

# ARMCHAIR EXPLORERS

OpenROV co-founders David Lang and Eric Stackpole created a robotics start-up that brings the secrets of the underwater world to everyone.



Rachel Botsman is a global authority on the power of collaboration and trust.

**I**n the past it was up to famous explorers such as Captain Cook or Christopher Columbus to go on discovery expeditions. When they returned from voyages they would share tales of the new lands they had found.

There were huge barriers – high costs for one, and enormous safety risks – that separated explorers from non-explorers.

David Lang (pictured) and his co-founder, Eric Stackpole, want to give amateurs from all over the world an easy and affordable way to discover the mysterious life under the sea. In 2012, they launched a robotics start-up called OpenROV that sells remotely operated vehicles (ROVs) which can be sent as deep as 100 metres under water.

Today, there are more than 3000 ROV owners who use them to explore shipwrecks, find ancient Mayan pottery, spot elusive sea creatures and observe pollution from the comfort of their living rooms. The global community share their expeditions and follow ones they are interested in on an online platform called Open Explorer.

On the surface, OpenROV looks like a cool underwater robotics company but in fact it's part of something bigger: the citizen science movement. Lang is one of a growing number of entrepreneurs developing affordable tools that will help democratise science. The next generation of explorers won't necessarily need a rocket or a submarine to expand the pool of the human knowledge; they will just need a \$2000 robot.

## What is it about the water that you deeply connect with?

I have a romantic attachment to the ocean. I moved to California with this dream of sailing around the world. I spent a lot of my 20s working on boats, living on boats, learning and teaching how to sail, and generally falling in love with the ocean. The thing that surprised me the most was how little people seemed to care about the issues of the ocean.

## Why do you think people are more interested in exploring space than the oceans?

Maybe it's human nature to look upwards and not to look inwards, to look at what we have on Earth. There is a widespread belief that space, not the oceans, is the next frontier.

Jacques Cousteau co-invented the aqualung just 75 years ago. We're only getting started with ocean exploration and we're discovering that it's a place filled with life, magic and creatures. It's actually the life support system of our planet and we have to start caring about it.

## How did your journey start with OpenROV?

I met Eric Stackpole, a NASA engineer at the time, who had been prototyping in his garage an idea for an underwater robot. He wanted to discover if the legend of Hall City cave having hidden gold was true. It just clicked that this was exactly the tool and narrative that we needed to get people engaged.

The great thing about the robot is you don't have to go underwater – you can be sitting in your living room exploring oceans halfway around the world, connecting with this global community of explorers,

doing this with other people. It took us a long time and a lot of input from our online community to get the underwater robot to work. And then we went to the cave and looked for gold, and we didn't find any. But it didn't matter.

Along the way, we had generated a lot of excitement and support for the project and met people around the world who wanted a robot of their own. We put the project up on Kickstarter and we raised \$US111,622 (\$151,000) in a month, which far exceeded our expectations. With the money we were able to start a little company that builds and ships these underwater robot kits.

## Why did people decide to participate even if there was no gold?

We've always emphasised the journey: it's not important what you find. It's important that you're out looking. Eric and I made a promise to each other really early on that our goal would always be to maximise our return on adventure.

## How do you stay true to your mission even when there are chances to commercialise the robot kits?

Our mission is to democratise exploration. I am really clear to everyone involved with the project – investors, employees and our customers – that we are not just about the robot, it's about the citizen science movement we are a part of.

When you're upfront and honest about that and you don't let anyone get involved who has different motives, it becomes self-reinforcing.

## When you use the term citizen science, what is it you're referring to?

IT'S NOT IMPORTANT  
WHAT YOU FIND, IT'S  
IMPORTANT THAT  
YOU'RE LOOKING.



Citizen science democratizes access to tools and it democratizes distribution of people asking questions and collecting data. It's actually not dissimilar from what happened with movies and music.

For example, I have an app called iNaturalist. I used it the other day to snap an unusual looking caterpillar. I had no idea what it was. Within minutes, three people had confirmed it was a swallowtail.

This app is getting millions of research-grade observations from people all around the world. It highlights the two principles of citizen science. First, people who are asking questions are from outside traditional scientific structures. Second, it's using cheaper tools available for people to ask questions such as smartphones and internet.

**Do you think we're close to a tipping point where the traditional scientific community values citizens' research and data?**

Yes. There have been a number of papers that show that citizen science collected data is as valuable as professionally collected data. It's not that citizen

science will replace traditional ways of collecting scientific research.

Tom Hanks doesn't need to create YouTube videos; Hollywood works for Tom Hanks. Instead, what citizen science will do is usher in a new culture of asking questions and collecting data by ordinary people.

**Are there scientific problems well suited to citizen science?**

When it's a problem that has a long data set or one that requires lots of data points. Also one that requires a broad geographic distribution set. For example, what do you do if you need to get samples from all around the world on one day? The only way is with volunteers and amateurs, and the culture of collecting.

**How do you turn a loose network of people into a community engaged around an issue?**

It's not about starting the parade; it's more about getting in front of the parade and giving them a new rallying cry. There are no shortcuts to doing it. You have to be involved and you have to genuinely care. Any type of community building is a lot of

## HACK THE MINDSET: DAVID'S RULES

1

Make sure it's a good story: even if you fail, make sure that it's an adventure.

2

Do it together, not do it yourself: the best makers are the ones who know all the other people to talk to and collaborate with.

3

Be kind: I don't think you can overstate the importance of always being kind.

work. I think it comes down to finding the right "architecture for participation" as [O'Reilly Media founder] Tim O'Reilly calls it.

**You seem to be very honest when you don't know what you're doing but have a knack for asking the right people for help. Where does this trait come from?**

I have a long history of doing things I'm not qualified for. When I was younger, I wanted to learn how to sail and I made this decision that I was going to try and sail around the world. I'd never been on a boat.

From that experience, I learnt that it is possible to make dramatic changes and learn a lot in a short amount of time if you surround yourself with the right people. I think that is my superpower.

**What books or podcasts do you religiously follow and would recommend to amateur explorers?**

I love reading the old biographies of explorers such as Roald Amundsen, a Norwegian polar explorer who was the first one to get to the South Pole. The guy was a maniac. When he was a kid, he used to sleep with the windows open in winter just to prepare. He knew that's what he wanted to do. The odds of him not surviving the expedition were profound, but he still did it.

I'm really captivated by this sense of exploration that humans have carried throughout history. That there's this question of what's around the corner? What's over the horizon? What's next? What's possible? There's this real sense of wanting to push the species forward.

*Research Mia de Villa*