the Galaxy Camera's image quality is going to jar with its $500 price tag.

When we look at the samples, that's exactly what we find. The auto mode often failed to sufficiently correct white balance, leaving us with excessively cold outdoor images and pinky-orange indoor ones. Noise affected pretty much every shot to some degree, even at ISO 100, and it became a serious issue beyond ISO 800 due to the overcrowding of those 16 million pixels on the sub-half-inch CMOS chip. Considering that you can get an APS-C Nikon D5100 with a kit lens and the same resolution for $580 these days, or a pedigree fixed-lens compact like the Fujifilm X10 for $550, or a Sony NEX-5N mirrorless ILC for $480, it's impossible for the Galaxy Camera's relatively cheap photographic components to put up a fight.

On the other hand, you could say that's an uneven contest. After all, aside from Samsung's habitual overpricing of its cameras, the money that goes on the non-photographic aspects of the Galaxy Camera is hardly being wasted — it's just being invested in a different set of talents. If we shift the comparison to smartphones like the Galaxy S III, it's obvious that the Galaxy Camera is in a different league than any traditional mobile device.

Combined with the long lens, the larger sensor opens up a world of different shot opportunities and also allows some shallow depth of field. It has better dynamic range and tends to capture and preserve more data per shot, even after you correct for the difference in resolution — for example, a 16-megapixel image of tomatoes weighed 4.2MB on the Galaxy Camera and only 1.7MB on the 8-megapixel Galaxy S III. Although the video data rate is broadly the same across both devices, at just over 2 MB/s, the op-

Optical stabilization allowed crisp 1/10-sec low-light stills.

tical stabilization in the Galaxy Camera means that data is used to capture detail rather than the chaotic motion of camera wobble, and the resultant video is actually very good. The stabilization also helps with stills — we were able to pull off 1/10-sec. low-light shots with virtually no visible shake. The only slight issue with video recording is that audio volume dips noticeably when you engage the zoom.

Ultimately, we have to conclude that image quality is good enough for the intended audience — people who are more interested in getting up close to a subject and capturing a moment, and then tweaking and sharing the resulting image, rather than creating something particularly polished. Many of the images from this camera will even be deliberately subjected to low-fi filters and effects before they're shared on Instagram and other platforms, so raw quality just isn't going to be what counts.

PERFORMANCE AND BATTERY LIFE

There may well be some users who want to use the Galaxy Camera as their

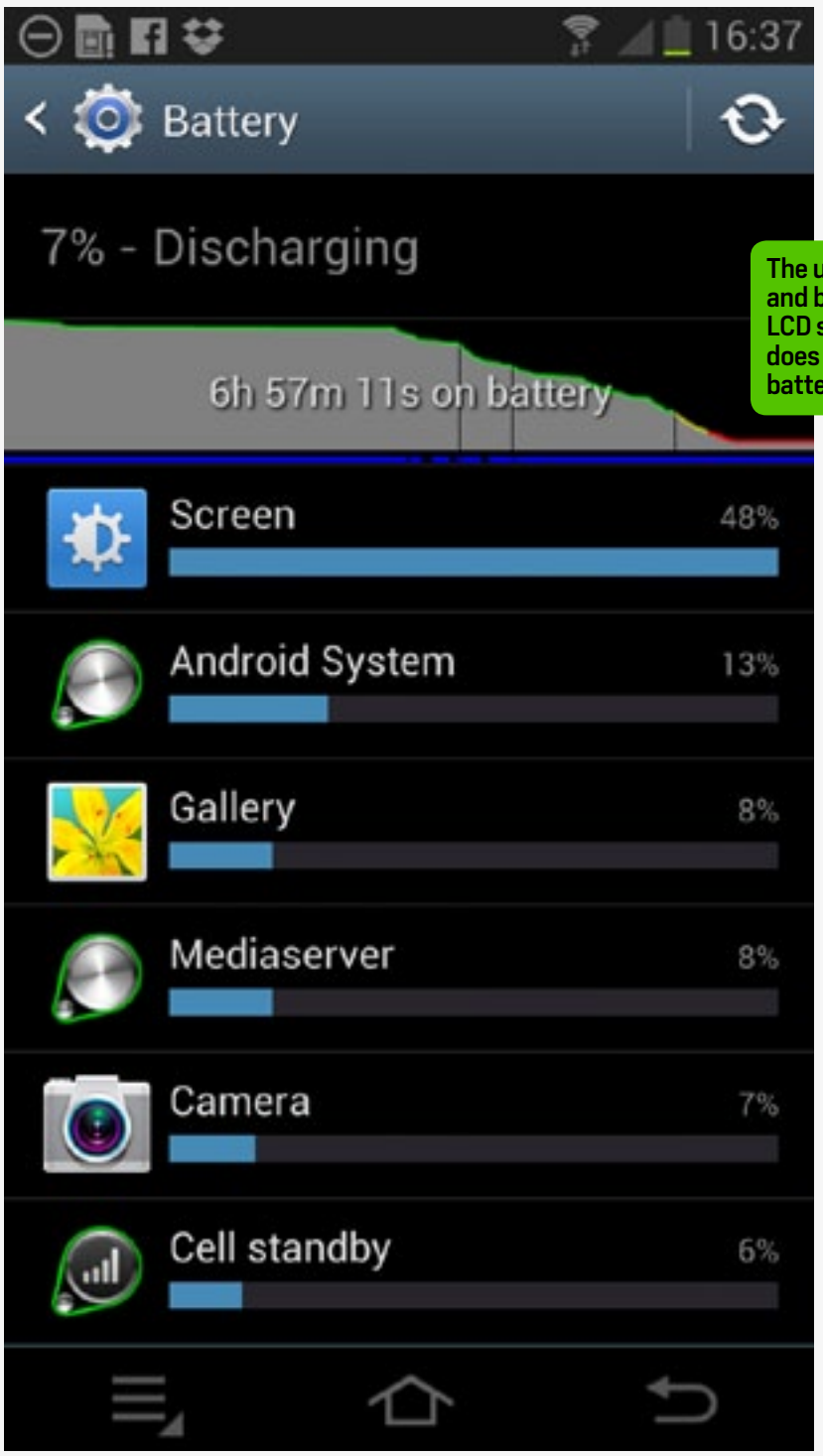
primary Android device — perhaps alongside a small-screened smartphone that isn't great for typing and other non-phone tasks. In that scenario, battery life will be important in exactly the same way as it is on a smartphone or tablet, so we ran our usual looped-video rundown test. Due to a network issue at the time, we disabled cellular data but left WiFi and GPS switched on.

As it turns out, battery life is limited enough that you'll probably want to ration wireless connectivity and only use it as you need it. With a duration of just six hours and 40 minutes, the Galaxy Camera doesn't last nearly as long as the GS III with WiFi, GPS *and* cellular data enabled. The gap between the 1,650mAh and 2,100mAh batteries is a big one, and it's likely that the GS III's HD Super AMOLED panel is also more power efficient, in part thanks to its lower brightness.

Bear in mind that you'll need to divvy up that battery capacity between Android usage and actual photography. We were able to drain the battery in just four hours after snapping 115 photos and three minutes of HD video, alongside some heavy editing and sharing over WiFi tethering and WiFi Direct. Reducing the amount of browsing and general screen use made a huge difference, especially when we powered off the screen between each shot. This approach gave us 146 shots and six minutes of HD video and we still had 40 percent of the battery left. Depending on how you're likely to use the Galaxy Camera, you can count on either charging it every day like a power-hungry smartphone, or carrying a USB power

BENCHMARK	GALAXY CAMERA	GALAXY S III	GALAXY NOTE II	NEXUS 7
QUADRANT ADVANCED	5,830	5,852	**6,819**	3,501
VELLAMO 2 HTML5	1,674	1,565	**1,831**	1,650
ANTUTU	12,006	11,960	**13,539**	8,954
SUNSPIDER 0.9.1 (MS)	1,209	1,170 (1,460)	**1,023**	1,785
GLBENCHMARK 2.5 EGYPT HD C24Z16 OFFSCREEN (FPS)	15	15	**17**	N/A
CF-BENCH	12,910	13,110	**15,267**	11,807
BATTERY LIFE	6:40	9:02	**10:45**	9:49

LOWER SUNSPIDER SCORES ARE BETTER. SCORES IN BRACKETS WERE RECORDED BEFORE A RECENT UPDATE.



The useful and bright LCD screen does tax the battery life.

pack or spare battery. Fortunately, the battery is identical to that in the original Galaxy S II, so buying $10 spares should be a cinch.

The upside of all of this wattage is that you're getting an extremely fast and fluid widescreen Jelly Bean experience. We had one crash, and a couple of strange slow-downs, but for the most part every aspect of the camera ran as quickly as the GS III. The processor also allows you to launch the camera app and take a shot within two seconds of tapping the button. It can also pull off a confirmed four frames-per-second at full-res with fixed focus and a maximum burst of 20 shots.

SOFTWARE

Let's get back to that original question: why bother having Android on a camera? When it's implemented properly, as Samsung has achieved here, the answer to that question is something you feel as soon as you switch on the device. Instead of some clunky traditional camera interface, you'll be welcomed by your own, deliciously customizable environment. Favorite shots can be deployed as wallpaper; slideshow widgets can cycle through your recent photos and those of your friends; your most commonly used image editing and sharing apps can be positioned where you need them; the default keyboard can even be switched to one of your choice, making it easier to tag, rename and caption photos you intend to put online.

The overall effect is to make you feel more creative and more connected to photography, to the point where Samsung's marketing about a "new visual

You feel more creative and more connected to photography.

communication era" actually has a ring of truth to it. It's hard to explain, but there's just something fundamentally different and exciting about looking at people's Instagram shots on a device that is so powerfully equipped for taking pictures of your own, with no other hardware or file transfers getting in the way.

On a side note, it would have been nice to use the zoom within the Instagram app, especially since Samsung said the app was being tweaked to allow that, but there's no sign of such a feature. Twiddling the zoom now only changes device volume, as it does anywhere except within Samsung's own camera app.

That's right — there's no "camera mode" as such. To take a shot you simply launch the camera app, whose icon is permanently positioned on the lower-left corner of each home screen. Alternatively, you can press the shutter release to get the same effect. Either way, it takes less than two seconds for the lens protector to flip open, the barrel to pop out and for the camera to be able to focus and pull off a shot. The shooting interface itself is simple and uncluttered, but heavily geared towards auto and scene-based photography.

The main controls are located on the left side of the screen, which displays the current mode, a dial for choosing a different mode, as well as onscreen triggers for movie recording and shutter release (which behaves identically to the physical shutter release but is sometimes more convenient). Auto mode is pretty good, but we found that it often misjudged color balance and tended towards overexposure. Any discontent with Auto's results will lead you to the second easy-to-use mode, known as Smart. This brings together no fewer than 15 separate shooting styles — not just scene-based profiles (e.g., Macro, Silhouette, Landscape), but also capture modes (Continuous Shot, Best Shot, HDR / Rich Tone), stitching options (Panorama, Best face) and effects (like Beauty face, which claims to smooth out imperfections). This might sound bewildering, but it quickly makes sense to organize things this way, and more importantly, each

The Galaxy Camera's interface is smooth and uncluttered.

This compact cam also offers the full Android experience.

Smart mode is pretty effective at getting the result you're looking for.

Finally, if you're still not satisfied with what Smart mode can do, then you'll need to resort to the least intuitive of the three modes: Expert, which obliterates the screen with a range of onscreen dials covering P / S / A / M mode, ISO, exposure compensation, aperture and shutter speed. Depending on which priority mode you pick, one or more of these dials will be greyed out and inaccessible, because it's under the camera's control. In full Manual, the exposure compensation dial will be inaccessible and used to display the degree to which, by the camera's reckoning, you are over- or under-exposing. Overall, it's a logical system that stays faithful to how proper cameras work, and it's essential for creative control, but compared to physical dials it's still very tricky to hit good manual settings quickly or in response to changing conditions — not least because the preview of the shot is obscured by all the dials and, well, there's just so much tapping.

When it comes to looking back at your shots, the stock gallery app is no different to that on Samsung's latest smartphones and tablets, but it proves its worth on this device. When you're looking at a single image, there are just four main image-related buttons along the top right of the screen and they're all well thought out. The Share button brings up a list of all the installed apps that can be used to share or exploit a photo — for example, if you install Evernote on the camera then this but-

ton will give you the option of creating a note out of the photo you're looking at. The second button is a shortcut to the method of sharing you used last — so if you mostly use Facebook to share a picture, then the second button will likely be the Facebook logo. The third button is a quick and painless Delete, while the fourth button brings up an extensive menu that covers pretty much everything else you'd want to do with a photo: including basic crop, rotate and rename functions, and opening the photo in one of the two bundled editing apps to carry out more complicated refinements (there's Photo Wizard which is smart and easy to use, or Paper Artist which is for mostly gimmicky effects). Of course, you can use any app you like to tailor your images — the entire Android ecosystem is at your disposal.

It should be clear by now that the software on this camera isn't just a bonus — it's the Galaxy Camera's defining feature, and it's so engrossing that it's hard to go back to the closed-off, one-trick ways of a traditional shooter. But things hopefully won't stop there: now that Samsung has signaled its willingness to let third-party developers design apps specifically for this camera module, we can envisage a multitude of ways in which it could be made better-suited to a range of niche users — from tech bloggers to realtors, location scouts and untold others who'll want automated scripts for resizing, watermarking and filing photos; remote control apps; and who knows what else. Of course, that'll only happen if the popularity of this camera reaches a tipping point. And, as we've seen by now, there are serious limitations to this device — namely its price, image quality and battery life — that may prevent that from happening.

It's hard to go back to the closed-off, one-trick ways of a traditional shooter.

WRAP-UP

This is a tricky thing to evaluate. On the one hand, if we had $500 to spend on a camera of this size, we'd be more likely to spend it on a sophisticated mirrorless model that delivers better image quality. Alternatively, if we needed a cheap compact, we might opt for the Samsung WB850F, which has WiFi connectivity and the same lens and sensor as the Galaxy Camera, but costs half the price. The fact that we're paying so much money to dupe expensive components already used in smartphones, and that we'd have to spend at least $10 per month extra to get a basic data plan and make use of that SIM slot, all weighs heavily against the Galaxy Camera as a practical purchase.

If the device were smaller and lighter, perhaps with a 4.3-inch panel and a shorter zoom, and if it was priced only slightly higher than a regular non-An-

droid compact (perhaps at $300 or $350), we could imagine it being more mainstream. But alas, that's not what we're looking at right now.

On the other hand, it wouldn't be right to just dismiss something that is so much fun to use. The combination of decent compact camera hardware and the latest version of Android is not only powerful; it's also seriously enjoyable, and it may result in the casual photographer spending far more time perfecting and sharing their pictures than they ever did before. We see it like this: Unless you're a dedicated hobbyist or you're taking photographs for your job, the creativity involved in editing and sharing a photo tends to be a fragile thing. The slightest inconvenience in switching out an SD card, or the boredom of waiting for a file to transfer, could be enough to make someone quit the task at hand and do something more urgent. So, if you've got a wad of notes to spare and you're intent on preserving and sharing the type of photos and videos that even the best smartphone can't achieve, the Galaxy Camera is bound to be rewarding. D

It's a pricey package, but still a tasty bit of photo tech.

Zach Honig contributed to this review.

Sharif is a British tech journalist with 10 years' experience filming and reporting news for the BBC and other broadcasters.

BOTTOMLINE

SAMSUNG GALAXY CAMERA

$500

PROS

- Jelly Bean brings a lot of fun to photography
- Wide range of connectivity options
- Good stabilization

CONS

- Surprisingly big and heavy
- The 4.8-inch screen drains the battery
- You can find better image quality for the same price

BOTTOMLINE

The Galaxy Camera proves that Android on a point-and-shoot is no gimmick. But until the price drops closer to the level of other compacts, it's not a very practical purchase.

REVIEW

LENOVO IDEAPAD YOGA 13

Will Lenovo's nimble new IdeaPad Yoga 13 earn a top spot in the fast-paced Windows 8 hybrid race?

By Dana Wollman

Make no mistake: Lenovo is taking this Windows 8 thing *very* seriously. The company's first-generation of Win 8 devices includes everything from a laptop / tablet hybrid to a classic convertible laptop with a swiveling display. Then there's the Yoga. This, too, is a convertible, in the sense that it can be used as a tablet. But it's not like any convertible you used back in the Win 7 era: the screen folds 360 degrees back, turning this Ultrabook into a giant, 13-inch slate. Because of that special hinge, though, you can also bend it into a Downward Dog, to use a Yoga

term ("tent mode" if you're nasty) or fold the keyboard underneath so that only screen is exposed. It was one of the most memorable things unveiled at CES, and it remains the most striking Windows 8 design we've seen to date. But what's it like to actually use it? And how does it fare as, you know, a plain old $1,000 Ultrabook? Let's find out.

LOOK AND FEEL

At first glance — i.e., before you start playing around with its foldable display — the Yoga 13 looks like a slightly lower-end version of Lenovo's other Ultrabooks. Like the models that came before it, this has a book-inspired silhouette, with subtle scooping along the edges that's meant to evoke pages stuffed between two covers. Whereas the IdeaPad U300s Ultrabook is made of unibody aluminum, though, the Yoga 13 is coated in softer materials, including a rubbery lid and leathery palm rest.

The final result isn't premium, per se, but the entire machine feels well-made nonetheless — you won't notice any flex in the palm rest, or any other part of the system, for that matter. And besides, if the build materials seem ho-hum, we can

The Yoga 13 looks like a slightly lower-end version of Lenovo's other Ultrabooks.

at least assure you of this — the entire machine, from the lid to the palm rest to the display, is impervious to scratches. After more than a week of testing the Yoga 13 and regularly tossing it in a bag with other items, it is still in pristine condition.

Once you handle the machine for a few minutes, it's impossible not to notice how thin it is. We hear an awful lot about how touchscreens add to a laptop's weight, and we've used that as an excuse to explain why the Toshiba Satellite U925t and other Windows 8 convertibles feel a bit chunky. And yet, even with a capacitive touchscreen on board, the

This versatile hybrid is also quite thin at just 0.67 inch thick.

LENOVO IDEAPAD YOGA 13

The Yoga 13's hinge allows you to flip the screen a full 360 degrees.

Yoga 13 measures just 0.67 inch thick, weighing in at 3.3 pounds. It looks thinner than competing notebooks, and it is.

Interestingly, Lenovo retooled the power port for the sake of keeping the machine as thin as possible. What we have here, tucked on the right edge of the laptop, is a proprietary, rectangular power socket that looks kind of like a small USB port. (It's yellow on the inside, instead of blue, so you'll never actually mistake it for a USB 3.0 socket.) A proprietary adapter is a little annoying, we suppose, but it should only really be an issue for people who are upgrading from an older Lenovo system. For everyone else, this thin design should be well-worth the trade-off. Continuing our tour around the device, there are two USB ports (one 3.0, one 2.0), an HDMI socket, a volume rocker,

We've been testing several Windows 8 convertibles lately, and this is clearly the most interesting take we've seen yet.

a button for locking the screen orientation and a 3.5mm headphone jack. There's also an SD card reader — clearly, Lenovo learned its lesson after leaving it off last year's U300s.

Now for our favorite part, that thing that makes the Yoga, well, the Yoga: that awesomely flexible hinge. If we sound excited, it's because we've been testing several Windows 8 convertibles lately, and this is clearly the most interesting take we've seen yet. It's not just that the screen plays a neat parlor trick, folding all the way back into tablet mode. It's that the hinge feels so reassuringly sturdy — firmly attached, but not stiff like the slider on the Toshiba Satellite U925t. Conveniently, the physical keyboard turns off once you push the display back far enough. You'll know it's been disabled because you'll see a touchscreen keyboard appear onscreen, letting you know you're officially in tablet mode.

As we said when we reviewed the U925t and the Dell XPS 12, you wouldn't want to use a 3.5-pound, 12- or 13-inch laptop as a tablet for long periods of time — they're just a little too unwieldy. It does help, though, that the Yoga 13 is as relatively thin and light as it is, and that so much of Windows 8 is controlled by swiping the edges of the screen. (In other words, it's just as easy to get at the Charms Bar on a 13-inch tablet as it is on a 10-inch one.)

That said, there's something disconcerting about using the Yoga 13 in tablet mode: the keyboard remains exposed on the back side. True, the keyboard's disabled at that point, but it still feels odd to cradle the device in landscape mode, and to feel your fingers pressing against loose, flappy keys on the other side. For what it's worth, Lenovo is selling a $40 sleeve that can cover just the keyboard when you're using the device in tablet mode. It's a bit of a bummer that you have to buy this extra accessory to make the flappy keys go away, but at least you can use the sleeve as a proper case — it's roomy enough that you can fit the entire laptop inside.

In addition to that obvious tablet mode, though, you can fold the Yoga into a couple other poses. One is "tent mode" with the screen folded back, and the system standing upside down, with the hinge in the air. We don't imagine this is any more useful for movie-watching than simply using the Yoga as a plain old notebook. It does seem, though, that it could come in handy for presentations, especially if you'd rather use your fingers to control the action onscreen. If you like, you can also fold the keyboard back so that it's flat against your desk, with the display sticking straight up. That serves about the same purpose as tent mode.

KEYBOARD AND TRACKPAD

As any Lenovo diehard will remind you, the keyboards on the company's IdeaPad laptops aren't quite the same as the ones you'll find on its ThinkPads,

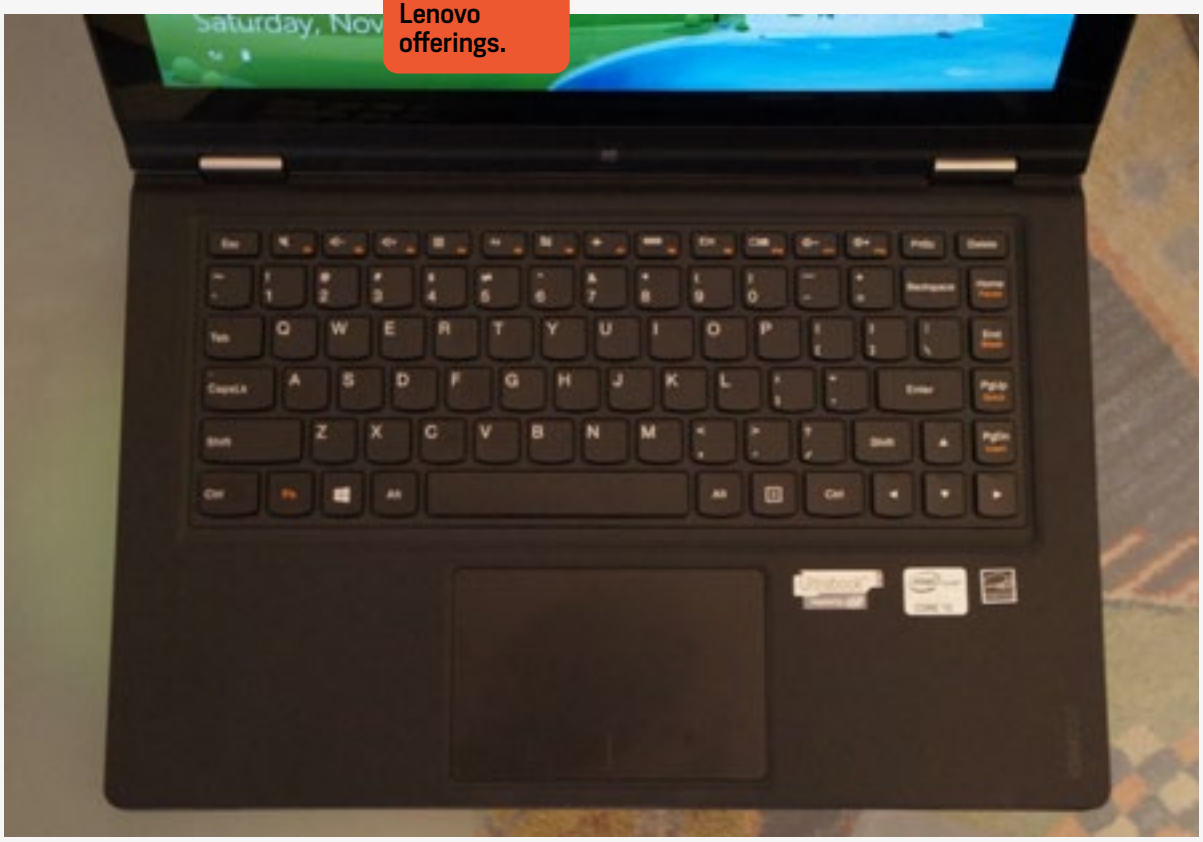
It's just not as comfy as some of Lenovo's other keyboards.

but they generally have a lot in common: the same U-shaped "smile" keys, with springy feedback and a generous amount of travel (see: the ThinkPad X1 Carbon and IdeaPad U310). That said, this doesn't feel like Lenovo's best work. Even after more than a week of use, we still found that the keyboard didn't register all of our presses — fairly often, we had to hit the Backspace key and re-type whatever letter it was we meant to hit.

Speaking of the Backspace button, it's awfully small, and can be hard to find with your finger if you're touch typing. Other major keys have been shrunken, too, including Enter, Caps Lock and Tab. It's a workable layout, for sure, and it's still better than what you'll find on most other Ultrabooks. It's just not as comfy a setup as some of Lenovo's other keyboards.

In case you were wondering, the keyboard isn't backlit, which was true of last year's U300s as well. That's a little atypical for a notebook as expensive as this, but it doesn't really detract from the machine's usability, either. In case you couldn't tell, we're more concerned about the key travel and the size of the buttons.

The Yoga 13 has a large glass trackpad that supports all the Windows 8 gestures you'd make on the touchscreen — swiping in from the right to expose the Charms Bar, et cetera. For the most part this works well, though we did struggle a bit when it came to swiping in from the top of the trackpad to expose menu settings, and open tabs in IE 10. Additionally, classic multi-touch gestures like pinch-to-zoom and two-finger scrolling both work smoothly. Still, we ran into some trouble with single-finger navigation: often, the cursor would stop short on the screen before we arrived at whatever it was we meant to click.



The keyboard falls short of previous Lenovo offerings.

On the bright side, the trackpad's built-in button is easy to press, and makes but a quiet sound.

DISPLAY AND SOUND

The beauty of having lots of Windows 8 review units lying around is that it's easy for us to compare all of those touchscreens side by side. Even amid so much competition, the Yoga 13 comes out looking pretty good. The 1,600 x 900, 300-nit IPS panel looks noticeably crisper next to more pedestrian 1,366 x 768 displays, though it's still not as stunning as the 1080p panels used on the XPS 12 and Acer Aspire S7. Then again, those two machines each have a higher starting price, so is anyone really surprised they come standard with nicer screens?

Pixel count aside (and we do think 1,600 x 900 will be good enough for many people), the viewing angles are as broad as you'd expect on an IPS display: you shouldn't have any trouble working with the machine in your lap, or sharing the screen with a friend while you watch Netflix. We also found the touchscreen to be responsive — it was generally quick to register our various taps and swipes.

As we often say about ultraportable laptops, the audio quality is on the tinny side, but that distortion actually seems more subtle here. Sure, bass-heavy music

The 1,600 x 900 IPS display is plenty clear and crisp.

won't sound quite the way the artists intended, but it's at least pleasant to listen to, which we can't say about every thin-and-light laptop that crosses our desks.

PERFORMANCE AND BATTERY LIFE

Of the three configurations sold on Lenovo's site, we tested the middle one, with a 1.7GHz Core i5-3317U processor, the same one used in many other Windows 8 convertibles. It also had 4GB of RAM and a 128GB SSD. If benchmarks are any indication, the Yoga 13 mostly performs on the same level as other Windows 8 Ultrabooks with similar specs. As with other Windows 8 notebooks, too, start-up time is less than 10 seconds (six seconds to the log-in screen, according to our stopwatch). Any difference in our PCMark and 3DMark scores is negligible, though SSD read speeds (as measured by ATTO) were nearly half what we recorded on the Toshiba Satellite U925t and Dell XPS 12.

When it comes to battery life, at least, we've been having something of an unlucky streak with Windows 8 convertibles. The Dell XPS 12 lasted five and half hours in our standard rundown test, while the Toshiba Satellite U925t crapped out 20 minutes sooner. The Acer Aspire S7 (not a convertible, but a touchscreen laptop) delivers absolutely abysmal runtime — it managed just four hours and 18 minutes in the same test. The Yoga 13 falls into the same ballpark: it lasted through five hours and 32 minutes of video playback, with WiFi on and the brightness fixed at 50 percent.

As you can see, that's better than all

BENCHMARK	PCMARK7	3DMARK06	3DMARK11	ATTO (TOP DISK SPEEDS)
LENOVO IDEAPAD YOGA 13 (1.7GHZ CORE I5-3317U, INTEL HD 4000)	4,422	4,415	E917, P572	278 MB/S (READS); 263 MB/S (WRITES)
TOSHIBA SATELLITE U925T (1.7GHZ CORE I5-3317U, INTEL HD 4000)	4,381	4,210	E989, P563	521 MB/S (READS); 265 MB/S (WRITES)
DELL XPS 12 (1.7GHZ CORE I5-3317U, INTEL HD 4000)	4,673	4,520	N/A	516 MB/S (READS); 263 MB/S (WRITES)
ACER ASPIRE S7 (2.4GHZ CORE I7-3517U, INTEL HD 4000)	**5,011**	**4,918**	**E1035, P620, X208**	**934 MB/S (READS); 686 MB/S (WRITES)**

LAPTOP	BATTERY LIFE
LENOVO IDEAPAD YOGA 13	5:32
SAMSUNG SERIES 9 (15-INCH, 2012)	7:29
LENOVO THINKPAD X230	7:19
SAMSUNG SERIES 9 (13-INCH, 2012)	7:02
MACBOOK AIR (13-INCH, 2012)	6:34 (OS X) / 4:28 (WINDOWS)
DELL XPS 14	6:18
HP FOLIO 13	6:08
HP ENVY SLEEKBOOK 6Z	5:51
TOSHIBA PORTEGE Z835	5:49
SONY VAIO T13	5:39
MACBOOK AIR (13-INCH, 2011)	5:32 (OS X) / 4:12 (WINDOWS)
DELL XPS 12	5:30
HP ENVY 14 SPECTRE	5:30
TOSHIBA SATELLITE U845W	5:13
TOSHIBA SATELLITE U845	5:12
ACER ASPIRE TIMELINE ULTRA M3	5:11
TOSHIBA SATELLITE U925T	5:10
LENOVO THINKPAD X1 CARBON	5:07
SAMSUNG SERIES 5 ULTRABOOK (14-INCH, 2012)	5:06
ACER ASPIRE TIMELINE ULTRA M5	5:05
DELL XPS 13	4:58

those other Win 8 machines we mentioned, but that's not saying much — not when non-touch Ultrabooks can last six or even seven hours on a charge. The Yoga 13's battery life isn't bad, considering the category it's in, but we're holding out hope that the next generation of these devices offer better endurance, touchscreens be damned.

SOFTWARE

Though Lenovo is guilty of including some bloatware on the Yoga 13, it's not nearly as heavy a load as you'll find on other Windows 8 machines, like the Toshiba U925t. One app, Lenovo Transition, is actually quite useful: it lets you decide which apps will automatically run at full-screen when you enter tablet-mode. There's a bunch of presets and, as you'd expect, they're all programs you can use without a keyboard. These include Windows Media Center, PowerPoint and MS Paint, among others. To be clear, too, you can set different actions for different programs, meaning you could choose to just have Windows Media Player run at full-screen if that's what you wanted.

Besides Lenovo Transition, you'll find tiles for Lenovo Support, Skype, Microsoft Office, Intel's AppUp store and Lenovo Cloud Storage, powered by SugarSync. Metro, er, Windows 8 apps include eBay, Evernote and the music streaming service, Rara.com. On the security front, Lenovo included a trial for McAfee Security Advisor.

Like most other consumer PCs, the Yoga 13 comes with one year of parts-and-labor coverage.

CONFIGURATION OPTIONS AND THE COMPETITION

Though the Yoga 13 has a list price of $1,110 and up, it's currently starting at $1,000 on Lenovo's own site. That's the Core i3 model, which also has 4GB of RAM and a 128GB SSD. Each of the three main configs has 128GB of storage, in fact, except one has a Core i5 processor (that's $1,100) and the other packs a Core i7 chip (that goes for $1,300). The i5 and i7 versions also have eight gigs of RAM — double what's offered in the base i3 model. All come with Intel HD 4000 integrated graphics. From what we can tell, there's no 256GB storage option for sale on Lenovo.com, so hopefully you can make do with 128 gigs.

There's also an 11-inch Yoga coming, though it has an ARM chip and runs Windows RT, not Windows 8. In other words, it's a completely different class of product than the Yoga 13, even if it does have the same form factor.

So far, we've been heavily comparing the Yoga 13 to the Toshiba Satellite U925t and the Dell XPS 12, and for good reason: both are similarly sized Ultrabooks that can be used in tablet mode. As flawed as the Yoga 13 is, we still think it's a better bet than the U925t, which offers even shorter battery life, and whose slider design makes for a compromised typing experience. It also has a lower-resolution display, despite the fact that it costs more.

It's in the Dell XPS 12 that the Yoga 13 finds some stiffer competition. Though it's more expensive (the base model costs $1,200), it has a more pixel-dense 1080p display, as well as a comfortable backlit keyboard. We'll admit, though, the XPS 12's rotating, pop-out screen is not nearly as satisfying to use as the bendy hinge on the Yoga 13. Depending on your preferences, too, you might miss the ability to fold the machine into all the poses the Yoga is capable of. Still, as we said, when it comes to tablet mode, at least, the XPS 12 is more comfortable to use, since the keyboard is tucked away. As for performance, the two machines are mostly well-matched in battery life and overall speeds, though the XPS 12's SSD offers considerably faster read rates.

The Yoga 13 is also likely to draw comparisons with the dual-screen ASUS TAICHI, though we confess we haven't had the chance to play with one for more than a few minutes. The 13-inch version, which goes on sale next month for $1,300 and up, is pricey

We haven't seen another Windows 8 convertible with quite this versatile a design.

even for a Windows 8 convertible. Then again, no one ever said a machine with two 1080p displays would be cheap.

WRAP-UP

Back in January, when we first saw the Lenovo IdeaPad Yoga at CES, we declared it to be one of the most memorable things to come out of the show. That was 10 months ago, though, and thanks to that gap, there's a bit of a discrepancy between our initial impressions and our reaction following a week of real-world use. As we've discovered, it's an imperfect product, with a flaky trackpad, relatively limited storage and a fairly mediocre typing experience (this is usually Lenovo's strong suit). What's more, without the optional sleeve to cover the keyboard, the Yoga is awkward to use in tablet mode, since your fingers press up against the exposed buttons.

Still, the Yoga remains an intriguing specimen; we haven't seen another Windows 8 convertible with quite this versatile a design. And what a great design it is: as much as we complain about the keyboard, the hinge is sturdy and well-engineered. The entire package feels thin and light, despite the fact that touchscreens usually add heft. Even if you rarely flip the screen around, this is a solid Ultrabook in its own right. Sure, there are other Windows 8 PCs with sharper screens and even faster SSDs, but those cost about $200 more. Compared to the competition, then, this is still a good option. Left alone in its price class, it's an even stronger choice. Let's just hope Lenovo can quickly update that flaky trackpad. That's not too much to ask, right? D

Dana Wollman is Reviews Editor at Engadget, a marathoner, lover of puns and a native Brooklynite.

BOTTOMLINE

LENOVO IDEAPAD YOGA 13

$1,000+

PROS

- Amazingly versatile design
- Thin and light for a convertible
- Bright, crisp IPS display

CONS

- Jumpy trackpad
- Parts of the keyboard feel cramped

BOTTOMLINE

The Yoga 13's shape-shifting design makes it the most intriguing Windows 8 convertible we've seen. It's not perfect, but it's still a good choice among Ultrabooks.

REVIEW

HTC DROID DNA

Verizon has a contender with its new Droid DNA, but can this 1080p powerhouse steal the spotlight from an array of capable competitors?

By Brad Molen

Guanine, adenine, thymine, cytosine... Android? The Droid DNA — the latest addition to Verizon's Droid series — may not contain any actual nucleotides (that we know of), but that doesn't make this HTC-made superphone any less of a powerhouse. On the contrary, we've been eyeballing this handset with eager anticipation ever since it first launched in Japan as the J Butterfly; much like its counterpart from the Land of the Rising Sun, the DNA boasts a jaw-dropping 5-inch, 1080p display. But while that may be the headliner-worthy feature, you

certainly can't go wrong with a quad-core Snapdragon S4 Pro processor and 2GB of RAM taking charge behind the scenes, along with an ImageSense camera and other top-notch specs.

In certain respects, the Droid DNA is a sneak preview of what's to come in 2013: a wave of high-performance "superphones" that take advantage of this improved resolution, and offer a long list of other top-notch features. Indeed, that's a future we could all definitely live with, but let's not get too ahead of ourselves; we've got a phone to review, after all. Is the display as tantalizing as it sounds? Will its size be a selling point or a major distraction? Should you waltz into a Verizon store on Black Friday and demand they take your hard-earned $200? Follow us as we focus on the here and now.

HARDWARE

HTC may not be the king of the hill in device sales or financials, but 2012 has convinced us that it's firmly planted as the champion in smartphone design. The company's had a knack for thinking outside the rectangular box and coming up with cleverly built handsets — the Sensation series and Touch Diamond come to mind — but it seems to have cranked the focus up another notch this year. The One series was beautifully crafted and each model therein acted as a brilliant indication of

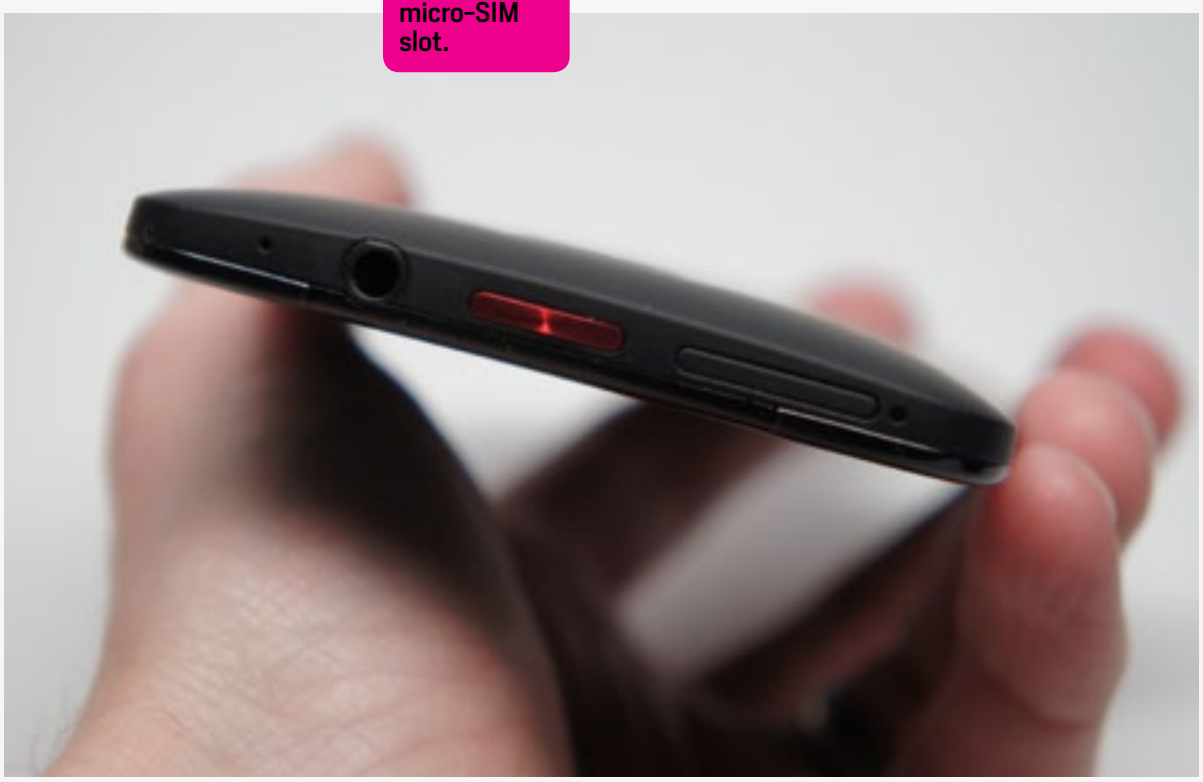
Qi wireless charging is supported and works like a charm.

HTC's renewed dedication; without skipping a beat, it was later followed up with the colorful and visually stunning Windows Phone 8X, which has been readily endorsed by Microsoft.

This brief bit of background was added to emphasize one important thing: HTC isn't slacking off with the Droid DNA. Everything about the phone — straight down to the Ferrari-inspired edges — screams luxury and ensures a comfortable experience. We're just as drawn to its beauty as we were when we first beheld the One X with our own eyes. It's an incredibly sleek and solidly built device that won't leave us worried about durability, since it consists of aluminum on the sides and a soft-touch polycarbonate on the back that is quite similar to the material used on the 8X. (Unfortunately, it's also a fingerprint magnet.) Gorilla Glass 2 graces the display with the promise of preventing that beautiful screen from getting scuffed.

Currently, the DNA only comes in one color option: black with red accents. These two colors have been HTC's bread and butter for many years, so it comes as no huge shocker that this would be the default choice for, well, Big Red. It also correlates with the Beats Audio color scheme, so it's a perfect combination for every party involved. The red isn't overbearing and complements the black quite well, accentuating the power button, earpiece, camera and edges (as we mentioned earlier, the grille-like edge design was apparently inspired by Ferrari, and we fully support that decision).

The same folks who were concerned about the Galaxy Note II's behemoth size will also have identical reservations for the 5-inch DNA at first, but this particular device isn't looking to compete in the same genre. HTC went out of its way to emphasize that the DNA is "a smartphone, not a phablet," and we can definitely attest to that statement. Holding it up to your ear when making a call likely won't inspire the same feelings of awkwardness as the Note II might do, and it's much easier to use for one-handed tasks without needing special keyboards or dialpads. In fact, the DNA's form factor reminds us of what you'll



At the top: audio jack, power and micro-SIM slot.

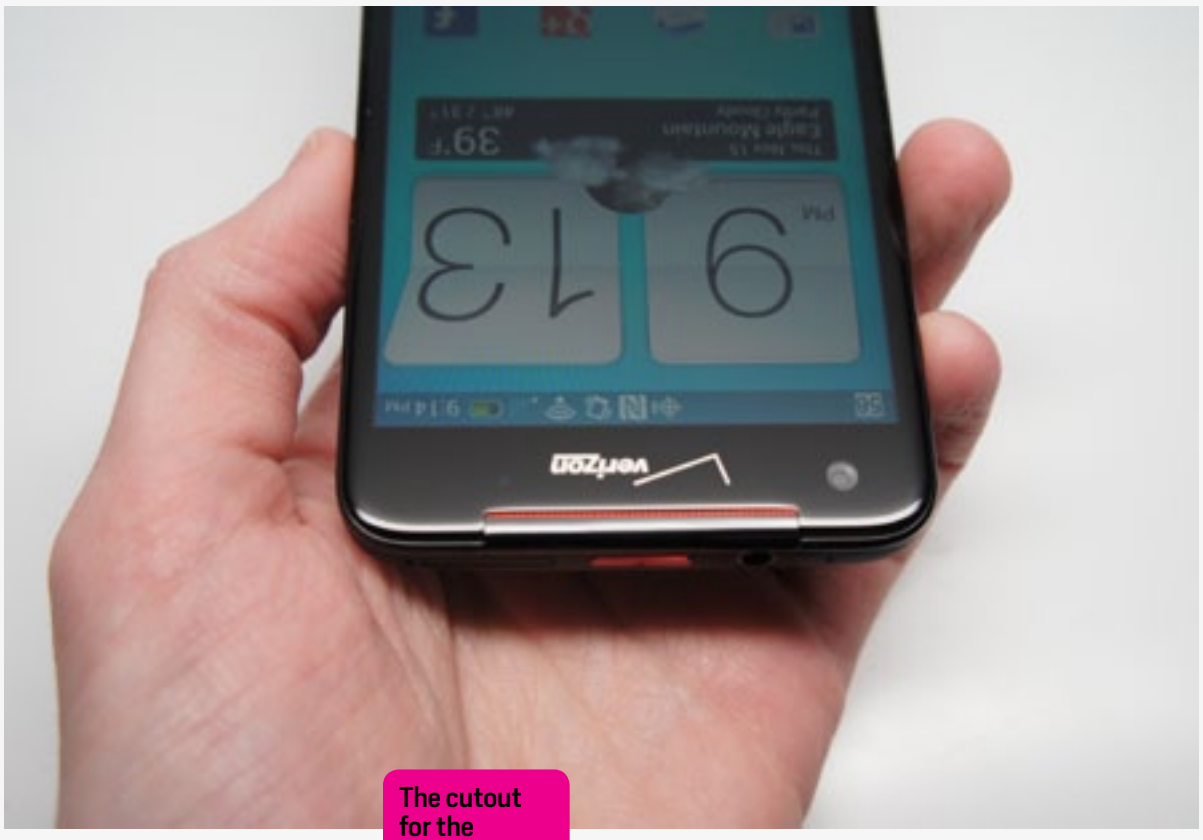
find on the One X and Samsung Galaxy S III: at 70.5mm (2.78 inches) wide, it's only 0.6mm wider than the One X and is actually 0.1mm *narrower* than the GS3. Boasting a height of 141mm (5.55 inches), it's also taller than either phone. At its thickest point, the DNA measures at 9.73mm (0.38 inch), which is a bit thicker than the 8.9mm One X and 8.6mm GS3, but the back gently slopes to meet the 4mm-thick tapered edges. We were expecting the phone to require some sort of adjustment period at first, but we found the DNA to be a completely natural fit in the palm of our hand — and it feels great.

The DNA's back is another indicator of HTC's recent change in design strategy. If you recall, the Windows Phone 8X offers a gently sloping curve (think of a "smiley face" when looking at the phone edge-on) without the phone becoming too thick, thanks to the pyramid-like fashion in which the designers stacked the internal components; HTC confirmed to us that this same methodology was used for the Droid DNA as well. And as we've come to expect on top-end devices made by HTC, the back is entirely unibody, so that 2,020mAh battery can't be swapped out. Near the top, you'll find the 8MP ImageSense autofocus camera flanked by an LED flash to the right and an LED notification light to the left. The rear notification light is rather uncommon to smartphones — we can't recall having seen a device adorned with two such indicators — but anyone who tends to put their phone face-down will actually find a great deal of use out of this addition. Near the bottom are the Verizon LTE and Beats Audio logos, though fortunately they don't take up much real estate.

On the front, you'll notice HTC's standard three-button setup below the screen (back, home and recent apps), with the front-facing camera, proximity sensor and earpiece above. An LED notification light hides underneath the speaker grille. The Gorilla Glass covers nearly the entire front, but there's a U-shaped cutout at the top for the earpiece; this

The Droid DNA measures in at 5.55 inches tall.

particular section of the phone seems ill-designed, as the earpiece — and the small section above it — appears completely out of place and disrupts the cohesiveness of the design.



The cutout for the earpiece seems ill-designed.

There's a fine line when it comes to continuity, however: in an effort to make the phone look sleek, HTC made the volume rocker (found on the right edge) almost completely flush with the body of the phone, making it a bit difficult to press. The power button, unfortunately placed on the top center, is designed precisely the same way. The two buttons are made of anodized aluminum and their flush placement helps them blend in better, making the edges much more aesthetically pleasing, so you'll just need to decide if that makes it worth the small cost in usability. Rounding out the top of the DNA, the power button is flanked by a micro-SIM tray on the right and 3.5mm headphone jack on the left.

We noticed another small quirk soon after unboxing the phone: the micro-USB / MHL port on the bottom is covered by a plastic flap that takes more effort to snap closed than it should. According to HTC, this was done to keep the phone splash-resistant, in exactly the same manner as the J Butterfly. As we've seen on the majority of Japanese phones in the past, carriers in that country have particularly high standards when it comes to protecting devices from water, so HTC and Verizon chose to adopt those standards for the DNA. If you purchase the phone, it's important to keep in mind that it's compatible with Qi, so it may be worth investing in a certified wireless charging pad rather than fumbling with that flap on a regular basis. (We used an Energizer pad and Nokia Fatboy pillow to charge the DNA, and both worked like a charm.)

While we're on the subject of wireless, we should note that the Droid DNA also features dual-band 802.11a/b/g/n, NFC and compatibility with HTC's Media Link HD for wireless HDMI mirroring. If you don't mind going the wired route, an MHL adapter will easily work

here in its place. Sadly, USB OTG isn't officially supported. Last but not least, internal storage is limited to 16GB with no option for expandable memory, a poor decision on HTC's part. Sure, the idea of shunning the microSD slot is nothing new, and HTC has done this plenty of times before — the One X+ is guilty of the same thing — but we have a feeling that this particular choice was

SPECIFICATIONS	HTC DROID DNA
PRICING	$200 WITH CONTRACT
DIMENSIONS	5.55 X 2.78 X 0.38 INCHES (141 X 70.5 X 9.73MM)
WEIGHT	4.86 OZ. (138G)
SCREEN SIZE	5 INCHES
SCREEN RESOLUTION	1,920 X 1,080 PIXELS (440PPI)
SCREEN TYPE	SUPER LCD3
BATTERY	2,020MAH
INTERNAL STORAGE	16GB
EXTERNAL STORAGE	NO MICROSD SLOT
REAR CAMERA	8MP, F/2.0, 28MM WIDE-ANGLE LENS, AF, BSI, IMAGECHIP
FRONT-FACING CAM	2.1MP, F/2.0, WIDE-ANGLE LENS, BSI
VIDEO CAPTURE	1080P REAR / 1080P FRONT
NFC	YES
RADIOS	LTE, CDMA, QUAD-BAND GSM / EDGE, QUAD-BAND UMTS / HSPA+
BLUETOOTH	VERSION 4.0 WITH APTX
SOC	QUALCOMM SNAPDRAGON S4 PRO APQ8064
CPU	1.5GHZ QUAD-CORE
GPU	ADRENO 320
RAM	2GB
MHL	YES; SUPPORT FOR HTC MEDIA LINK HD ALSO INCLUDED
WIFI	802.11A/B/G/N DUAL-BAND
OPERATING SYSTEM	ANDROID 4.1.1 JELLY BEAN, SENSE 4+ UI

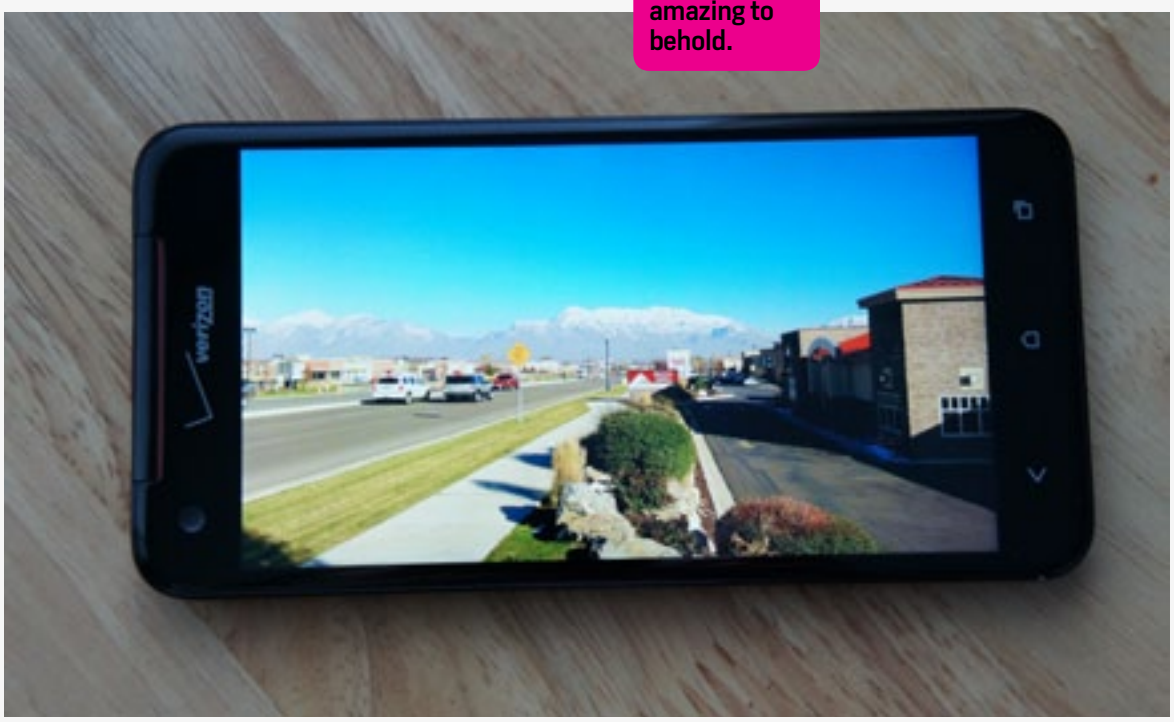
made by Verizon, since the J Butterfly (the DNA's Japanese counterpart) *does* allow for expandable storage. In other words, Verizon would have had to go out of its way to make sure the slot wasn't included.

DISPLAY

And here it is: the crown jewel of the DNA. The feature that makes it stand out above the rest of the quad-core crowd: that 5-inch, 1080p (1,920 x 1,080) display. More specifically, this IPS panel — also known as the Super LCD3 — is an evolution of the SLCD2 you can find on the One X. If you recall, we declared that device's display to be the best we'd ever laid eyes on; the DNA, however, easily steals that title away. Granted, it's an iterative bump in resolution: the Super LCD2 panel on the One X had packed more pixels than the naked eye could discern, so pushing the density by over 100ppi merely makes the DNA screen sharper and clearer.

How good is it? Images appear to just float above the screen. The font rendering is crisper than anything we've ever seen, and 1080p movies look simply stunning. Colors seem to appear more natural (without being overly saturated), the darks are darker and whites are not as harsh to our eyes as they were on the One X. Viewing angles are just as stellar, and you will love to use this phone in direct sunlight because even at 50 percent brightness you can see everything without straining your eyes — something that we can only say about a select few devices.

We give the Super LCD3 display all the praise in the world, because it's the current undisputed champion in the mobile industry. It can't be argued that the 1080p screen is the most beautiful we've laid eyes on to date, but don't go giving your current 720p display the heave-ho just for that single reason. It's an iterative improvement to be sure, and it's love at first sight, but it's a bit more nuanced than any previous bump in resolution. To put it more succinctly: it's difficult to go back to a qHD screen after using 720p for an extended period of time, but we don't have the same reservations going back to the One X+ display after using the DNA.

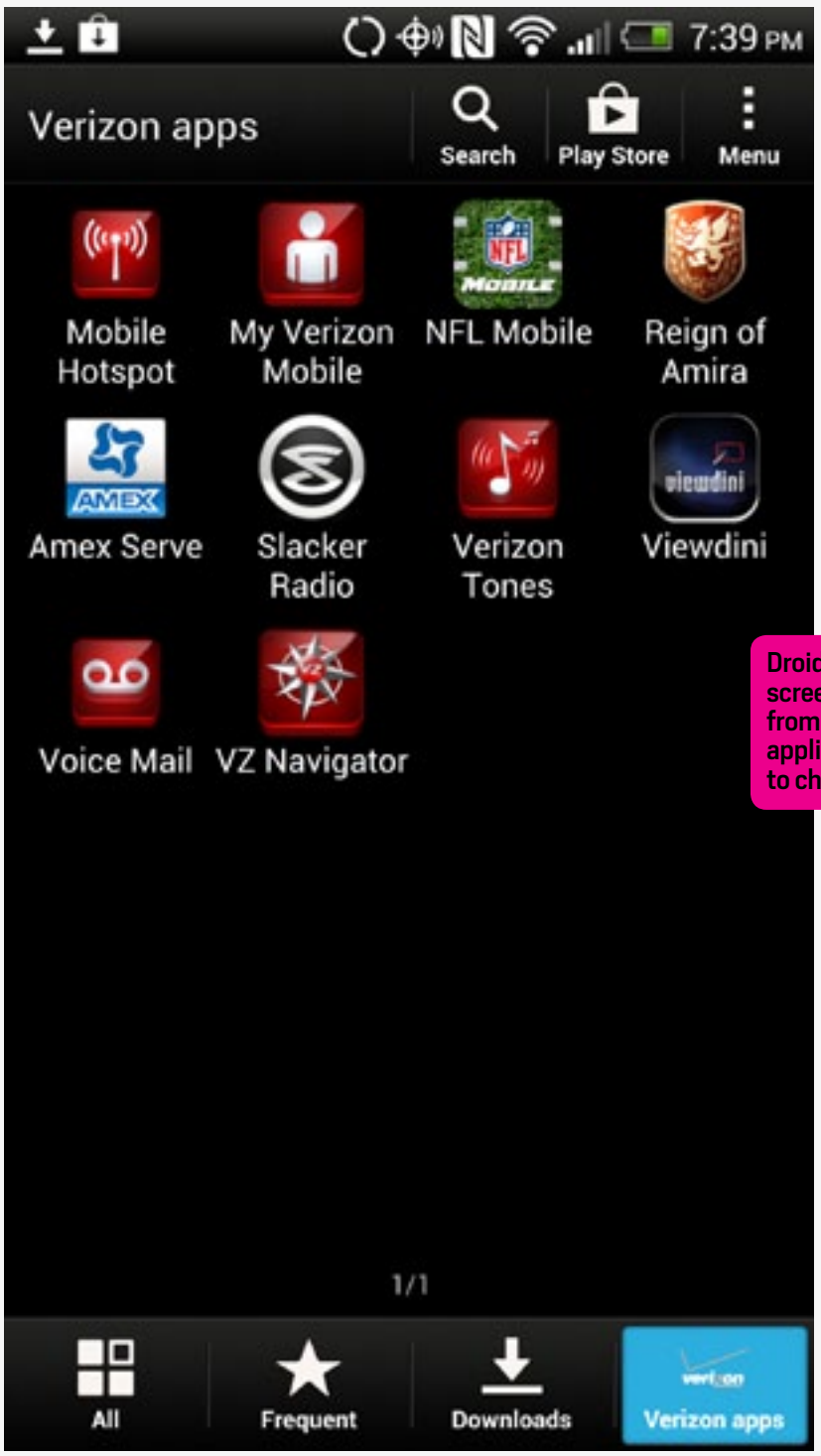


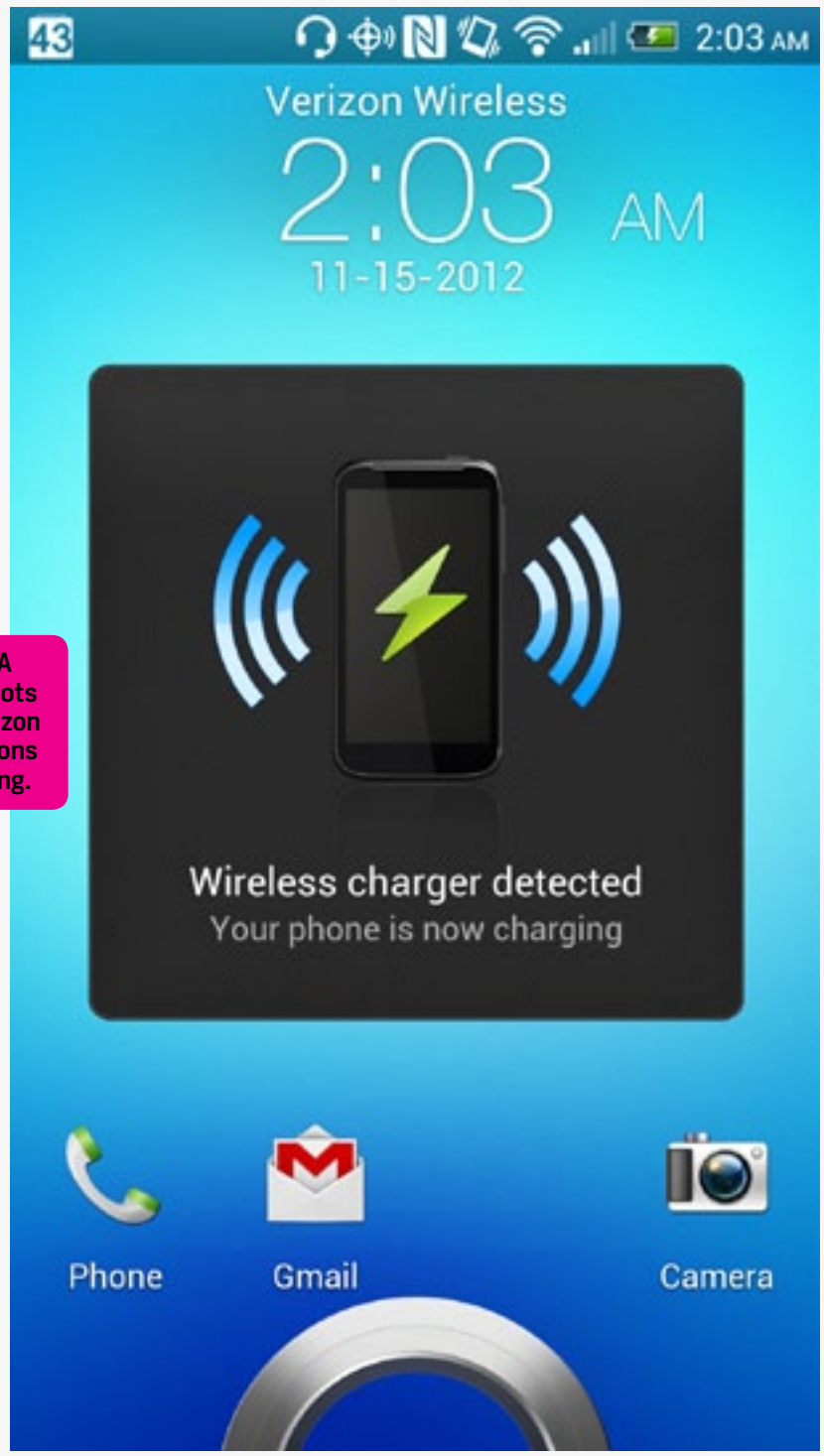
The Super LCD3, 1080p display is amazing to behold.

SOFTWARE

As expected, the Droid DNA plays host to a fresh installation of HTC's Sense 4+ user interface, which runs atop Android 4.1.1 Jelly Bean. Regardless of what you may love about the display, you may not harbor the same feelings toward the manufacturer's custom skin. With the exception of carrier-mandated tweaks, the UI here is essentially the same as the one we reviewed on the One X+ a couple weeks ago, so head over to our review to get the full rundown on the odds and ends.

We mentioned special provisioning from the carrier, which comes as no surprise to anyone familiar with the US smartphone scene. Verizon has stuck with precedent and thoroughly decimated the DNA with obnoxious amounts of pre-loaded apps. Fortunately, nearly all of them can be disabled and each one can be hidden from view, thanks to some functionality in the Sense app menu. We can live with those





Droid DNA screenshots from Verizon applications to charging.

options, especially since there seems to be very little impact on performance (more on that later), but there is one change to the firmware that simply shouldn't have happened: the recent apps / multitasking button cannot be changed or toggled to allow for the menu key. This is a feature that you can find on the One X and X+, so it gives us cause to believe this is something Verizon chose to leave out of the final product. Doing so essentially forces the menu button to take up an abnormally large amount of screen space on third-party apps.

The keyboard is also slightly different — and just a little better. The larger screen allows for slightly bigger keys and the symbol / number toggle is on the left side instead of the right, but we were disappointed in the slow response we experienced with the Swype-like "trace" functionality on the stock HTC keyboard. Any time we finished a word, we found ourselves waiting a second or two for the phone's guess to show up on the screen.

CAMERA

Let's begin our discussion of the DNA camera by stating that we set our expectations to the same level as the One X and X+, since it sports a very similar camera module. Inside that red-rimmed contraption on the back is an 8-megapixel camera with f/2.0 aperture, 3.63mm focal length (28mm equiv.) wide-angle lens, BSI sensor, AF and HTC's special ImageChip. Flip over the phone and you'll come face-to-face with a 2.1-megapixel front-facing camera with BSI sensor and 88-degree ultra-wide-angle lens.

The usual litany of adjustable settings is here. ISO can be manually set to a max of 800, but we noticed that rating jump up to over 1400 when we took low-light shots on auto or low-light mode. You can also adjust white balance manually, which unfortunately you will want to do more often on the DNA since the auto white balance is a little too warm. You can also choose to use HDR, macro mode or low-light mode and you can also adjust exposure / contrast settings. Since the DNA doesn't offer the ability to lock exposure, adjustments will be needed more often than not. When using the front-facing camera, you can tap the viewfinder to start a three-second timer to get that perfect Facebook profile shot.

Performance-wise, the camera is very snappy, taking shots even faster than the One X and X+. The images are also a little sharper and more detailed, though as we mentioned earlier, we were disappointed that the auto white balance feature is on the warm side. (This is more likely a software concern that could be resolved in a future update.) But when the white balance is adjusted correctly, we enjoyed natural colors and overall good quality shots. Low-light images are fair, but not quite as good as we'd like to see from HTC; at the very least, the LED flash is sufficiently bright.

While not leaps ahead, the camera is still top-notch.

In other words, you're not going to be buying this phone for its imaging prowess, but it's not going to break the deal, either. It's not leaps and bounds better than the X or X+, but it's certainly in the same league.

The front-facing camera, on the other hand, is definitely improved over the One series. The wide-angle lens makes a huge difference, especially in video chat, which is exactly where it counts — it's much easier to bring multiple people within view, which is handy for groups of friends and family. The images, which have received a bump in resolution to 2.1 megapixels (1,920 x 1,088) are also more detailed than anything we've seen on an HTC Android device to this point.

We didn't see any huge improvement in the DNA's video recording performance on the rear camera, as it performs roughly the same as the One X and X+. It still records in MPEG-4 format at a bit rate of 10 Mbps and frame rate of 30 fps. It also features slow-motion capability, which can be quite useful when filming something with a lot of action, but you also take a hit on resolution as a consequence. The front-facing camera is great for video, as we were able to record at up to 1080p. We were quite surprised at how smooth and fluid the resulting footage came out; we didn't experience much choppiness when it came to filming moving objects.

PERFORMANCE AND BATTERY LIFE

It's the end of 2012 and quad-core Snapdragon S4 Pro is the name of the game for top-end flagship products like the Droid DNA. Specifically, you can expect to enjoy a 1.5GHz APQ8064 paired with an MDM9615m modem, Adreno 320 GPU and 2GB RAM. This thing is as powerful as they come right now, and power users won't be disappointed with its performance. It trucks along swiftly; the speed of the processor, complemented by the efficiency of Jelly Bean, make for a killer combination that certainly kept us happy the entire time we used the phone. To be fair, there are a few more demands on the processor thanks to the higher-res display, but the hiccups this factor caused are the exception rather than the rule.

As always, we ran our standard suite of benchmark tests in the hopes of quantifying the performance of the Droid DNA over some of the other quad-core powerhouses we've used recently.

As you can see, the DNA can certainly hold its own against some of the current titans, and even fares better than the ICS-running LG Optimus G, which takes advantage of the same chipset (once the Optimus G gets upgraded to Jelly Bean, we may see the two phones become more evenly matched). Fortunately, our real-world experience matches the benchmark scores, so getting the DNA for its level of perfor-

PERFORMANCE	HTC DROID DNA	SAMSUNG GALAXY NOTE II (N7100)	LG OPTIMUS G (KOREAN MODEL)	HTC ONE X+ (GLOBAL)
QUADRANT ADVANCED	**8,028**	6,819	7,628	7,457
VELLAMO 2.0 HTML5	1,752	1,831	1,710	**1,897**
ANTUTU	**14,474**	13,539	11,284	13,591
SUNSPIDER 0.9.1 (MS)	1,150	1,283	1,283	**1,107**
GLBENCHMARK 2.5 1080P EGYPT OFFSCREEN (FPS)	**31**	17	**31**	12
CF-BENCH	**18,386**	15,267	14,398	14,558
BATTERY LIFE (RUNDOWN TEST)	6:38	**10:45**	8:43	7:32

SUNSPIDER: LOWER SCORES ARE BETTER

mance is definitely a no-brainer.

That is, unless you're an avid gamer. Sad to say, our gaming experience was a mixed bag — some of our favorite titles worked flawlessly and games like *Riptide* and *Reign of Amira* looked amazing with the Adreno 320 pushing the graphics behind the scenes, as well as the high-res screen. But it's that fantastic display that will be the thorn in early adopters' sides for a little while, we're afraid; it seems that some games don't play well with the higher resolution. To offer an example or two, *Angry Birds Star Wars* crashed every time we tried starting a level, and *Need for Speed: Most Wanted* displayed a black screen instead of a racetrack — even though all of the controls, car positions and damage notifications showed up without a problem.

How does the 2,020mAh battery hold up to a screen that's constantly pushing more pixels? Our standard rundown, which involves running a video on an endless loop, resulted in the phone holding out for six hours and 38 minutes, which isn't quite as good a showing as we saw from the One X+ and Optimus G on the same test. In terms of real-life usage, the DNA got us through a full day on moderate use, but it's quite apparent that the screen will drain the battery much faster, so frequent users will need to keep that in mind before heading off on the daily commute. There's a good chance you'll make it through a regular eight-hour workday if you're constantly using your phone, but you'll be cutting it pretty close. If you haven't already done so, it may be worth investing in a Qi pad for the office.

In addition to the usual Verizon-specific LTE and CDMA / EVDO radios, the Droid DNA also features global quad-band (850/900/1900/2100) HSPA+ 14.4 Mbps and quad-band (850/900/1800/1900) GSM / EDGE. This isn't anything new, as Big Red has been giving most of its smartphone lineup the ability to access global GSM for international roaming, but the difference this time is that the DNA's GSM and HSPA+ radios are unlocked (just like Verizon's iPhone 5). You read that right: we stuck our AT&T micro-SIM card in, plugged in the proper APN settings and *voila*! We had full data and phone access. You can do the same with T-Mobile, although you're pretty much restricted to EDGE (unless you just happen to be in one of the few cities that offers 3G in the 1900MHz range so far). Granted, this wouldn't be the most cost-effective solution for AT&T customers who are in search for the best phone — the Nexus 4 fits the bill much better, and it provides you with faster HSPA+ service — but the main point of emphasis here is that you have options. Buy it at full retail price and proceed to do whatever you want with it, or at least include it as a selling point to potential eBay buyers when it comes time to swap it out for a newer model in two years.

The same Beats Audio you've come to either love or hate is featured on the

DNA, and as we saw with the One X+, you don't need a special set of headphones to use the feature (we used a pair of Klipsch Image S4As), nor do you need to stick with stock music apps. Fortunately, it also has seen a significant boost in power, thanks to the 2.55V amp HTC has installed. With Beats turned on, the DNA cranks out more than enough bass for our liking, but the sound is still quite loud with the feature off, if you're not into that kind of thing. For those who cannot stand Beats but still want to take advantage of the DNA's audio capabilities, we'd like to see other EQ options offered stock, but all you need to do is download a third-party music player and set it up however you like.

As for the external speaker, it's still sufficiently loud and we can comfortably handle conference calls or listen to music in the background while doing other tasks. We've definitely heard louder, but at least all of our calls on Verizon's network were crisp, clean and static-free, which makes a significant difference on the speakerphone. Dropped calls were never an issue for us. Our LTE speed tests ranged from 25 Mbps up to as high as 40 Mbps, all when enjoying five full bars of coverage.

PRICING AND COMPARISON

With such an impressive list of features and components (and a reasonable $200 on contract and $600 at full retail), you might assume that HTC's prized jewel would be the runaway hit of the holiday season — but it won't be *that* easy. After all, it's going to be contending for a top spot in its pricing tier against the likes of the Samsung Galaxy

Comparing the iPhone 5, Droid DNA and Galaxy Note II.

S III and Motorola Droid RAZR HD; the RAZR Maxx HD (and the Samsung Galaxy Note II, which comes out at the end of the month) can be purchased for an extra hundred bucks.

You can't argue that the Droid DNA certainly holds a unique place — at least for now — as the one and only smartphone in the US market that offers a 1080p display, so aficionados interested in the absolute best panel have no choice but to go with Verizon's darling. With that said, we wouldn't be surprised to see a wave of similarly specced smartphones show up at CES and MWC early next year, so it's quite possible that loyal customers on other carriers will have a few options to choose from pretty soon. If you can't wait past the holiday season, however, the DNA is our new favorite device on Verizon — and unless you need to take advantage of a pen, this is a better (and cheaper) alternative to the Note II.

WRAP-UP

At present time, it's pretty tough to convince us that you can do much better than the Droid DNA on Verizon's lineup. For $200, you're getting the absolute best display on the market, a great camera, Android's Jelly Bean OS and the best quad-core processor you can get. Sure, you can't go wrong with many of the other powerhouses we mentioned earlier, but HTC isn't letting a few rough quarterly earnings reports get in the way of making a high-quality product with top-end components and a gorgeous design. It's easy to tell that HTC put a lot of TLC into the DNA, and it pays off — let's just say that you don't need a geneticist to lecture you on why this kind of thing matters. D

Brad is a mobile editor at Engadget, an outdoorsy guy and a lover of eccentric New Wave and electro. Singer and beatboxer.

BOTTOMLINE

HTC (VERIZON) DROID DNA

$200
(ON CONTRACT)

PROS

- Gorgeous display
- Strong performance
- Durable build quality and elegant design
- Unlocked HSPA+ / GSM radios

CONS

- Verizon branding is over the top
- HTC removed the microSD slot

BOTTOMLINE

With its display, reasonable price and top-of-the-line components, the Droid DNA is our top choice on Verizon's lineup this holiday season.

The World and Work of *MARY ROACH*

By Brian Heater

Photographs by Cody Pickens

Weird Science

Mary Roach in her modest, sparsely furnished office in Oakland, Calif.

From a column at *Salon.com* to the *New York Times* bestseller list, Mary Roach has made her name writing about scientific oddities. As she gears up to release her fifth title in a series, "Gulp: Adventures on the Alimentary Canal," she gives us a glimpse at the weird science behind her books.

"It's next to the walrus penis bone," Mary Roach explains, helpfully. "It was actually billed as a walrus penis bone. In fact, it's a seal penis bone. Totally sold a false bill of goods."

I'm having some trouble locating an object on a crowded shelf in her cozy downtown Oakland, Calif., office. It's in here somewhere, amongst a small collection of biological paraphernalia, below her collection of book awards and a small reference library, to the left of a handful of international editions of her own work. "The bone on the left there," she adds. I find what I'm searching for finally, as advertised, next to a large bone propped up against the rear of the bookcase. A coin pouch crafted from a kangaroo scrotum, an integral part of her collection of "biological change purses," is seated just to the left of a larger one made from the full, preserved body of a cane toad, the invasive amphibious scourge of Queensland, Australia.

We're already off to a bit of an auspicious start when she introduces herself for the cameras in typically self-effacing fashion, "My name is Mary Roach, and people call me a science writer." And then, for the first time in the 15 minutes since we arrived with the crew, the phone rings. Roach doesn't skip a beat, "There's science now." It's a short conversation, made brisk for the sake of the visiting film crew. "I'll just call you when I'm done," she tells the mystery caller, hanging up

For thousands of years, cadavers have been a key part of scientific discovery and truly weird science. *Stiff* explores the strange paths our bodies take after death.

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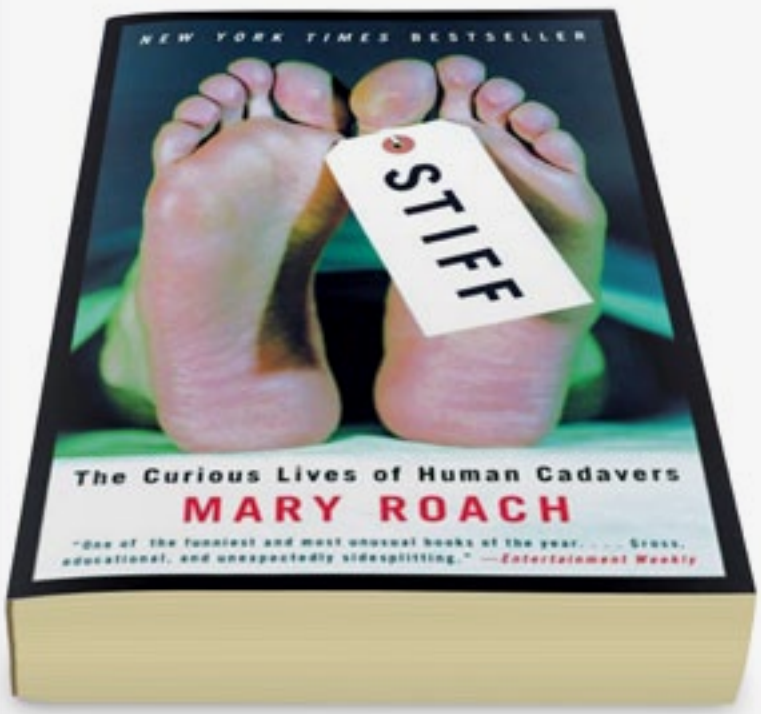


after a "bye." Roach smiles, apologetically. "It's the Mary phone," she says, motioning to the big, classic landline sitting next to her desk.

"I'm Mary Roach," she starts again, pausing to clear her throat. "My name's Mary Roach, and I'm a science writer." Third time's the charm. "I write about kind of unusual aspects of science and medicine. My first book was 'Stiff: The Curious Lives of Human Cadavers,' which is about interesting post-mortem careers. My second book was 'Spook: Science Tackles the Afterlife,' and there are a couple of others." There are four in total — bestsellers, the lot of them. Roach, however, would never let such facts stand in the way of her perpetual modesty.

"I think of myself more as kind of a gateway drug to science for people who don't think science is interesting."

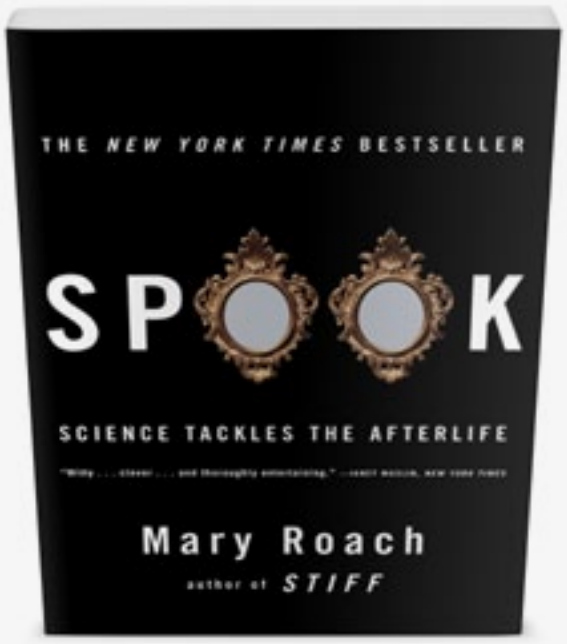
"I don't think of myself as a science writer," she says, struggling to explain what it is precisely that she's done over the course of the four titles. "I don't have a science degree. I have a Bachelor of Arts. I write about science, but I feel a little uncomfortable with the title. I think of myself more as kind of a gateway drug to science for people who don't think science is interesting."

Roach's office is, fittingly, rather modest in its own right, in a part of Oakland that, on the surface at least, doesn't appear to be gentrifying with the rapidity of its immediate surroundings. She shares the space with a handful of folks who come and go throughout the course of our conversation. There are a few posters lining her walls, art from various speaking engagements and a handful of miniature yellow Post-its covered in barely legible notes. One of those notes reads "Houston, We Have Mold," a paraphrasing of a chapter from Roach's "Packing for Mars" that somehow made it onto the cover of the book's Taiwan edition, which, Roach quickly points out, also swapped the US edition's image of crummy luggage

for something far more upscale. The office is far less cluttered than one might expect from the author of "Bonk: The Curious Coupling of Science and Sex." A filing cabinet sits in one corner, while an old Toshiba laptop and a coffee mug full of office supplies comprise the majority of her work station. Above the neighboring door, a painted sign with exposed wood grain reads, "They Pop When They Pop" in wavy text; a strange mishmash of upper and lowercase letters.

"My officemate Lisa bought that at an exhibit of developmentally disabled people's art," Roach explains when I mention the object a couple of weeks later, while combing through photos of the space. "It didn't come with any explanation but seemed to be a useful piece of advice along the lines of 'que sera, sera,' or 'whatever' or 'god willing.' It became our unofficial motto."

What happens when we die? Well, a number of folks — from doctors to ranchers — have attempted to use science to try to answer the age-old question in a quest to figure out if there is indeed an afterlife.



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It's one that takes on slightly different meaning, however, when we broach the subject of "fecal popcorning" later in the conversation; without question one of the more stomach-churning topics in "Packing for Mars."

Our entry into Roach's office was an interview for the Engadget Show — a piece about ghost hunting that found us standing in a darkened hundred-year-old building in upstate New York, sandwiched between two 19th century graveyards a couple of days prior. We exchanged a handful of emails, attempting to establish an interview with the wildly hospitable author, using her second book as the basis of her role as a friendly skeptic. I mention, in passing, the story of Mary Toft, who'd made a bit of a splash in the 18th century scientific community by claiming to have given birth to a series of rabbits.

"Oh," Roach answers, with what I assume to be a fair amount of enthusiasm, "the vaginal bunnies! I'd almost forgotten about them."

The human body and its strange fecal-popcorning / bunny-birthing history are the through line of Roach's book-writing career, one that spun out of an assignment

for *Salon.com*.

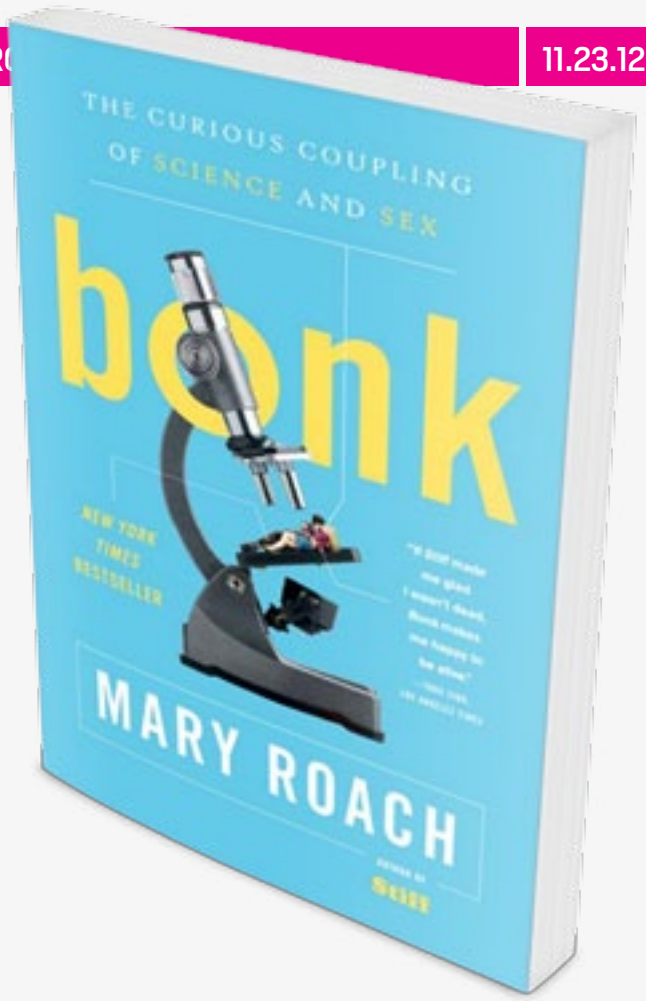
"I wrote this column that was about the human body, kind of reported, but about fun topics. I had done two or three cadaver-related columns. One of them about how cadavers are used in developing crash test dummies, another one about how much the human stomach would hold before it bursts. That was the Thanksgiving Day column. I was talking with an agent around that time, and he thought it would be a good idea to write a book proposal, which I expected everybody to run screaming away from, but in fact they didn't. They thought this was something to pursue, so I wrote this book 'Stiff.'"

"Stiff" begat "Spook" - a natural progression, really, from death to the afterlife.

"There was a chapter in 'Stiff' that had to do with people poking around in cadavers actually physically looking for the soul," Roach explains. "They'd go, 'This thing, what might it be? Might this big thing be the soul? No, in fact that's the liver. This thing in the head, this little thing in the middle of the brain? That's it, that's got to be the soul because it's right in the middle and it's in the brain. Oh, oh actually that's the pituitary.' There would be a lot of mucking around and trying to figure out which bits and pieces might physically be a soul, which I found kind of fascinating. The chapter had to do with using the scientific method and inquiry to pin down a human soul — to wander into the realm of spirituality and religion and actually try to get some evidence or proof."

"... I derive a lot of merriment from efforts to deal respectably with stuff that's really in the realm of the 12-year-old mind."

It was that pursuit that made contacting Roach a no-brainer to provide some context for that strange experience a week prior. We were standing on the top floor of a one hundred-year-old farm building as a group of ama-



Bonk goes behind the closed doors of the labs and numerous other places where sexual physiology is studied in an attempt to answer "questions Dr. Ruth never asked."

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teur ghost hunters called out into the darkness, hoping to capture the voices of the afterlife on a trio of handheld digital voice recorders.

"The problem with a lot of what goes on in the kind of amateur paranormal research is there's not always a clear understanding of what these pieces of equipment are for," Roach tells us, as we describe the strange night in Syracuse, N.Y., involving tables full of EMF (electromagnetic frequency) readers, spectrometers, infrared cameras, parabola microphones and the like. "There's this whole sense over the years every time there's a new technology, particularly something that enables you to detect information in a realm that the human senses can't. There's always a sense that we might be able to capture communication from the beyond because they're communicating on another level: infrasound, or ultrasound or infrared or whatever it is, there's this hope that maybe we'll be able to capture — we'll be able to communicate on this wavelength because they're just on a different wavelength."

There's a constant sense amongst our amateur ghost hunter friends of the importance of framing themselves as objective parties in the search for life after death. "Skeptics first," as the saying goes, and as we stood in the dark, old grange building on a chilly October night, they did their part to discount potential EVPs (electronic voice phenomenon) captured by off-the-shelf, repurposed electronics equipment, chalking them up to cars driving up nearby roads, dogs barking and doors slamming shut off in the distance. But Roach quite literally wrote a book on the matter. "Spook's" subtitle, "Science Tackles the Afterlife," does a fairly good job summing up matters, calling into question the legitimacy of their approach, as amateurs the world over use ever-advancing technology in an attempt to legitimize a pursuit long maligned by established sciences.

"I called up the people who make an EMF meter that is specifically marketed to ghost hunting and said, 'On what


“My name is Mary Roach, and people call me a science writer.”

evidence are you selling this as a device to capture spirit energy?' He said, 'Well somebody at some point seemed to feel that when there was a spike that it was paranormal activity. It seems to be selling quite well.'"

Roach's "gateway drug" approach is reflected in her subject matter, books with a broad sense of appeal and a hook for reeling in even the most scientifically averse. All of this is ultimately bolstered by the fact that the author is no scientific insider herself, going along on the journey with the reader. Ultimately, however, it's that focus on science that can tend to ground these subjects, taking some of the wind out of the subject matter's fantastical approach — the attempted justification of previously held beliefs through scientific findings. In a sense, that concept is a defining characteristic of Roach's most recent book, "Packing For Mars," a framing of the unglamorous realities of the human body that arguably strip some of the science fiction glamor from the world of space exploration. Naturally, this brings us back to the subject of fecal popcorning, a peculiar and fairly upsetting phenomenon that can occur when nature calls while in zero gravity that literally involves the matter bouncing off walls and heading the wrong way out the toilet. " Fecal popcorning is the reason space shuttle toilets were equipped with rearview mirrors," Roach explains. "Fecal popcorning is the gateway phenomenon to fecal decapitation. You do not want fecal decapitation happening on your ship."

There are chapters in "Mars" about isolation, vomiting (you do NOT want any of it getting caught in your air tube), death, sex and other extremely human phenomenon in the book, but there's something about the universality and vulnerability of number two that utterly humanizes the storied heroes in ways largely unseen.

"NASA waste management system people came up with just the most spectacular euphemisms like 'egesta,'" Roach tells us with a sense of sheer delight. "There's 'ingesta' and 'egesta.' 'The material.' My favorite was 'the astronauts' contributions.' These are all in papers, aerospace

engineering journals, and I derive a lot of merriment from efforts to deal respectably with stuff that's really in the realm of the 12-year-old mind."

It's a merriment that translates, even as you attempt to exorcise images of the first astronauts attempting to direct their business into plastic baggies.

Roach has even, at least partially jokingly, pitched a spinoff to publishers.

"I regularly torture the publicists at W.W. Norton by saying that they need to do a little point of purchase kind of fun thing for Mary Roach readers: a cookbook," the author tell us with a smile. "From 'Stiff' there's mollified man, from 'Bonk' there's three different artificial semen recipes, 'Packing for Mars' — those folks down at NASA Ames came up with a high-fidelity fecal simulant, the key ingredient being refried beans, I believe. It's a dream of mine. It's not something that will probably ever find its way to print. There's probably 15 recipes altogether."

The fake waste, it's worth noting, was created when attempts to produce the matter during the 22 seconds of zero gravity provided during a parabolic flight proved too difficult, for fairly clear anatomical reasons. Roach's dream cookbook may well never be realized, but she has yet to abandon the literary goldmine that is the human body. "The next book is called 'Gulp: Adventures on the Alimentary Canal,'" the author tells us. "It's got all sorts of weird shenanigans"

"Gulp" is headed for bookstores on April Fools' Day. Beyond that, however, Roach isn't sure where inspiration will take her.

"I've kind of used up the human body," she says, straining slightly for an answer. "'Packing for Mars' was the human body in unusual circumstance, so I may go off in some other unusual circumstances. But I'm not sure where I'm going."

Any good writer will tell you that you can't force ideas. It's like the old saying goes: "They Pop When They Pop." D

How do you test how certain scenarios will play out in another galaxy? With the use of cadavers and space shuttle training toilets, of course. Take a look at the strange ways in which space life plays out on Earth.

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PHOTOGRAPH BY ANDERS KRUSBERG / AP IMAGES FOR NINTENDO OF AMERICA

Mii AND U VISUALIZED

Nintendo rolled out the hype machine in NYC last week to generate buzz for the Wii U's launch event, which took place at midnight November 18th. Groups of bobble-headed Mii characters, the social avatars from the gaming system, descended on the city to drum up excitement and mug it up with people on the street. Die-hard gaming fans who queued up a day in advance were also joined by these beaming Mii characters who, we hope, were nice enough not to cut the line.

RYAN RUSSELL

THE ROCK PHOTOGRAPHER AND NERVOUS ENERGIES CHARLATAN reminisces about the R.O.B. and proposes a grace period for new gadgets.

What gadget do you depend on most?
iPhone 5, aside from the obvious, I enjoy using the new camera almost as much as my Canon DSLR. My Tamagotchi is a close second.

Which do you look back upon most fondly?
Original Nintendo Deluxe with the R.O.B. (Robotic Operating Buddy).

Which company does the most to push the industry?
Federal government.

What is your operating system of choice?
OS X Mountain Lion. When I switched to Apple in 2005 it was nice to have an idiot-proof OS. Can hardly use Windows now without getting a migraine.

What are your favorite gadget names?
Canon, Lomo and Arc Reactor.

What are your least favorite?
Samsung and Thighmaster.

Which app do you depend on most?
RadarScope. Weather plays an insanely high part in photo shoots. Spent many times under awnings waiting for a storm to pass watching the radar to finish up a shoot.

What traits do you most deplore in a smartphone?
The speakers.

Which do you most admire?
The camera. Digital point-and-shoots are irrelevant now.

What is your idea of the perfect device?
iPhone 5.

What is your earliest gadget memory?
Trying to figure out how to make the R.O.B. work with the Nintendo. I never could make it work right. I ended up just making it a Transformer crusher.

What technological advancement do you most admire?
Anything Bell Labs created.

Which do you most despise?
Automated Customer Support

What fault are you most tolerant of in a gadget?
Early models. Anytime anything comes out there has to be a grace period after being released to the public. No amount of testing will ever match the insanity some people put gadgets through.

Which are you most intolerant of?
Battery life.

When has your smartphone been of the most help?
Traveling. It literally has everything I will ever need except for food and gas to go out and take photos.

What device do you covet most?
Nike+ FuelBand.

If you could change one thing about your phone what would it be?
Expandable storage in iPhones.

What does being connected mean to you?
Being able to show anything and speak to anyone in less than a few seconds.

When are you least likely to reply to an email?
When it was never sent in the first place.

When did you last disconnect?
What is this “disconnect” you speak of? Sounds like heresy. D

Ryan Russell (center) with the punk rock outfit Against Me!

The week that was in 140 characters or less.

Spam Translation, Wii U Frustration and Random Book Drops

@hickswriter
I can't find the words to express how much I love the new Bibliomat

@andyayres

So Oprah loves the Surface so much, she tweeted, from her iPad ...

@danielwcooper

My eyes feel funny. Engadget looks all different.

@leraboroditsky
Gmail is now available in the Cherokee language. Finally Cherokee will have a word for "spam"!

@Tim_Stevens
Spent 45 minutes updating my Wii U and now it's timing out trying to create a new user. If this is the new era of console gaming I want out.

THE STRIP | BY SHANNON WHEELER

HIGH-FIDELITY HOLIDAY

Before portable audio docks and wireless streaming graced our homes, people had to get crafty to keep the groove going from room to room. In this particular scene from 1954, we're presented with a powerful portable system by Regency Inc. including their HF-150 high-fidelity amplifier, a Webcor "Diskchanger" and a Jensen "Duette" reproducer (tea cart not included). That innovative mobile kit could have you Twisting in the living room or doing the Mashed Potato with mom while cooking up some of the same.

MODERN EQUIVALENT:
TDK Boombox

PHOTOGRAPH COURTESY OF SHORPY.COM

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