How Yahoo Killed Flickr and Lost the Internet

Web startups are made out of two things: people and code. The people make the code, and the code makes the people rich. Code is like a poem; it has to follow certain structural requirements, and yet out of that structure can come art. But code is art that does something. It is the assembly of something brand new from nothing but an idea.

This is the story of a wonderful idea. Something that had never been done before, a moment of change that shaped the Internet we know today. This is the story of Flickr. And how Yahoo bought it and murdered it and screwed itself out of relevance along the way.

Do you remember Flickr's tag line? It reads "almost certainly the best online photo management and sharing application in the world." It was an epic humble brag, a momentously tongue in cheek understatement.

Because until three years ago, *of course* Flickr was the best photo sharing service in the world. Nothing else could touch it. If you cared about digital photography, or wanted to share photos with friends, you were on Flickr.

Yet today, that tagline simply sounds like delusional posturing. The photo service that was once poised to take on the the world has now become an afterthought. Want to share photos on the Web? That's what Facebook is for. Want to look at the pictures your friends are snapping on the go? Fire up Instagram.

Even the notion of Flickr as an archive—as the place where you store all your photos as a backup—is becoming increasingly quaint as Dropbox, Microsoft, Google, Box.net, Amazon, Apple, and a host of others scramble to serve online gigs to our hungry desktops.

The site that once had the best social tools, the most vibrant userbase, and toppest-notch storage is rapidly passing into the irrelevance of abandonment. Its once bustling community now feels like an exurban neighborhood rocked by a housing crisis. Yards gone to seed. Rusting bikes in the front yard. Tattered flags. At address, after address, after address, no one is home.

It is a case study of what can go wrong when a nimble, innovative startup gets gobbled up by a behemoth that doesn't share its values. What happened to Flickr? The same thing that happened to so many other nimble, innovative startups who sold out for dollars and bandwidth: Yahoo.

Here's how it all went bad.

In the Beginning

Flickr famously began as a feature of another product. Husband-and-wife development team Stewart Butterfield and Caterina Fake had created a photo sharing feature for another product they were working on, Game Neverending. Butterfield and Fake were old-school Web types. The kind with low Metafilter user numbers and <u>WELL</u> accounts.

And because they knew the Web so fluently, they soon realized that their real product wasn't the game: It was this secondary feature, the ability to share photos online. This was 2003, and photo sharing was still very much a novel problem for people. Flickr was born.

<u>It was a hit</u>. Bloggers especially loved it, as it solved an age-old photo hosting problem. (This was during the hoary old days of the Web when storage actually cost money.)

Two years later, in 2005, Butterfield and Fake sold their company to Yahoo, whose deep pockets

promised great things for Flickr's users. It upped the monthly storage limit to 100MB for free users, and removed it altogether for pro accounts, for example. Yahoo had bandwidth and engineering to burn. Things were going to be great; things are always going to be great the first time you embrace a new corporate mother.

When Startups Become Successes

Very few people manage to build successful startups. But when the one hits, it can change the status quo in an instant. Suddenly, those two elemental ingredients—people and code—become very valuable to the established companies that seem to reside on an untouchable corporate Mount Olympus. It would have to be an overwhelming compliment and sense of validation. How would you handle it? What if you made something beautiful and useful that changed the status quo? Would you sell it? Would you sell *yourself*?

That's the choice successful startup founders are faced with. Build something good, and the buyout offers start rolling in. But while selling out in most other fields of creative endeavor is frowned upon, it's a given on the Web.

Maybe it shouldn't be. For every YouTube, there are horror stories of great people with great products, squandered in the yawning maws of uncaring corporate integration. Dodgeball gets lost in Mountain View. Beloved bookmarking services like Delicious become fields of information left fallow.

Some upstarts take an independent path. Consider Foursquare. Or Twitter. Or Facebook. Each spurned buyout offers, and none has ever been stronger. All managed to find a business model over time. Or even StumbleUpon, which only found its feet after its founder re-purchased his company from eBay and spun it off again as an indie.

It's no secret that for many entrepreneurs, the exit is *always* the goal. It's about the sellout before the first line of code is written. But for a select group, products are meant to be art. They are meant to literally change the world. And for those, selling out can be especially problematic.

Flickr falls into that camp.

Integration Is The Enemy of Innovation

"Yahoo was a good fit initially," says Flickr co-founder Caterina Fake, who left the company in 2008. "We had offers from various companies, including Google, and I honestly think that Yahoo was a great steward. It was a great steward of the brand. It was allowed to flourish. In the subsequent two years after the acquisition, Flickr blossomed."

Yet even early on, there were signs that the transplant—which had seemed so successful at first—was going to fail. That the DNA didn't match. This was largely due to how this new appendage was grafted on by Yahoo's CorpDev department.

Full size

The flickr team was forced to focus on integration, not innovation

When a new startup comes into an established company, the first wall it typically hits is CorpDev, or corporate development: the group within a business that manages change. CorpDev is usually charged with planning corporate strategy—where a business will grow or shrink, the markets it will enter or exit, and what kind of contracts and deals it may strike with other companies. It often oversees acquisitions. It plans them. Approves them. And then it sets the terms.

When a big company gobbles up a smaller one, often only a fraction of the money is handed over up front. The rest comes later, based on the acquisition hitting a series of deliverables down the road. It's similar to how incentives are built into the contracts of professional athletes, except with engineering benchmarks instead of home runs.

... a sledgehammer applied with great force to the feet of nimble development

developmentCorpdev sets these milestones. They reflect the reason for the acquisition, and how the company—in Flickr's case, Yahoo—can leverage them. They're baked into the deal, and an acquisition integration team begins working immediately to make sure they are met. Typically, they're very engineering-based, designed to integrate the smaller company's product into the enormous corporate machine.

And because payment schedules are based on achieving those CorpDev terms, it means both companies have a vested (pun intended) interest in putting those milestones ahead of new features. They are a sledgehammer applied with great force to the feet of nimble development. Worse, they often completely ignore what made the smaller target valuable in the first place.

Take Upcoming, the calendaring site Yahoo bought not long after Flickr. It was a play to get local listings. Local data—especially in smaller cities or for smaller events—can be very hard to come by. Everyone ends up having the same stuff. But Upcoming's data was user-generated. It was different. Unique. *Valuable*.

The milestones for that acquisition were all based around integrating that local event data into Yahoo. Yahoo didn't care about Upcoming's users—the community that *created* the data. Yahoo's approach turned out to be completely backwards. The value of the the company was determined by the index itself, rather than how the index was built—which is to say, by the community.

It was a stunning failure in vision, and more or less the same thing happened at Flickr. All Yahoo cared about was the database its users had built and tagged. It didn't care about the community that had created it or (more importantly) continuing to grow that community by introducing new features.

"We spent a lot of time in meetings with CorpDev just defending the product and justifying our decisions," said a former Flickr team member.

And so when Flickr hit the ground at Yahoo it was crushed with engineering and service requirements it

had to meet as per demands of the acquisition integration team. Those were a drain on resources, human and financial. Even though many of the resources came from Yahoo, they were debited against Flickr. This created an untenable cycle that actively hampered innovation.

"The money goes to the cash cows, not the cash calf," explains one former Flickr team member. If Flickr couldn't make bucks, it wouldn't get bucks (or talent, or resources).

Because Flickr wasn't as profitable as some of the other bigger properties, like Yahoo Mail or Yahoo Sports, it wasn't given the resources that were dedicated to other products. That meant it had to spend its resources on integration, rather than innovation. Which made it harder to attract new users, which meant it couldn't make as much money, which meant (full circle) it didn't get more resources. And so it goes.

As a result of being resource-starved, Flickr quit planting the anchors it needed to climb ever higher. It missed the boat on local, on real time, on mobile, and even ultimately on social—the field it pioneered. And so, it never became the Flickr of video; YouTube snagged that ring. It never became the Flickr of people, which was of course Facebook. It remained the Flickr of photos. At least, until Instagram came along.

The Flickr team was forced to focus on integration, not innovation. This played out in two key areas.

Socially Awkward

Flickr's best feature isn't what you think. It's not photo-sharing at all. Just as photo sharing was a feature hidden within a game, there was another feature hidden within photo-sharing that was even more powerful: social networking. Flickr was, nearly a decade ago, building what would become the Social Web.

We didn't give a shit about the community

The first point in Flickr's two point mission statement is to help people make their photos available to the people who matter to them. Flickr had—and still has —excellent tools for this. Flickr was an early site that let you identify relationships with fine grained controls—a person could be marked as family but not a friend, for example—instead of a binary friend/not friend relationship. You can mark your photos "private" and allow no one else to see them at all, or identify just one or two trusted friends who may view them. Or you can just share with friends, or family. Those granular controls encouraged sharing, and commenting, and interaction. What we are describing here, of course, is social networking.

It's hard to remember, but back in 2005, Yahoo seemed like it had its game on. After losing out on search dominance to Google, it snapped up a bunch of small-but-cool socially oriented companies like Flickr (social photos), Delicious (social bookmarking), and Upcoming (social calendaring). There was a real sense that Yahoo was doing the right thing. It was, to some extent, out in front of what would come to be widely known as Web 2.0: the participatory Internet.

But Yahoo's social success in those years was almost accidental. It wasn't (and isn't) a company with

vision. Its founders Jerry Yang and David Filo's great contribution to the Internet? They built a directory of links and then sold ads on those pages.

It was a gateway, nothing more. This was hardly an innovative idea, or technically complicated to pull off. You don't have to write algorithms to build a portal. Yahoo was little more than an electronic edition of Yellow Pages.

The founders' influence on a company's culture is enormous, and Yang and Filo cared about business, not products or innovation. They didn't foster a culture of computer scientists, like Google's founders did, or cultivate hackers like Facebook. They grew a business culture. For many years that worked quite well—until Google came along. Suddenly nobody needed directories anymore. Why browse a hierarchy when you can jump directly to what you're looking for with a simple query?

Yahoo's CEO Terry Semel had <u>failed to buy Google in 2001</u>, <u>when he had the chance</u>. Now Yahoo was so focused on winning search that it essentially surrendered social. In 2005, Flickr had far and away the best social connection and discovery tools on the Internet. Remember, back then Facebook was still very much a fledgling service, one that didn't even let you upload pictures other than the one in your profile. Yahoo, meanwhile, had existing internal social products, like Address Book and Messenger. Social was clearly the future. What Yahoo wanted, however, wasn't the future. It was to re-fight an old battle from the past. It was to beat Google.

"By the time we were looking at Flickr, Yahoo was getting the shit kicked out of it by Google. The race was on to find other areas of search where we could build a commanding lead," says one high ranking Yahoo executive familiar with the deal.

Flickr offered a way to do that. Because Flickr photos were tagged and labeled and categorized so efficiently by users, they were highly searchable.

"That is the reason we bought Flickr—not the community. We didn't give a shit about that. The theory behind buying Flickr was not to increase social connections, it was to monetize the image index. It was totally not about social communities or social networking. It was certainly nothing to do with the users."

And that was the problem. At the time, the Web was rapidly becoming more social, and Flickr was at the forefront of that movement. It was all about groups and comments and identifying people as contacts, friends or family. To Yahoo, it was just a fucking database.

The first community problems became evident when Yahoo decided all existing Flickr users would need a Yahoo account to log in. That switchover occurred in 2007, and was part of the CorpDev integration process to establish a single sign on. Flickr set it to go live on the Ides of March.

From Yahoo's perspective, there was no choice but to revamp the login. For one, Flickr had grown internationally, and it had to localize to comply with local laws. Yahoo already had tools to solve this, because it had already expanded into other countries. It offered a ready-made solution.

But moreover, Yahoo needed to leverage this thing that it had just bought. Yahoo wanted to make sure that every one of its registered users could instantly use Flickr without having to register for it separately. It wanted Flickr to work seamlessly with Yahoo Mail. It wanted its services to sing together in harmony, rather than in cacophonous isolation. The first step in that is to create a unified login. That's great for Yahoo, but it didn't do anything for Flickr, and it certainly didn't do anything for Flickr's (extremely vocal) users.

Yahoo's RegID solution turned out to be a nightmare for the existing community. You could no longer use your existing Flickr login to get to your photos, you had to use a Yahoo one. If you did not already have a Yahoo account, you had to create one. And you did not even log in on Flickr's home page, upon

arriving, you were immediately kicked over to a Yahoo login screen.

Although Flickr grew tremendously with the huge influx of Yahoo users, the existing community of highly influential early adopters was infuriated. It was an inelegant transition, and seemed to ignore what the community wanted (namely, a way to log in without having to sign up for a Yahoo account). This was the opposite of what people had come to expect from Flickr. It was anti-social.

And it very much delivered a message, to both users and to the team at Flickr: You're part of Yahoo now.

That message was also going out to Flickr's team. Flickr prided itself on customer care, which it considered a core part of community building. But Yahoo wanted to manage all that itself with its existing departments. One of Yahoo's goals was to move from a system of notice and takedown, to prescreening all the content members posted before it went up online. Flickr saw this as both a costly time-consuming task and one that could very well violate its members privacy, especially when talking about private photos. The Flickr team scheduled a meeting and headed down to corporate headquarters in Sunnyvale for an hour long presentation to make its case. Halfway through the meeting, the vice president who oversaw customer care for Yahoo looked at his watch, announced he had another meeting, and left. It was an open fuck you.

For Heather Champ, who was Flickr's head of community at the time, the meeting was the beginning of the end. "I came out of that meeting knowing I couldn't continue in my role. I didn't want to stay and watch them dismantle everything we'd worked so hard to build."

By mid-2008, a year after the RegID debacle, it was clear to most everyone that Facebook was the big up-and-coming social network. What had been a plaything for college kids and high schoolers was suddenly the network your mom, your dad, your gym coach, and everyone else you'd ever met was sending you friend requests from. Microsoft was pumping money into it, and it was fast approaching 100 million users.

Inside Yahoo, which itself had a massive user base and multiple social products, some were already warning that it was going to be bypassed in social just as it had been bypassed in search.

"I spent years at Yahoo trying to signal the alarm that Facebook was going to take over the adult market unless we stepped in and used our existing social networks to fight back," laments one former Yahoo engineer who worked on products at both the parent company and Flickr. "Obviously this never went anywhere for a multitude of reasons."

Yahoo had already tried to buy Facebook in 2006—for a billion goddamn dollars. And failed. Two years later Facebook was too big to buy. The only way to beat it was to come at it from another direction with a better product. Yahoo's best hope for that was Flickr. But by then it was too late.

"Flickr wasn't a startup anymore," explains the engineer, "people didn't really want to work that hard to turn the entire product around. Even if they had, Flickr [was] very techie hipster, many didn't use or like Facebook and considered it bland, boring, evil, poorly designed, etc., and were certainly not ready to fast follow it. Emphasis was put more on how things looked, and felt, rather than on metrics and on what worked. The whole experience was very frustrating for me all around, as I slowly watched Flickr and Yahoo fade into irrelevance."

The Unstoppable Force And His Immobile Object

There's a difference between a missed opportunity and a complete fuck-up. When Yahoo failed to capitalize on Flickr's social potential, that was a missed opportunity. But if you want to see where it completely fucked up, where it just butchered Flickr with dull knives and duller wit, turn on your

phone and launch the Flickr app. Oh, what's that, you don't have one? Exactly.

Flickr had a robust mobile Web site way back in 2006—before the iPhone even shipped. You could use it with your piece of crap Symbian phone, or the dinky screen on your Sony Ericsson T68i. But it was basically just a browser. If you wanted to get a photo from your phone to your account, you had to email it.

And then in 2008, something happened that made the mobile Web a sideshow altogether: apps. The iPhone's App Store ushered in a new era that changed the way we interacted. People didn't want mobile web experiences that required them to skip from a camera app, to an editing app, back to the Web and possibly even over to email to upload and share an image. They wanted an app that did all those things. The Flickr team understood that. Unfortunately they couldn't do anything about it.

"Flickr was not empowered to build its own iOS app—or any other mobile app for that matter," laments one former Flickr executive. "You had this external team with strong opinions as to what the app should do."

It was here that the missions of the two companies truly collided, according to insiders. The Flickr app was a top-down decision, driven by Yahoo Mobile and its leader, Marco Boerries. The team at Flickr was iced out.

Full size

Boerries was a maniac

Boerries had a grandiose vision for something called "Connected Life." It was to be a socially seamless mobile experience that brought all your Yahoo services together in the palm of your hand, and connected them with the desktop. It was nothing short of what Apple and Google and Microsoft are all trying to do today with their cloud strategies.

Boerries was a maniac. He'd built a word processing program called StarWriter as a 16 year-old kid, grew it into the StarOffice suite and sold it to Sun for \$74 million in 1999. By 2004, he was running around Silicon Valley giving a demo that was literally making people gasp in wonder.

He would walk into a room full of investors, pull out his crappy flip phone, and take a picture of the room. Then he'd pocket it, open his laptop and refresh the app running on his desktop. Suddenly, the visitors in the room would be confronted with their own skeptical faces. It was automatic. He then explained that he could do the same thing with any other type of data—emails, phone numbers, mp3s, whatever. Anything you did on the phone would be seamlessly reflected on the desktop, and vice versa. Basically, it was iCloud.

Yahoo bought his company in 2005 for something in the neighborhood of \$16 million, largely to buy Boerries. A month later, it would buy Flickr.

Boerries was a genius, and, by all accounts, a nightmare to work with. One of the most frank depictions of this comes from Kellan Elliot-McCrea, Etsy's CTO who, in a past life, was the chief architect of Flickr. On Quora, he writes:

"Marco Boerries was without a doubt one of the most viciously political, and disliked Yahoo! execs and he reigned for 4 years over the Yahoo "Connected Life" team which had universal control over all native mobile experiences within Yahoo. Several Flickr internal

attempts to build and ship native mobile experiences (going back to 2006) were squashed relentlessly."

The Yahoo Mobile team was onerously slow to get an app out the door. Although the iTunes App Store launched in July of 2008, Yahoo Mobile let a year slip away before it released an official Flickr app. When it finally did roll out the long-delayed beast in September of 2009, it was beyond disasterous. The early <u>reviews on the iTunes App Store</u> read like pre-alpha test notes of the world's worst software.

"Not enough functionality to be useful"

"it is SLOW and seems to slow down more with use"

"Was very excited about this app only to be let down. Hard."

"slow, buggy, terrible navigation."

"everything is painfully slow"

Among other problems, it wouldn't let you upload several photos at once, you had to go in manually submit them one at a time. It was downscaling photos to 450 x 600, murdering image quality. Users had to log in via Safari rather than in the app itself. It was striping EXIF data from photos as they uploaded—precisely the kind of thing Flickr's photo nerds wanted to see.

People. Fucking. Hated it.

The app landed like a pile of mud on a wedding gown. As one App Store reviewer put it, "For uploading to Flickr, this is really the worst app I've tried; you're better off just emailing photos direct from the phone in that respect."

It somehow managed to get Flickr's two key strengths—photo sharing and storage—completely wrong.

Possibly worst of all—at least from a business perspective—you couldn't sign up for a Flickr account from the app. (In fact, you still can't. It kicks you over to the Web to sign up with Yahoo if you want to register as a new user.) While other apps draw users into their Web services (think Foursquare, Twitter, Facebook, and notably Instagram) the Flickr app that Yahoo Mobile rolled out had no mechanism for that. It was not a recruitment tool. It was just for existing users.

"That was a big oversight," says Fake. That's an understatement. It was the mother of all fuckups.

Meanwhile, all manner of new apps were appearing that would not only snap photos for you, but process the images too. Things like Best Camera and Camera Bag were introducing consumers to the idea of applying automatic filters to their mobile photos. A little over a year after the Flickr app hit iTunes, another photography app came along that worked much like a quicker Flickr. It was called Instagram.

Today, it all seems too late. The iPhone is the most popular camera on Flickr, but the feeling isn't mutual. Flickr isn't even among the top 50 free photography apps in iTunes. It's just below an Instagram clone in 64th place. By way of comparison, an app that adds cats with laser eyes to your photos is 23rd.



If you can't beat laser cat, you probably deserve to die.

What Next

Flickr's mobile and social failures are ultimately both symptoms of the same problem: a big company trying to reinvent itself by gobbling up smaller ones, and then wasting what it has. The story of Flickr is not that dissimilar to the story of Google's buyout of Dodgeball, or Aol's purchase of Brizzly. Beloved Internet services with dedicated communities, dashed upon the rocks of unwieldy companies overrun with vice presidents.

As a result, Flickr today is a very different site than it was five years ago. It's an Internet backwater. It's not socially appealing.

Recently, Flickr rolled out a "Justified" view, a way to scan your friends' recent photos where they are all placed together like puzzle pieces. It's similar to the way Pinterest lays out images. It's a dramatic, gorgeous way to look at photos—that mostly highlights how rarely many people update now.

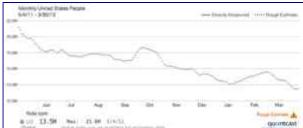
As I scroll down I note that friend after friend has quit posting. At the bottom of the page I am already back in mid 2010. So many of my friends have vanished. It feels like MySpace, circa 2009.

This is anecdotal, sure, but I follow many of these same people on other networks (Path, Facebook, Instagram) where they tend to be very active. I see photos of the same people, with their same children and their same dogs—all looking a year or two older than on Flickr.

This justified view also serves to highlight just how many of my friends' photos are formatted in perfect squares—the tell-tale sign of an Instagram snap that's been exported. Many of my contacts' entire photostreams are made up of Instagram photos. In other words they are mere duplicate streams—with fewer comments and activity—of content that exists in primary form elsewhere. The only reason they are active on Flickr at all is because they automatically export there.

There are other signals as well. On <u>Stellar.io</u>, a favorites aggregator that tracks what people are linking on Twitter, YouTube, Vimeo and Flickr, the latter's links fail to show up even daily in my stream. And

of course, there is that damning Quantcast traffic chart.



Despite years of neglect, Flickr's miniscule yet highly

talented team is trying desperately to right the ship.

Flickr began the year by killing off a slew of features that didn't really make sense—like Photo Sessions, a baffling feature that let you show real time slideshows of your pictures to other people that had Yahoo written all over it. It's also hustling to roll out many more, like that new Justified View and an Uploader that runs on HTML 5. It replaced its photo editor (formerly Google-owned and now defunct Picnik) with and HTML5 tool called Aviary, which lets people make changes to their photos without leaving the page and will play nice with tablets. It's showing pro members photos at 1600 and 2048 pixels now to take advantage of Retina Displays.

Flickr's product manager Markus Spiering notes that his team gets what it needs from Yahoo now. (Of course, you'd also assume he has to say that. But still.)

"We do have a lot of resources which are also within the main company. The people you see on the About page are the core team you see on San Francisco, but a lot of the horizontal development efforts are shared."

And that hated Yahoo-only login? Gone.

"We don't care so much about what kind of passport you have—a Google ID, Facebook," he says. "At the same time, we let you share your images to various places. There are a lot of solid and easy to understand privacy controls, and we see ourselves as the centerpiece.

"That's where we're pushing Flickr towards where it's a beautiful, photo centric experience. But whatever you are using, it gets your photos there."

Mobile is still a disaster. Flickr's iOS app, though improved from the one it rolled out in 2009, is still just awful. It still requires you to log into Yahoo via Safari, for example. And it doesn't offer even the most basic of photo editing or filters that seemingly every other camera app provides.

"I think I can honestly say that especially on iOS we need to provide a better Flickr experience in terms of our own app, but that's something we are working very hard on," says Spiering.

So let's say Flickr finally gets it together. Let's say it fixes its app, reinvigorates the community, and finally gets back on path. The question is: *Is it too late?*

It's under attack not just from Facebook and Instagram and, hell, TwitPic and Imgur (Imgur for fuck's sake!) but also the likes of Dropbox, Google Drive, Skydrive, and Box.net. Not to mention Apple's iCloud and PhotoStream, Google's Picasa, and yes even Google+, which does automatic photo uploads from Android handsets in glorious full resolution complete with geotags and EXIF data.

A comeback doesn't seem likely.

Flickr is still very valuable. It has a massive database of geotagged, Creative Commons- and Getty-licensed, subject-tagged photos. But sadly, Yahoo's steady march of incompetence doesn't bode well for making use of these valuable properties. If the Internet really were a series of tubes, Yahoo would be the leaking sewage pipe, covering everything it comes in contact with in watered-down shit.

Flickr's last best hope is that Yahoo realizes its value and decides to spin it off for a few bucks before both drop down into a final death spiral. But even if that happens, Flickr has a long road ahead of it to relevance. People don't tend to come back to homes they've already abandoned.

Flickr is still pretty wonderful. But it's lovely in the same way a box of old photos you've stashed under the bed is. It's an archive of nostalgia that you love dearly, on the rare occasion you stumble across it. You pull them out, and hold them up to the light, and remember a time when you were younger, and the Web was a more optimistic place, and it really was almost certainly the best online photo management and sharing application in the world.

And then you close the box.

And you click over to Facebook, to see what's new.

Image: Shutterstock/Vince Clements