

SYNCTANK
IS THE IDEAS
& INNOVATION
MAGAZINE
FOR PEOPLE &
ORGANISATIONS
WORKING IN THE
ARTS & CULTURE
IN SCOTLAND.

IT IS PART
OF SYNC, A
PROGRAMME
OF ACTIVITIES
THAT INCLUDES
CULTURE HACK
SCOTLAND &
GEEKS-IN-
RESIDENCE.

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SYNC TEAM

ROHAN GUNATILLAKE
ERIN MAGUIRE
DEVON WALSHE
SUZY GLASS

CONTRIBUTORS

BEN TEMPLETON
SARAH TIERNEY
LUCY CONWAY
STEF LEWANDOWSKI
MARCUS KERNOHAN
PHILIP ROBERTS
ALAN SMITH
MARGARET ROBERTSON

If you would like to write
for SyncTank please email:
hello@welcometosync.com

Sign up to our mailing list:
welcometosync.com

Design by Rydo

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LOTTERY FUNDED



6 – IN SYNC

8 – SHOWCASE



IDEAS:

10 – THE BEST TECHNOLOGY IS NO TECHNOLOGY

14 – CULTURE IN THE CLOUD

52 – THE PRODUCER GAP



GEEK DIARIES:

18 – GEEK HOST // LUCY CONWAY

20 – RESIDENT GEEK // STEF LEWANDOWSKI



FEATURES:

26 – THE SOUND OF LUDICROUS AMBITION

31 – CULTURE HACK SCOTLAND REDUX

37 – TECHCUBE // HOW TO HACK AN INCUBATOR



CODING:

22 – HIRING CODERS

48 – TECH TEARDOWN // SHAKEY



DESIGNER PROFILES:

42 – ALAN SMITH

45 – MARGARET ROBERTSON

IN SYNC

How will digital culture
impact on your work in 2013?
Will it be dissonant, fetishised
or feared? Or will this be the
year when the whole arts
and digital thing grows up
and becomes more honest,
progressive and playful?

SYNC TEAM

Prototyping our way to a better place. Sync is interested in contributing to an arts sector that has permission to test new ways of thinking and new ways of doing. Scotland has an incredible wealth of artists, designers, producers, technologists, organisations and infrastructure. Its urban centres and rural communities all represent remarkable and diverse environments in which this conversation between the arts and this thing we like to call digital can happen. To make the most of this opportunity we have to move past working out how to use Twitter to sell tickets to 'young people'.

Let's shift the focus and look instead at how changing technologies and behaviours might help us re-imagine every part of our practice, from our communications to our creative work.

To get there we're going to need more experimentation, education and inspiration. Here at Sync we believe that to do this we need to find ways of approaching digital exploration that feel less like lectures. Enough of being told what to do: more like soft play, incentivising us and supporting risk-taking.

Through our annual 24-hour Culture Hack Scotland event, we've shown how productive and progressive cultural organisations and digital talent can be when they work together with curiosity, generosity and passion. Through our Geeks-in-Residence placements we're learning how organisations can evolve from commissioning digital talent to be service providers, starting instead to relate to them as creatives. Through SyncTank's features, project profiles, opinion pieces and other articles we bring fresh energy and perspectives to all of us working in and around the arts and culture.

In this first print issue we hear about work taking place in locations ranging from Eigg to Australia, we speak to the makers of an extraordinary online sonic work, we are challenged to move beyond our fascination with apps and screens. We take a look back at the magic of Culture Hack Scotland 2012, we learn about the exciting new startup centre at the heart of Summerhall, we hear from two world-class designers. And more.

The pieces you read here are part of a bigger set of articles that you can read in full online at:

welcometosync.com

If you are lucky enough to have one of these limited edition print issues in your hands then we very much hope you enjoy it. When you are done with it, don't just file it or bin it — please do pass it on.

If you have any suggestions for future editions or any other questions about Sync Tank and the programme in general, our inbox is always open:

hello@welcometosync.com

Yours,

Rohan, Erin, Devon & Suzy





STOBHILL

KATE HO & INTERFACE 3

Stobhill is a unique 3D interactive experience based on Edwin Morgan's poem. Set in the spooky, shadowy abandoned hospital of the title, players discover the audio logs of three people with a history within its walls and slowly uncover a sinister and disturbing plot with a dramatic climax.

It's the first 3D project we've undertaken and in order to make the narrative as strong as possible we worked with local theatre group DropHound.

After settling on the storyline, we spent hours looking at hospital layouts. Our sound engineer pulled an all-nighter on Friday night recording chilling sound effects and music, and on Saturday our programmers set about creating a virtual version of our planned hospital. We used the Unity game engine, designed to work across multiple platforms, and we programmed the game in C#.

My first experience of Morgan's work was at school, with the beautifully written Stobhill. Up until then, I had thought poetry was just clever people writing in rhymes about the world — then out of nowhere came this thought-provoking piece of storytelling. We wanted to see whether we could retell such impactful literature in an interactive, immersive manner.

interface3.com/deconstructing-our-experiment-with-immersive-poetry



#UNRAVEL

FOUND THE BAND

#UNRAVEL is an Internet-reactive, story-telling musical installation with an unreliable memory. Members of the public uncover stories from a Narrator's past by choosing vinyl records from his collection and playing them on a custom record player. The stories are soundtracked by robotic musical instruments and evolve and warp according to everything from the local weather to opinion on Twitter.

Inside the record player we have a Mac Mini running five different software elements: a Processing program creating the dials on top of the installation; Python scripts analysing weather information and carrying out sentiment analysis of

live Twitter feeds; an enormous Ableton Live set containing the narration and MIDI files for all the music (320 minutes); a MAX/MSP patch that analyses audio coming from the record player to determine which record is playing and where in the record the needle is; and a MAX patch that coordinates all these elements through a mixture of OSC and internal MIDI. In addition there is an Arduino that is connected to an electronic barometer and three passive infra red sensors to detect body movement. The individual instruments use over 100 of FOUND's own custom robotic beaters and levers connected to J-Omega MIDI boards.

www.unravelproject.com

ME & MY SHADOW

JOSEPH HYDE

Me and My Shadow is an installation project combining telepresence and motion capture. I think most people know the second term — it means capturing the movement of the human body to control an avatar or character (usually). The first, 'telepresence', basically means full-body teleconferencing. Here of course we weren't sending normal video data, but a complete 3D 'capture' of the body.

It's first showing happened in July 2012, with installations in London, Paris, Brussels and Istanbul. Each one was quite a simple little box (I called

them 'portals') designed for a single user. You could go in and instantly become a 3D avatar (not an arbitrary shape but an actual 3D capture of your body) in a virtual space, where you could meet and interact with users in the other three cities.

I worked very closely with a programmer, Phill Tew, he is also an artist and brought some really good aesthetic judgement to the project. The main tech we used was the Microsoft Kinect. The idea is that it should be quite 'scaleable' — we've only had 4 portals working so far, but there's no reason there couldn't be 10, 100, 1000!

madeshadow.wordpress.com





THE BEST TECHNOLOGY IS NO TECHNOLOGY

Isn't there more to life than
apps, likes and iPhones?

BEN TEMPLETON



↑ Image by Thought Den

At the time, it felt like a flip of a coin would decide whether I studied Theatre or Media Production. Both disciplines are essentially about communication and experiences that move or entertain us. In the end I was swayed by rows of silver Apple Macs and something called the internet that lots of people were talking about. But over the years since I've never let go of the idea that when it comes to experiences, we're all largely looking for the same thing. Whatever the medium, from a traditional theatre performance through to a multi-platform digital extravaganza, we need a human connection; a level of emotional resonance that gives the experience real value. And with the almost limitless possibilities presented by constantly evolving communication technology we're in danger of not seeing the wood for the trees.

It's incredible to think that in only 30 years we've gone from typewriter to touchscreen and from dog-eared A to Z to the all-seeing Google Maps. As everyday objects become connected, interactive and intelligent, the possibilities can be both intoxicating and overwhelming. I can't help feel that technology, in all its shiny glory, can sometimes steal the show. ▶



▷ Designing any experience, from slicing bread to watching theatre, requires a solid understanding of what people want and the most appropriate way to provide it. While the sharpest knife is no doubt a pleasure to use, the meaning we get from slicing bread is that there will be a nice sandwich to eat at the end. If the bread knife could play music, take photos and tell you the weather forecast, wouldn't that distract you from making a nice sandwich? At Thought Den we make digital things for web, mobile and installation that help organisations entertain and educate their audience. Besides indulging our appreciation of bread-based snacks, we regularly ask ourselves — how can we make the technology invisible?

This year we helped the world's oldest provincial zoo to adopt some of the world's newest gesture tracking technology. 'Zoom' invites visitors to strike animal poses in front of a large screen to unlock images from the archive relating to that animal. Microsoft's Kinect is capable of far more complex things than detecting an animal pose but we went with a simple premise; getting people to monkey around. We've found that the more hidden the technology, the more room there is for natural behaviours to flourish.

Our goal with 'Magic Tate Ball' was to give people a reason to engage with Tate's collection by connecting

↑ Image by [slimmer_jimmer](#)
(Creative Commons)

artworks to their day to day lives. This wouldn't have been possible without a smartphone that knows the date, time of day, precise GPS location, local weather data and ambient noise levels. Technology had a very important role to play, but was only very quietly integrated into the experience. A user simply shakes their phone and is presented with a beautiful piece of artwork that relates to their surroundings. A funny or facty Twitter-sized tag explains the connection, sometimes posing open ended questions to help the user explore other meanings. With such fantastic content it is less surprising the technology aspect could play a backseat role; part of the app's success is the simplicity of the idea. The artworks are already packed with quirky stories and untold details that people will find interesting. The trick is to make it as easy and fun as possible for that engagement to occur.

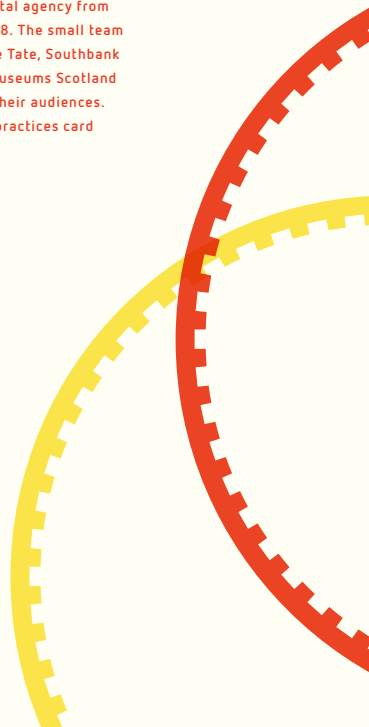
Tom Cruise's balletic swiping in *Minority Report* is a surprisingly enduring vision of the future. It looks pretty cool, which is probably what Spielberg wanted, and Tom seems to get quite a bit done. Heads-up displays in cars and augmented-reality contact lenses are part of the next wave of more ambient, user-centered interfaces with the somewhat dubious goal of allowing us to multi-task. If this is the future, I'd like to make sure there is an off switch. Five minutes on any high street shows us the sorry picture of an always-on world: zombie-texters, heads down, shuffling forwards, lost in their digital bubbles. My fear is that information over-load and hyper stimulation will shrink our attention spans to such a degree the world will be overrun with gibbering idiots.


But that said, the idea of no screens, or an omnipresent screen, is quite interesting. At first there were no screens, then a single screen in the corner of the room and now we have multi-screen viewing. Perhaps it's not that long until we come full circle and the concept of a screen is lost entirely; every surface being used to browse information. Interactive reviews and comments on the back of a book; recipes projected on to a kitchen surface; fashion tips on the changing room door. There's a very real appetite for contextually relevant content — the right thing at the right time. Indeed, smartphone apps are all about performing specific and singular functions for a streamlined user experience.

Yet despite a growing intelligence and sophistication our relationship with technology remains incredibly fragile. At times my phone knows me better than I know myself. It is often the last thing I look at before bed, and the first thing that swims into focus each morning. Even in a relationship as intimate as this it can sometimes feel like the only way to make an iPhone do what I want is to press my finger right through the screen, or screw it up in a ball and hurl it across the room. For all it's ergonomic prowess and computing power, this slice of the future can quickly become inadequate in the face of organic, impulsive, random human behaviour.

Let's not forget our bodies are far more sophisticated than any gadget on the market. We're only 30 years into a revolution that has already massively changed the way we do things. With this enormous power, the most important thing is to keep our eyes on the prize — what fundamental human need or desire are we appealing to? And what is the simplest, most effective way to achieve that? I think the first step is to ignore the technology all together. □

Ben Templeton is the co-founder and Creative Director of Thought Den, an award-winning digital agency from Bristol founded in 2008. The small team help organisations like Tate, Southbank Centre and National Museums Scotland engage and diversify their audiences. In his spare time Ben practices card magic and capoeira.





Do digital technologies hold the key to preserving cultural heritage while empowering traditional owners?

SARAH TIERNEY

CULTURE IN THE CLOUD

↙ Martumili artist Kumpaya Girgaba points out the stock route wells in the collaborative painting *Canning Stock Route Country*. Photograph by Monique La Fontaine, 2012. Courtesy of FORM, the Canning Stock Route Project.

Two elder Aboriginal women sit in the dust, hand painting on a canvas that stretches between them. At a nearby makeshift table, three young Aboriginal women tap away on smartphones. They are on Facebook. These women are all Martumili artists or filmmakers, and only one or two generations separate them. The elder generation were born and grew up 'on country' and began the practice of painting on canvas. The current generation were born in hospital and raised in communities, balancing modern influences with traditional culture and law. This rapid transition from the bush to the cloud must make Aboriginal Australians one of the most innovative cultures in the world.

We are at the Martumili Art Centre in Newman on the edge of the Pilbara Desert, the red dusty heartland of Western Australia. I am here with FORM, a not-for-profit arts organisation that leads cultural and industry development through thought-leadership and creative capital. This is the first in a series of community consultations to establish a legal, cultural and technological framework for an ambitious digital archive of materials amassed in the course of FORM's Canning Stock Route Project.

The Canning Stock Route is a 2000 km trail that cuts across Western Australia's red desert interior. It is the world's longest and reputedly most dangerous cattle stock route. It was constructed by Alfred Canning in the 1900s to increase the trade of cattle from the north to feed a gold boom in the south. However, the Canning Stock Route was forged by brutal methods. It also

crossed the traditional lands of more than 20 Aboriginal language groups, and wells — created a day's walk apart — desecrated sacred waters at the very heart of indigenous culture. The route scattered Aboriginal communities, many ending up in stations and settlements far from their traditional lands. Like much of Australia's twentieth century cultural history, the white story was a source of deep shame, and the black indigenous story remained largely unknown.

That changed in 2006 when FORM initiated Ngurra Kuju Walyja: The Canning Stock Route Project — translated as One Country, One People — which sought to explore the history of this land from an Aboriginal perspective. The project brought together over 200 elders, artists and community members from 10 language groups who, despite the distances that now separate them, are related by marriage, kinship or blood. The resulting exhibition of paintings, film, oral histories, photography and interactive multimedia went on to break attendance records across the country. Dark stories of first contact and conflict are overwhelmed by the vibrancy of culture, connection to land, spirituality, the uniting of diaspora, and the development of an Aboriginal art movement which has taken the world by storm. The exhibition was recently acquired by the National Museum of Australia as a 'national treasure'.

Between 2006 and 2011, the Canning Stock Route Project and exhibition amassed a vast store of creative and cultural works which must rival any single collection in the world. Aboriginal society is an oral one, with cultural knowledge preserved and passed on in stories, song, painting and dance. And while Aboriginal peoples are one of the most intensely researched in the world, this knowledge has consistently seeped out of communities in the hands of white anthropologists and researchers, to be stored in museums, libraries and universities far from the reach of most indigenous people.

A new phase of the Canning Stock Route Project aims to reverse this decades-long trend of extracting cultural knowledge from communities. Recognising the ubiquitous reach of digital technologies into even the most remote communities, FORM will repatriate the project's materials through a vast digital archive and range of web and tablet applications. ▶

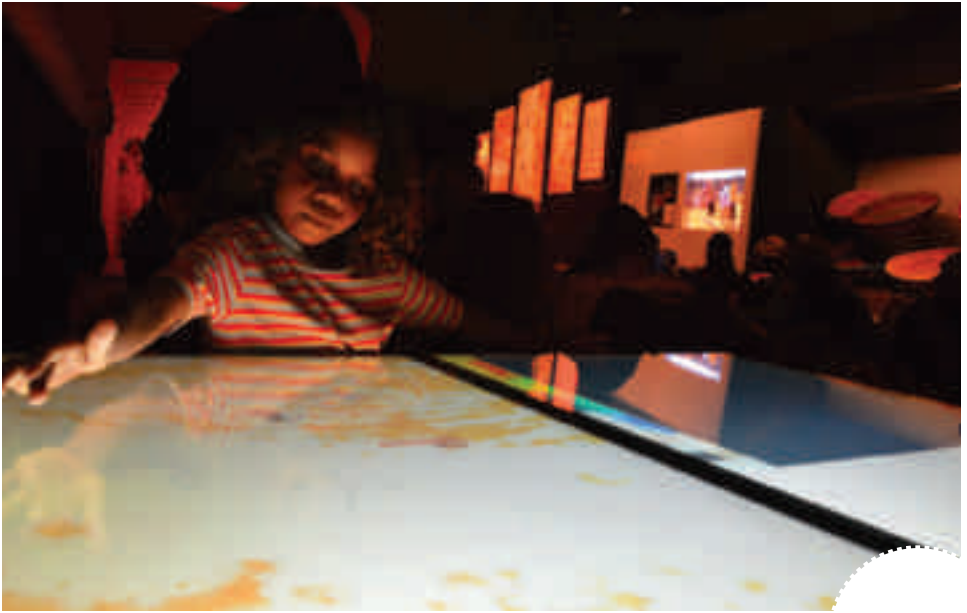
▷ A handful of bespoke content management systems exist with cultural protocols at their core, including Mukurtu developed at the Centre for Digital Archaeology at UC Berkeley. In these platforms, technical experimentation and innovation intersects with cultural context, research ethics and ownership of cultural property. Indigenous Cultural Intellectual Property (ICIP) protocols, widely acknowledged across Australia but not yet adopted into law, seek to recognise indigenous people's communal interests in tangible and intangible aspects of cultural practice. The architecture of the Canning Stock Route Project archive will rigorously reflect ICIP protocols, acknowledging traditional owners and determining which materials are 'open' for public use and which are closed, held as culturally sensitive only for the benefit of communities. Aboriginal communities have become understandably wary of the potential for their knowledge to be misappropriated or misused. FORM, in partnership with ArtsLaw Australia and arts centres across the Pilbara, aim to place ownership of this cultural knowledge firmly back in indigenous hands.

The ambition is that the Digital Futures project will become a living archive, owned and administered

by community, with the younger generation using and adding to its content to create deeper cultural heritage value and new revenue streams. FORM's immersive, content-rich web and tablet apps will act as a portal for indigenous and non-indigenous alike to explore the archive and understand the region and its people. The repository will be a work in perpetual progress, and finding funding partners and archival hosts with this kind of long-term vision may prove its greatest challenge. However, if successful, I believe the Canning Stock Route Project will become a world-leading example of how to collaboratively record and make accessible indigenous cultures, whilst simultaneously preserving and invigorating them.

We are now online, mobile and sharing everything, everywhere and everyday. We carry the world with us on smartphones and tablets. As armchair tourists, we can now explore distant cultures, living and past, to gain a greater appreciation and understanding of what separates and unites us. As a physical tourist, the digital world can be layered over the real world to create deeper, richer experiences to educate as we explore. For at-risk communities or environments, digital holds the potential for us to explore and care, but from a safe distance.





And new technologies enable indigenous cultures with tools to improve self-sufficiency, self-governance, human rights advocacy, education, and general economic conditions. In terms of cultural heritage, digital provides mechanisms to record and pass on knowledge, diluting a largely culturally homogeneous media and connecting with younger generations on their own digital turf.

I am not celebrating a cultural heritage digital utopia just yet. Although rapidly changing, the power, money and technology lie predominantly in non-indigenous hands. It is absolutely vital that indigenous peoples can actively assert dominance over the reflection of their own knowledge, stories and history. It must be their voice and their experiences that are digitally amplified. If we do not enable that, we risk following in Canning's footsteps: blind imperialist pioneers, distorting and misrepresenting indigenous cultures with every step. □

Sarah Tierney is an Executive Producer of film and television documentary and digital content, with a focus on international issue-driven work. Her productions have ranged from broadcast series to feature documentary to multiplatform slates, including Oscar-nominated, BIFA-nominated, Grierson-shortlisted and twice BAFTA-winning work. With a background in creative content start-ups, Sarah also has strong experience of corporate governance and creative leadership. In 2011, she became a Fellow of the Royal Society of Arts. Sarah was based at FORM as a Fellow of the International Creative Entrepreneurs Programme.

www.sarahtierney.me

www.form.net.au

www.canningstockrouteproject.com

www.internationalcreativeentrepreneurs.com

← Canning Stock Route Project co-curator Hayley Atkins with Martumili artists Mulyatingki Marney and Jartarr Lily Long with Lily's painting of Tiwa (Well 26). Photograph by Morika Biljabu, 2008. Courtesy of FORM, the Canning Stock Route Project.

↑ A child interacts with the One Road multi-touch table inside Yiwarra Kuju: the Canning Stock Route. Photograph by Tim Acker, 2011. Courtesy of FORM, the Canning Stock Route Project.

GEEK HOST // LUCY CONWAY

Why Eigg Box is ripe and ready to welcome a Geek.

LUCY CONWAY

I first heard about the [Geek in Residence programme at an AmbITion Scotland event in Perth](#) and instantly thought that would be something I'd love to bring to Eigg Box... one day.

The idea of Eigg Box is that it will be a cultural enterprise hub, bringing together local creative businesses with artists from around the world. Established as a self-sustaining social enterprise, Eigg Box will be a powerhouse of creative activity, entrepreneurship, inspiration and collaboration. However, unlike its urban counterparts, Eigg Box's eco-built studios and creative workspace are on the Isle of Eigg; a community-owned, renewably-powered island, off the north-west coast of Scotland with a population of less than 100. Eigg Box turns on its head the notion that a centre of entrepreneurship and creativity needs to be at the centre of population.

Eigg Box makes the remote central, so suddenly the idea of having a 'geek' to work on developing that idea at an early stage, rather than further down the line when the building would be built (target 2015), made sense. Eigg Box is about building and supporting a creative community, and while a physical building will be a vital

part of that, the networking, collaboration and sharing of ideas and solutions is just as, if not more, essential. So having a Geek in Residence before so much as a low impact eco-brick had been laid was too tempting an opportunity to pass by.

One simple and straightforward application process later, and lo, Eigg Box is a host organisation ... along with some very impressive, not to say well-established and respected other organisations. Perhaps what appealed to both Sync and indeed to the Geeks who applied was exploring the idea that you could build in geekery at first stages; especially in a project which really tested the ideas of boundaries, of the relationship between urban and remote, of community and also what it means to work as a creative in a world where choices of working digitally (or not) are so wide and varied.

Eigg Box has been matched with Stef Lewandowski, who I'd hadn't come across before but, as it turns out, with whom I have a lot of colleagues in common and all of whom said the same thing. He's got a million ideas, works very fast and flexibly and likes making things fun and useful. Sounded perfect.

Our first phone call confirmed it; an hour packed full of ideas, areas of common interest and a shared ambition to explore a variety of projects that build Eigg Box's community both on and off-island. "What did I know about 3D printing? Did I know he used to run a record label, and was/is a photographer? Had I come across this, that and another and another of his projects"

Then my turn. A bit about Eigg's recent history — buyout, renewable electricity scheme and how Eigg Box came about. A quick canter through the island's creative businesses; 18% of folk on Eigg make their living all or in part by being creative (the Scottish average is 8%) and many of our visitors come to play music, write, paint, take pictures etc. Eigg's creatives include artists, knitters & textile makers, web & graphic designers, wood wizards and musicians from traditional to heavy metal and acoustic neo-folk indy singer-songwriters! Eigg Box will also be the home to Eiggly Bread, the island's very own bakery and outside caterers using the best of local ingredients to make extraordinarily tasty food. All of this seemed to be like sweets to a small child. Even the prospect of the journey to our fair isle with its timetabling and

weather challenges seemed to excite him.

So, what next? A recce visit as part of the Fence Collective's Away Game to see Eigg at its musical busiest and meet as many people as possible. Then, if Stef and I can keep our post-festival excitement under control, a get together with Suzy from Sync to plan what we're going to do for real and when. Himself will be 'in residence' later in the year, but to do what specifically? ...you'll have to wait 'til the next eigg-citing instalment. (...thinks, maybe we should include an app for creating puns involving the word Eigg??) [▶](#)



RESIDENT GEEK // STEF LEWANDOWSKI

Stef begins his residency
on the Isle of Eigg.

STEF LEWANDOWSKI

▷ Hacking an island?

It's not often you get an opportunity to do that, so I'm pretty excited about going to the Scottish island of Eigg and being one of the first geeks in residence on Sync's new cultural/technology project.

Here's a collection of initial thoughts about what I might do with my time, a bit about my process, and what I hope will come out of my time at (the as-yet purely virtual) Eigg Box.

Why am I doing this?

I've just come out of working very hard for three years on a web video startup (I didn't design the sales site btw). For the uninitiated, have a read of the [#startuplife](#) hashtag on Twitter. Long hours, too much coffee, lots of ups and downs, but a singular focus on doing one thing really well and getting a successful business off the ground. We did just that, raised a good amount of investment, and it was time for me to change modes.

My new thing is 'playfully hacking on things that matter' and I'm spending my time throwing the net wide, doing a variety of interesting projects with a variety of interesting people. Here's a bit about what that means ...

'Playful', as in not really worrying too much about the end results of making something being something that could turn into a business, or having some idea of an immediate return on investment. I like to approach things with a bit of humour, lightness and just the beginnings of an idea on what could happen, then let conversations and play determine the result.

'Hacking', as in the positive use of the word, not doing illegal things, has been getting a bit of attention recently as a way of rapidly experimenting with solutions to problems, or to learn about something in a 'take it apart and put it back together again' way.

I've spent the last few years getting good at making digital things really quickly. You'll often find me at 'hack days', where people get together to make interesting little experiments over a short period of time, often around 36 hours. I'm researching this stuff at Sketching with Code and you can see some of the things I've hacked together in the past.

And 'things that matter', as in projects that have some kind of output other than just 'make lots of money' or 'solve a first world problem for people with iPhones'.

I gave a talk recently at the inaugural Find Better Problems event, and it seems that a fair few people are getting a little tired of people working in technology focussing all their efforts on getting people to see more ads, buy virtual products for an online game or work out a way to compete with Tim Berners Lee's 'Anything you can do I can do meta'.

I think there's a lot that cultural organisations can learn from creative technologists who work in this way, and vice versa, so I'm bringing this 'playfully hacking on things that matter' idea to Eigg, and I'm keeping my mind open to what might happen as a result.

I'll spend my first weekend on Eigg meeting Lucy and friends, talking to Suzy about some of the ideas that are floating around and coming up with others. Possibly we'll have a few hacks to show by the time I come back on Tuesday. □

Lucy Conway is a freelance creative project manager. She's the driving force behind Eigg Box, a cultural enterprise hub, bringing together local creative businesses with artists from around the world.

www.eiggbox.com
www.isleofeigg.org

Stef Lewandowski is a designer, software developer and startup person. His work focusses on playful approaches to technology and its cultural, social and political applications. He playfully hacks on things that matter and lives by the maxim 'create something every day'. Stef is currently researching how and what cultural organisations are learning from hacker culture.

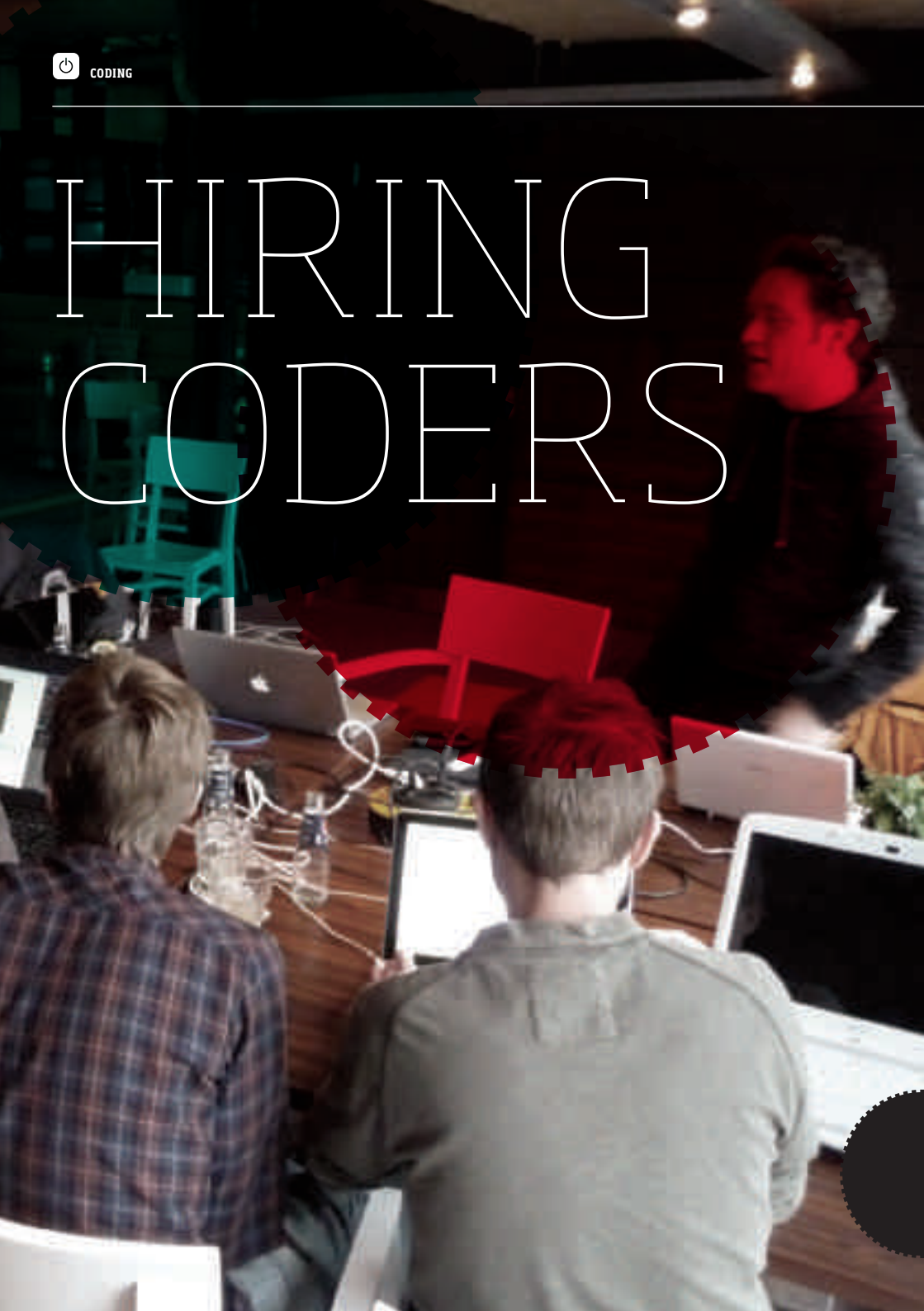
www.stef.io
www.sketchingwithcode.com

↩ Eigg — the beach by the pier
 Photo by Stef Lewandowski



CODING

HIRING CODERS



In the technical world, weird and wonderful tales from the job market are a gossip favourite for both employers and employees. It's difficult to pinpoint exactly why the business of hiring developers is so tricky, but we thought it would be fun to see what the local job market in Scotland had to say about the issue and share some of their top tips for anyone looking to hire coders.

DEVON WALSH

Kate Ho is CEO of mobile educational games startup Interface3, while Jim Newbery is an experienced freelance mobile developer currently working for fantasy sports company FanDuel. Rory Fitzpatrick is a veteran developer currently working at Storm ID. Rory Gianni is a freelance web developer and Rails trainer.

Some people say that there is a shortage of technical talent pretty much everywhere — do you see that in Scotland?

Kate Ho: I think there's a shortage of good technical talent everywhere, yes. That includes Scotland too!

Rory Fitzpatrick: Yep, there are plenty of 'developers' out there but finding good ones is hard. The company has to work just as hard to sell itself as the job seekers.

Rory Gianni: I have not had the experience of hiring, but I would agree there's a lack in Scotland.

Jim Newbery: When I read that, I always think it's a little simplistic. What I've seen in Scotland is a shortage of specific expertise and experience in some areas, but certainly not a shortage of talent. Scotland has some excellent technology degree courses which consistently produce talented graduates and no lack of passion, but it can be very hard to find more senior experts with exactly the skills you're after.

Have you ever had trouble finding employees — or, conversely, finding work?

RF: Not really in the past.

RG: When I began freelancing things were pretty slow but I guess that was to be expected. At the moment I feel I've found my feet and I've been busy for a while now.

KH: I think there's a challenge in finding good employees! That's true of any firm and any sector. When people say 'developer' they often just think of one homogeneous group. But in reality, there are lots of different types of developers. Some are good at doing front-end things, some at highly mathematical / logical problems.

JN: Things were not so good in 2000/01 during the dot com crash and I spent a few months moping around and soul-searching. Since then I've spent much of my career as a contractor working for various media organisations in London, and for the last ten years finding web developer roles in London has not been difficult for someone with good experience. In Scotland, and certainly in Edinburgh, many of the best jobs are to be found through contacts in the thriving tech community here, so it can be helpful to attend events like TechMeetUp and Refresh Edinburgh and get to know the people that work in the industry. ▶

▷ **Have you ever used a recruitment consultant?**

KH: No. We prefer to recruit directly or via word of mouth.

JN: Yes, both for finding work and for hiring developers.

RF: As a job-seeker yes, but I've never been offered a job through one.

RG: No.

How was your experience?

JN: Mixed. The relationship between recruitment consultants and the tech community can be fraught, but there are potential benefits for both candidates and employers. A good recruitment consultant can take on a lot of the time-consuming work of marketing, screening and dealing with candidates. The difficulty is making sure that the consultant's first priority is finding the right candidate for your organisation, rather than meeting some arbitrary internal target.

As a contractor, I tended to view recruitment consultants as rather obstructive, but they continue to manage much of the process of hiring consultants in larger organisations, so they can't really be avoided.

RF: They're sales guys with no in-depth knowledge of our expertise or the kind of people we are and the kind of companies we want to work for. Lists of keywords are the only way past them.

Any interviews gone weird?

KH: No, not really. I think it can get really awkward if you don't think

about the questions properly beforehand. But no, not really.

JN: Of course — regularly. I have had someone 'go to the toilet' and walk out the front door half-way through an interview (I'm not a scary interviewer at all). I have been sent to interview for completely the wrong job by a recruiter. At my first interview in London as a graduate I was nervous enough to try drinking from a glass of water while still talking. The resulting choking fit resulted in a ten-minute interview break and I never really regained my composure. I didn't get the job. The worst though was the candidate who insisted on discussing his very specific sexual inspirations in response to a question about problem solving.

RF: An interviewer once got his shirt off and showed me where the paramedics shaved his chest hair because they thought he'd had a heart attack. Turned out he'd just been over-stressed from launching twibbon.com.

Is it possible for a non-technical person to hire developers?

RG: This depends on the context but I don't see why not.

JN: Not by themselves, no. If you are hiring the first developer in an organisation, that's a serious strategic hire that will have a big impact. That developer will be taking on a lot of associated work, including systems

administration, business analysis, user research, project management, quality assurance, customer support. That needs to be recognised and made explicit in job descriptions. If the person responsible for hiring them has limited technical knowledge then it's very hard to make informed decisions.

RF: It's possible for a non-technical person to have a valid opinion about a developer from their perspective, but it's almost impossible for them to evaluate a developer on their technical merits.

KH: I think it's possible, but they might need to prepare a little more, that's all. There are lots of books and advice online for people hiring developers, so there's no shortage of information. Search around, speak to other people who have hired developers.

What advice would you give to non-technical people needing to hire developers?

RG: Have a good idea in mind of what you want the developer to do. Don't spend time over the details of which technologies they should know. Instead spend time understanding the types of developers and which one you need. Ask a couple of developers what sort of person you need.

KH: One of the best ways to distinguish between developers is by describing a simple task and asking them how they would go about

implementing it. For instance, in the past, I've described a simple game and asked the candidate to write out what they think is the logical flow of the program on a whiteboard. That sort of exercise is really enlightening, as you can see how they cope with being able to break down a task. You want to see their thinking — how logical it is, how easily they reach the same conclusion as you do, and so on.

JN: For any but the smallest projects, I think an organisation's first technical hire should not be a developer, but a product / programme manager with technical knowledge who can then be responsible for hiring permanent developers, or briefing freelancers or consultancy companies to carry out projects.

RF: Find a technical friend and ask them to help with the hiring process — pay them if you have to. It will be worth it in the end, rather than hiring someone that's shit.

Do you think there is a right / wrong way to hire a developer? Any tips you might have for the do's and don'ts of hiring them?

JN: Absolutely. There's plenty of nonsense out there. My overriding advice is to treat the hiring of developers like any other hire. It's very much a two-way process and it is extremely important that you allow candidates the opportunity to see what it will be like working

with your organisation. My overriding advice is to appreciate that the role of a developer is far more than just writing code. Clearly technical skills are vital, but a good developer will also be able to communicate clearly and in plain terms about the software they are developing. The best indicator of technical expertise is not qualifications or a list of skill buzzwords, but examples of work. Someone who gets involved in the technology community in some way — through hack days, meetups or talks — is also likely to be extremely committed to their work. Again, you should encourage and support this.

RF: From my experience there is no right or wrong way to hire. It's more about the company you're hiring for. Smart developers will smell a company that doesn't respect or value what they do as soon as they enter the building, and likewise will recognise those that do very quickly (usually before they've even applied for the job). Do get them to write code, and get more than one opinion from actual developers. Don't give them a series of questions from a Microsoft exam to which the answers are wrong (this happened to me, needless to say I didn't get the job after pointing out that the answers were wrong...)

RG: Read your job description. Remove anything that could cause

confusion. Think about what message it sends out. Do not religiously stick to a check-list of technologies they should know. A friend of mine who is familiar with CSS didn't get hired because he had not used a newer version of CSS. This is ridiculous. Developers will always need to do things they have never done before. This makes ability and willingness to learn an important trait.

KH: Do prepare your questions beforehand, ask to see their portfolio and question them about the exact parts they implemented. Don't ask them vague questions or make them feel unnecessarily uncomfortable.

If you were hiring yourself, what is the one question you would ask to get a perfect answer?

KH: Given a bit of legacy code that isn't working (for instance, a web or mobile app), how would you go about debugging it to make it work?

RG: What do you like (or not) like about development?

JN: Please describe the no-ball rule in cricket in detail.

RF: Developers are often introverted and/or shy, so getting the perfect answer is a fool's errand... □

Devon is a Canadian publisher living in Scotland and a member of the Sync team.

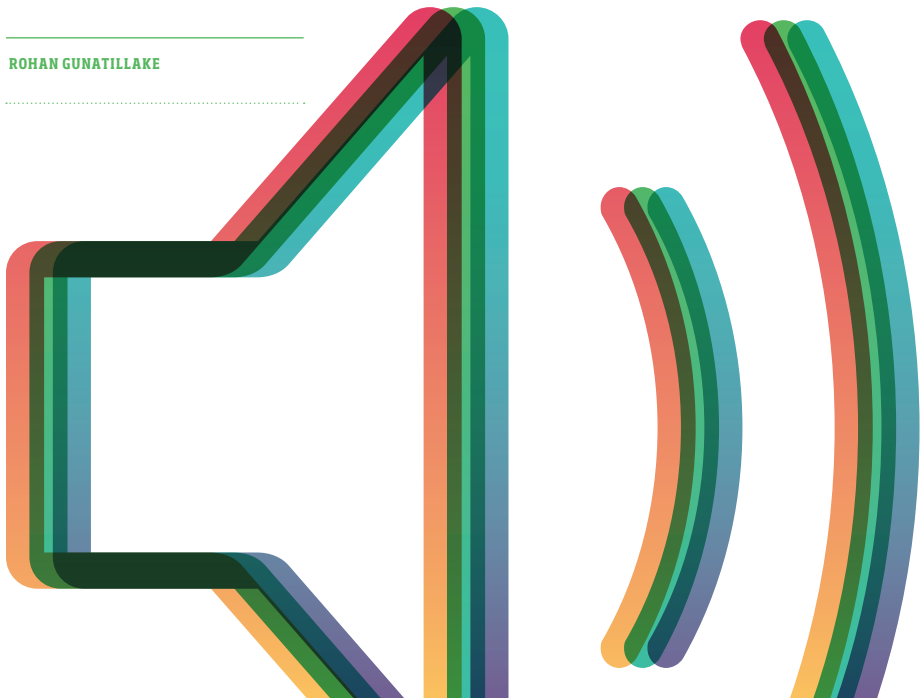
@devonwalshe

THE SOUND OF LUDICROUS AMBITION

What do a Californian cocktail, a chamber orchestra and Twitter have in common?

Daniel Jones & Peter Gregson talk about The Listening Machine — the remarkable six month long piece of live music that sets a new bar for the sonification of social media data.

ROHAN GUNATILLAKE



"I hate being called a technologist. It sounds like all I do is plug things in." Sitting on a comfortable leather sofa in Central London, Daniel Jones is crackling with energy. A prolific maker of extraordinary and mostly sound-based things, Daniel is sitting beside the equally bespectacled Peter Gregson. Gregson is a cellist and composer increasingly known for his insight and work at the boundaries of classical music and together Jones and Gregson made *The Listening Machine*, a remarkable six month long piece of music that is generated by the activity of five hundred Twitter users with the composition comprised of thousands of phrases recorded specially for the project by Britten Sinfonia. "We might let on who the five hundred are when the project is over. Or we might not, we've not decided yet."

While it is too early in the day for a cocktail, the pair are in celebratory mood. *The Listening Machine* is a major new commission for The Space, the digital content platform jointly developed by Arts Council England and the BBC and it is beautiful. The core idea of the project fell into place started when Gregson was talking with his friend Abdur Chowdhury, then Twitter's Chief Scientist, over cocktails in San Francisco whilst there to give a concert. Together they riffed on the question, "what does Twitter sound like?" The way he was describing these unimaginably large data sets... it was the same vocabulary that we use to describe music. That's when it started getting really interesting." Two years later, The Space commission enabled the project to move out of Gregson's mind and into realisation.

The result — available at thelisteningmachine.org — is a seamless interplay between music and technology where it is not possible to see where one begins and the other ends. "To be honest," remarks Gregson, "I'm pretty bored of people separating the art bit from the tech bit. And especially when they see me only as the art person and Daniel only as the code person. We're co-composers. It's just that we work with slightly different tools."

The essence of the *Listening Machine* is that it turns tweets into sound but that simple description belies the enormous complexity of the piece. At a recent event in Manchester where he presented the work, Gregson remembers that "someone came up to me afterwards and told me that they had done something just like it as a hack over a weekend. And I just had to tell them that frankly they hadn't, they really hadn't. Yes it's based on a simple idea but the result is thanks to an enormous amount of commitment and ridiculous attention to detail." A regular attendee of hackdays himself, Jones agrees that "there is incredible value in using hacks as a way to blow the lid of what you might like to do and try some experiments. But to make the most remarkable work that we can we also need to move past the hack mindset and take those experiments into a realm of ludicrous ambition."

The conversation moves onto how there have already been previous Twitter data sonifications and again Jones fizzles with insight. "The actual realisation makes such a difference. Which is why I no longer get put off if I have an idea and I find out that someone's already done it. ▷

▷ A year ago I would have bemoaned the fact it's already been done. But now I realise that there a million different instantiations of the idea and yours is going to be radically different and if you pay attention to the execution and the production quality it will be effectively a whole different thing. The idea that something has already been done is a really important thing to be able to mentally escape from."

So to the thing itself. The Listening Machine uses the tweets from 500 UK-based Twitter users and uses them as the basis of a continuous six month piece of live music that will end in November this year. While containing some random users, the majority of the 500 were chosen as a representative group across the eight topic classifications used by the BBC News website (e.g. sport, health, politics, business, entertainment & arts etc) and when any of these users tweet, that message is analysed for sentiment (positive, negative, neutral) and prosody (that's rhythm of speech if you were wondering). The sentiment is used to determine the mode and tone of the musical output and the prosody of the text is decoded to become the score itself. And by preserving the rhythms and dynamics introduced by punctuation and stress, the system can produce surprisingly structured-sounding motifs from otherwise simple sentences. And the overall result? A piece of generated but genuinely live music that is the result of nothing less than alchemy — turning the noise of Twitter into a thing of beauty that draws you back to it again and again.

"All composition is based on rules," Gregson interjects. "What's different about this piece is that we control the

rules but not the tweets which ultimately determine what the piece sounds like at any one time. And since we had to make a piece of live music that lasts six months, to make it sustainable it needs enough variation so that it stays interesting, but not too much so that it results in a big brown mess. It isn't six months of music, it's six months worth of 'potential music'. That's why I set the orchestration the way it is, so as not to confuse it further with too many elements. And it works!"

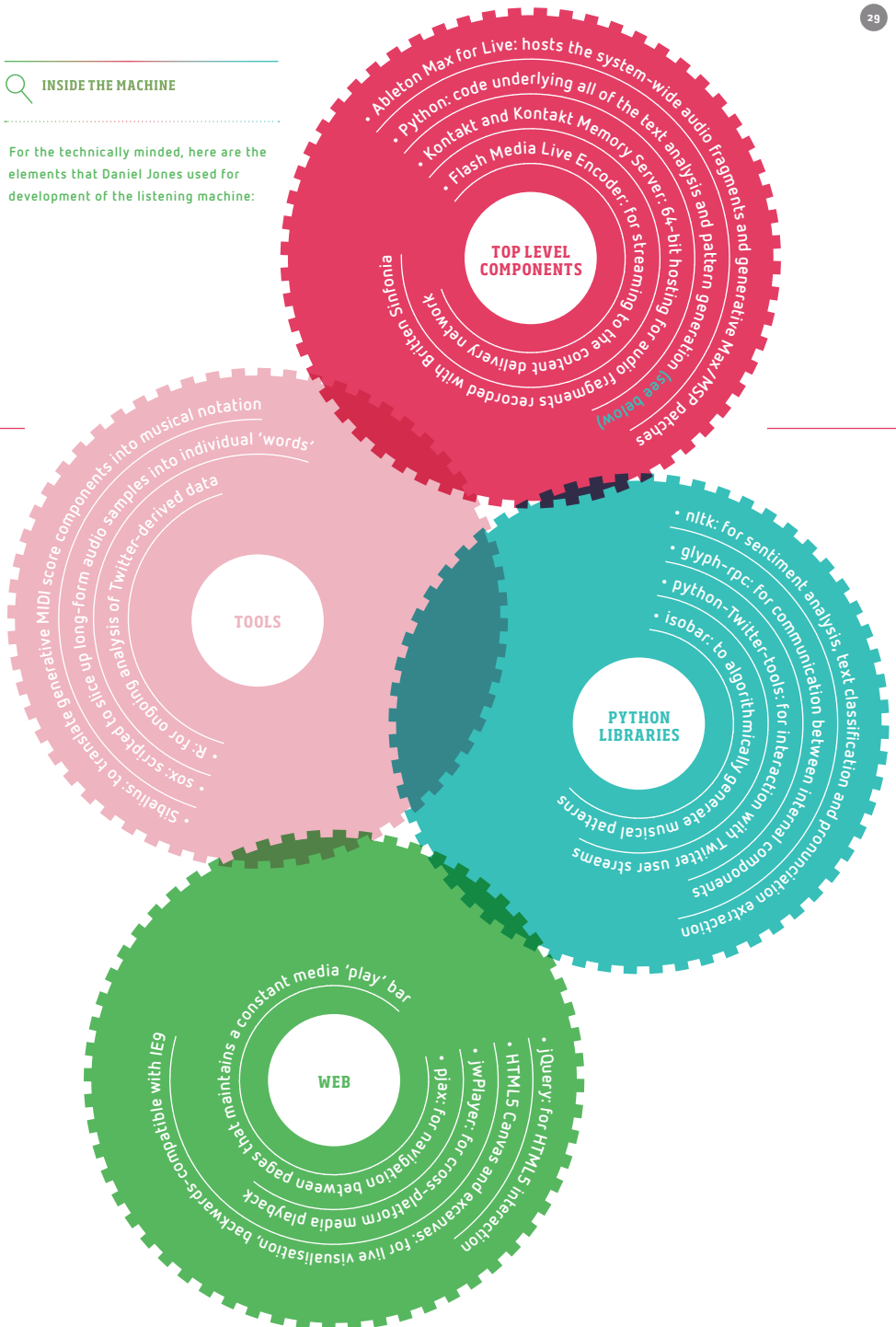
Recognising that the vast majority of data sonifications tend to work with electronic sound outputs, Jones and Gregson were insistent that they work with real human elements as the beating heart of the musical output, thereby matching the humanness of the thoughts and activities of the Twitter users. They worked with twenty musicians from Britten Sinfonia to create a database of sounds which matched the vast number of potential elements based on Jones' sophisticated text and sentiment analysis system. "We ended up having 43,801 audio files coming in at 60 gigabytes... which is quite a lot." Sharing a joke at the scale of the work, Gregson adds that, "it was ironic that the process had the musicians, myself included, working like machines, often just playing single sounds in a way that made no sense at the time of recording. The result is something much more fluid, much more musical."

Spending time with Jones and Gregson is a constant reminder of how artificial the divisions between art, technology and digital really are, but nevertheless those divisions do remain in the minds of many. When asked about the challenges traditional arts organisations face ▷



INSIDE THE MACHINE

For the technically minded, here are the elements that Daniel Jones used for development of the listening machine:



▷ and how they tend to engage with them as creatives, Gregson smiles and shrugs. “Organisations and institutions really can no longer afford to look at this thing called digital and just tack it on the side. There’s a lot of emphasis today on audience development which implies that the reason that people aren’t going to performances is because they, the audiences, are wrong. Surely the focus should be much more on making more relevant work? Hopefully projects like ours show that the experience of work can still be of high quality whilst being very different.”

“People look at my background as a creative programmer and just see the code,” adds Jones. “There’s just no way for me to get an ‘in’ with an organisation because all they think I can do for them is build their website. To engage with people like Peter and me you have to collaborate — and you have to collaborate way outside of your comfort zone. □

Born in Edinburgh in 1987, Peter Gregson is a prolific cellist and composer, the Artistic Advisor to the Innovation Forum at the New England Conservatory, Boston and claims a professionally aggressive carbon footprint. He has collaborated with many of the world’s leading technologists, including Microsoft Labs, UnitedVisualArtists, Reactify and the MIT Media Lab. You can find him at petergregson.co.uk and [@petergregson](https://twitter.com/petergregson).

Daniel Jones is a doctoral researcher at Goldsmiths and has published work on music theory, creativity and systems biology. He has exhibited digital work internationally and his award winning projects include The Fragmented Orchestra, Papa Sangre & Nightjar. You can find him at erase.net and [ideoforms](https://www.ideoforms.com).

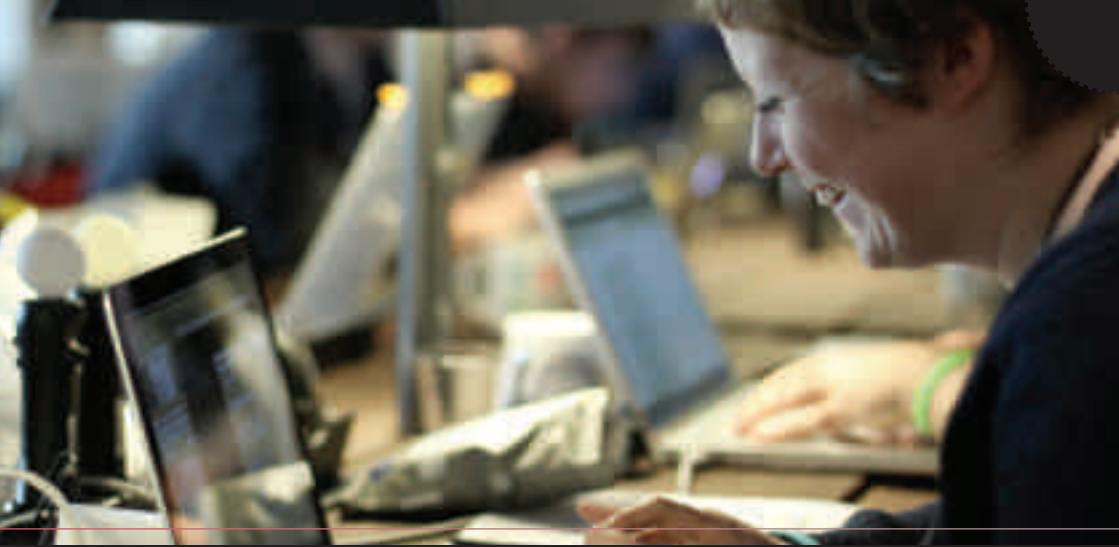
Together they made: thelistingmachine.org for The Space which is available through the magic of the internet.

CULTURE HACK SCOTLAND REDUX

Happenings and reflections
from this year's landmark
Sync event.

ROHAN GUNATILLAKE





▷ It's 4pm on Saturday and Jonnie Common has been up all night. As if the sleep deprivation wasn't already a challenge, he now has to perform a brand new set in front of 120 people. A set that he's put together in just the last 24 hours and inspired by and comprised of a glorious assortment of data that was provided by cultural organisations across Scotland. And as a non-techie, that's an intimidating ask. Needless to say Jonnie Common performs brilliantly and he closes the set with a surreal track called Footfall, a sonic interpretation of how many people have attended exhibitions at the popular Glasgow Southside venue Tramway. It's crazy beautiful stuff and the assembled crowd are now well warmed up for the show and tell. I'm MC-ing the presentations and in my intro I tell everyone to get ready for what may well be the most remarkable couple of hours of their year. This is Culture Hack Scotland 2012 and I'm not wrong.

Culture Hack Scotland does what it says on the tin. It's a hackday — an intense event in which quick proof-of-concept digital projects are made in a short period of time, in this case 24 hours. It's set in a cultural context in that data and content is provided specially for the event from cultural organisations so as to provide inspiration and framing for the project prototypes that are made. And it's in Scotland, involves Scottish cultural organisations and mainly, but not exclusively, digital and design talent from around Scotland. Incubated by the Edinburgh Festivals in its first year in 2011, it is now an independent event managed through Sync and although only two years

young, it is already established as one of the most productive cultural innovation events around.

It's 2pm on Saturday and Stef Lewandowski is thinking about one more hack. Well known for his prodigious as well as prolific making ability, working together with Dublin-based Carolyn Jones, London-based Lewandowski has already made two well constructed projects, one a textured map of stories from a Scottish Book Trust campaign and the other an ambitious prototype of a direct-to-artist crowdfunding service. And with two hours to go until the hacking deadline, something is really bothering him. The Demarco Archive is a tremendous collection of 10,000 photographs taken in and around the Edinburgh Festivals since 1947 and in 2005 a university was awarded £300,000 to turn them into a digital archive. The problem however is that the website made to house the images makes it incredibly difficult to view and interpret the images despite that being its whole purpose. Frustrated, Stef takes the image set kindly made available for the event and presents them as a beautiful and simply navigable gallery. And of course it's optimised for iPad.

Given their rising popularity and prominence in recent time, events like Culture Hack Scotland are seen by some within the sector as an ammunition store full of magic bullets, somehow acting as a factory of culture related digital projects and startups that will result in untold Zuckerbergian riches. There is clearly enormous potential both from a creative and from an enterprise perspective in cultural organisations engaging with digital practice



in a more progressive way. However to expect hackdays themselves to create the sustainably wonderful projects misses the wood for the trees. Culture Hack Scotland is less a factory and more a gym, a playground and a nightclub. It's a gym since it builds our prototyping and risk-taking muscles, a playground since it gives us a low-risk environment to try some things that are radically new and it's a nightclub since it allows us to dance with a lot of different people we may not have otherwise met. And who knows, we may just meet the love of our lives.

It's 11am on Saturday and Padmini Ray Murray has a smile on her face. After the 2011 event, Padmini gave us a lot of great feedback on how the technologists and the cultural community were too separate at that inaugural event. This time she has taken the initiative and is producing and guiding a team with three developers on a project which uses the text of Macbeth as the basis for an interactive parlour game using mobile phones. And as a lecturer in publishing studies and organiser of the Electric Bookshop events she is a valuable hand on the tiller, bringing nuance and context to her ad hoc colleagues. And she's not alone — one of this year's highlights for us

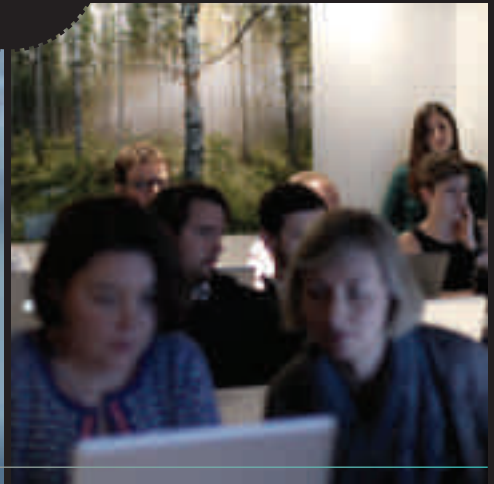
organisers has been seeing many more culture specialists working on and enhancing hacks.

Like innovation, collaboration is a somewhat overused word in the arts. And most typically it's related to need — there is less money so to help me keep its lights on I'm going to have to collaborate with you to realise some efficiency or other. At Culture Hack Scotland, the starting position is really quite different so when two people meet at the event, that meeting asks of them "what is it that might be the most creative and most useful coming together of our different skills and interests?" While it can feel outside of one's comfort zone as someone who works in arts & culture to suddenly start working with technologists and designers, the same is true for the technologists and designers very few of whom typically work in the cultural context. But because they have personal cultural lives they are able to make projects in that context. And in the very same way artists and arts professionals have personal technological and design lives so there is always going to be a collaborative space if you're happy to explore it. ▶





↖ The hack submission deadline is near.
Photo by Suzy Glass



▷ It's way past midnight on Friday and Roy, Jack, Michael and Tom have made their decisions. On the side of the SocietyM venue which is made up of a series of meeting rooms, there is a glass wall covered in cards, each representing a different project idea inspired by the various datasets. Four product designers stand next to a wall of ideas with a bag beside them full of prototyping and technical materials. After a short but fair voting process in which they graciously grant me a say, two projects are chosen. One is beautiful and the other somewhat comical. The beautiful is a micro-projection system which displays lines from your favourite books discretely around your home. The comical is a pair of skinny jeans that dances according to how many event listings there are in The Skinny for the location of where the jeans are. The latter proves to be a sensation when it comes to the presentations.

After 2011's inaugural Culture Hack Scotland had catalysed so many new connections and projects, we were initially unsure of how this year's event might evolve further. Thankfully that concern proved to be redundant as the community grew and brought new skills, inspiration and ambition. As well as there being several more product-design rather than web-design projects and also many more people who work in arts & culture involved in project teams, there were three other important new features this year. First was a much higher gender balance among the participants, better than last year and certainly much better than most other hackdays. Second was the

increased number of designers to complement the skills of the developers. And third and perhaps most important was how so many of the hacks were creative experiences in their own right, rather than just apps and services that sit around existing experiences.

It's 8pm on Friday and Julie Johnstone is talking about poetry. Which isn't particularly surprising given that she's a librarian at the Scottish Poetry Library. However what may surprise her is how in the following hours several talented designers, developers and producers will be inspired to use work from the Edwin Morgan Archive that Julie so generously was able to enable being available for the hackday. And what they will make will range from a poem generator using some clever maths called a Markov chain and a deeply disturbing 3D game environment based on Morgan's Stobhill. But at the moment, these brilliant projects are just sparks of ideas in the mind.

Among all the excitement and activities exploring digital opportunities within the cultural sector right now, three things tend to fall by the wayside — the willingness to be genuinely experimental, the ability to make space for the unexpected and the bravery to be open to different ways of working. Itself a prototype, albeit now in its second iteration, in just 24 hours Culture Hack Scotland shows what is possible when we bring the most creative attitude to innovation that we can and relax our boundaries. We look forward to curating Culture Hack Scotland 2013 and you are most warmly invited. And if you're wondering what the cost of entry is, it's your participation. □


TECHCUBE // HOW TO HACK AN INCUBATOR

Inside the new startup revolution taking place at the heart of Summerhall.

MARCUS KERNOHAN

Summerhall squats on the eastern edge of Edinburgh's Meadows park, a tangled mish-mash of beautiful Victorian architecture and bland, grey mid-century extensions, including a thoroughly unremarkable tower block which vies with the University of Edinburgh's nearby Appleton Tower to be the ugliest building in sight. It is within this uninspiring eight-storey hive of steel and concrete that TechCube, an incubator-in-incubation which seeks to become a new hub for Edinburgh's rapidly-expanding startup scene, is rapidly taking shape. But TechCube isn't another startup factory led by veteran venture capitalists or incubation experts — rather, it's a grand experiment in what happens when startup entrepreneurs hack together an incubator. TechCube's origin myth is a tale of opportunism. For many years the home of the university's veterinary school, the complex on whose fringes the Cube looms was mothballed and sold off with a multi-million pound price-tag last year. Doomsayers in the local community prophesied that Summerhall would share the fate of the nearby Royal Infirmary, and undergo a crude transformation into high-end flats.

But then the new owner, Robert McDowell, threw the entire city a curve-ball, announcing that the site would instead be transformed into Europe's second largest arts campus, in what was seen as a full-throated riposte to a perceived stagnation of culture in Edinburgh in recent years. But while the quirky warren of labs, dissection rooms and lecture theatres in the main complex slotted neatly into this vision, the utilitarian tower block presented a quandary. ▶



▶ Enter Olly Treadway, a boyish 42-year-old entrepreneur who had relocated to Edinburgh from his native London two years previously to launch his secretive startup, Sphere. (Treadway is notoriously tight-lipped about what Sphere does, exactly, but when pressed he's often heard to promise breezily that it's going to 'change the web'.) For Treadway, the building represented an opportunity. A designer by trade, he saw something in that ugly concrete cube: a potential solution to the frustratingly disparate nature of Edinburgh's startup scene. While the university's well-regarded School of Informatics operates an incubator in Appleton Tower, space is limited and most of Edinburgh's tech companies are to be found huddled in serviced office buildings scattered around the city.

One evening in September 2011, after a chance meeting with university incubation evangelist Michael Clouser, Treadway texted McDowell from the monthly TechMeetUp event at Appleton Tower. "Are you interested in your tower being a serious tech hub, incubator, startup machine for Edinburgh?" he asked.

The reply came quickly, and pithily, "Yes." Everything moved quickly after that. Within weeks, Clouser was in Silicon Valley preaching the gospel of TechCube to contacts from his days as a VC there, while Treadway was mulling where to start with the long road to converting a dour lab building into a hip new home for the capital's technorati.

Four months later, with the TechCube renovation less than two months from its scheduled completion date, Treadway comes across as both ebullient and completely exhausted. He speaks in stream-of-consciousness soliloquies; rapid-fire exhortations of the progress TechCube has made, and the great things it hopes to achieve.

TechCube as Treadway envisions it is a magnet for talent, ideas and, most importantly, money. As he sees it, Edinburgh is a city full of bright people doing interesting things, but without the necessary investment capital to support them — especially at the crucial early stages. "There's world-class life sciences and robotics and machine-learning, AI stuff happening in Edinburgh," he observes. "Those people want money, and the money's not here. Or at least, it's not accessible, and so what ▶





↑ The Tech Cube in Summerhall,
Edinburgh. Photo by Marcus Kernohan

▷ happens is they shoot off to California and other places around the world because they want to be taken seriously.”

Therein lies the niche he wants to fill with TechCube.

“The tech scene is about to explode. The business of trade, and social, and film, and retail and all these things are going to be driven by and accessed via the internet,” says Treadway, excitedly. “You’re going to need businesses to build that future, and a lot of that’s happening in America.

“But startups in Europe and the rest of the world find it very difficult to get the early money — the seed money, which is much more important than the stuff when you’ve got traction; the VC money. So the idea of the incubator is to deal with that.”

But if Treadway views Edinburgh as a dry commercial well right now, he seems fascinated by its potential as a backdrop for innovation. “Edinburgh is a stunning space,” he says. “It’s inspirational — topographically, visually.”

And in more practical terms, “because Amazon and IBM and others are actually here, and there are a whole bunch of world-class university bods, I think they’re the ingredients — even if it’s touch and go — to maybe, potentially have a presence in the world that is taken seriously for its ability to get web businesses up and running.” His immediate mission, he says is, “to put something right in the heart of the city, that gets that whole community together.”

TechCube’s path to this point, from SMS inception to almost-completion, can be likened in some ways to Facebook’s development philosophy: ‘move fast and break things’. In fact, in the early days, that inspiration took on physical form, as a swarm of entrepreneurs, geek allies and tech-sector affiliates descended on the site to help demolish seven labyrinthine floors of labs and academic offices.

It was crowd-sourced carnage, and a clever buzz-building strategy. Every weekend from mid-February to the end of April, dozens of the capital’s technology professionals put down their iPads, picked up sledgehammers, and adjourned to the pub eight hours later caked in dust and relishing a rare sense of accomplishment which can be derived only from hard manual labour. Meanwhile, the tower shed its fixtures and fittings without the need for expensive demolition

contractors — Treadway estimates they saved over £25,000 — and the project’s founders got the opportunity to woo the startups and preach stentorian their vision for TechCube.

But more importantly, the rip-out weekends started to nurture the sense of a TechCube community that is central to Treadway’s vision for the incubator. The moment startups took up tools at TechCube, they started to feel that they were personally invested in the project — not financially, but morally. Suddenly, dozens of companies had skin in the game: this wasn’t just another ‘coming soon’ redevelopment where they might consider moving their operations at some point. Instead, it was something that the community was coming together to build; an idea that played to their sense of agility and ambition, and which promised great things.

But Treadway’s plan extends far beyond just a nicely done-up building full of startups. Cheap office space for interesting, innovative companies is just phase one. Ultimately, Treadway wants TechCube not only to act as a lightning rod for investors, but to develop its own in-house ventures fund, currently codenamed ‘StockCube’. Moreover, he doesn’t see the incubator as a one-off.

In five years time, if all goes to plan, he says, TechCube, “has a really strong fund, there are two or three TechCubes around the world... and it’s really leading the way, and it’ll have success stories coming out of it, one after the other.”

The founders’ near-pathological obsession with agility and scalability — the art of doing big things fast — plays neatly into the industry’s mindset. The TechCube experiment, with its DIY ethic and stellar ambitions, seems to have arrived at the right time. In some ways, the community which is increasingly rallying around TechCube could be seen as part of a wider rebellion of the Scottish technology industry against the received wisdom that startups north of the border quickly outgrow Scotland, and are left with few options but to decamp to London or the Valley. This insurgency is backed by the Scottish Government, which under SNP first minister Alex Salmond has been doggedly determined to grow Scotland’s high-tech sector, and fuelled by an ever-increasing stream of top-quality tech talent from Scotland’s prestigious research universities.

One prominent figure in the Scottish technology sector notes that the web sector, “presents a unique set of challenges. Capital investment costs are minimal in comparison to the old factory model of innovation.

Startups can scale far more rapidly than in any other industry, moving from tens to millions of users in tiny timeframes. Ideas can be rapidly deployed and failure is far less destructive than in other business sectors.”

The TechCube model could work because it is, “driven by the passion and entrepreneurial flair of tech developers themselves. The groundswell of support and goodwill from across the Scottish tech sector has been impressive.”

And Coleman isn't alone: Gareth Williams, CEO of flight comparison site Skyscanner — now widely regarded as one of Scotland's pre-eminent tech companies — has also been an outspoken supporter of the TechCube vision, calling it “perfectly-timed.”

“Skyscanner started in the embers of the dotcom bust,” he says. “We felt isolated and it's taken us a long time to achieve our modest success. However, by creating and adding to a network of co-located business with shared lessons, energy and ideas, this process can be accelerated and lead to a positive feedback loop where success breeds more success.

“Several really good companies in Edinburgh five years ago failed to become all that they could have in impact, jobs and contribution ... TechCube has a great chance of being a big part of not repeating those mistakes.”

Early successes have buoyed TechCube evangelists' hopes for the incubator, and for Edinburgh's place as a viable centre for the global tech industry. In late June, Treadway closed a deal to bring the Edinburgh-based development hub of American fantasy sports giant FanDuel to TechCube. And in mid-July, after less than six months in business, Edinburgh startup ShopForCloud were acquired by Californian cloud computing firm RightScale for an undisclosed sum. The previous month, as they were finalising the RightScale deal, the startup had moved into TechCube, and are now, in their new incarnation as a semi-autonomous product unit within their new parent company, set to remain as tenants.

The twenty-something founders of the newly-rebranded PlanForCloud, brothers Ali and Hassan

Khajeh-Hosseini, seem to have bought into Treadway's vision of a community of geeks coming together to do something awesome. Other Edinburgh office spaces they viewed, says product and marketing manager Hassan, “are just people in suits walking around, and everyone's kind of isolated.”

Ali, a PhD candidate at the University of St Andrews and PlanForCloud's technical lead, elaborates: “Even though we're now part of this big RightScale team, and they have over 200 employees, they're trying very hard to keep that startup culture, because that's what keeps it exciting and fun ... it's better for the whole company if you do that.”

“We essentially thought, when we were making our decision, “if we're at TechCube, it's going to be very easy for us to grow that culture, because everyone's doing similar things, everyone wants similar things.”

But for Treadway, the TechCube formula is an even simpler equation: “Young, vibrant people with good ideas enjoy being together, and that creates interest, and that'll be the start of things to come.” □

Marcus Kernohan is editorial director at The Journal Online.

www.journal-online.co.uk
@philip_roberts



ALAN SMITH

Co-created books, smart money and the importance of patience, 10 questions from a revolutionary business designer.

ROHAN GUNATILLAKE

What do you say when someone asks you what you do? "I'm not sure, but I do it all day!" We have a chuckle, they say, "but seriously...?" Being primed after hearing a joke, they'll usually listen intently to my long-winded but more accurate answer which would otherwise put them to sleep. Feel free to use this one yourself if your job-title is hard to get at.

What are you working on at the moment? How are you making decisions about what to do next? How do you discuss and describe your organisation's strategy? Could you show me your business model? Nobody has good answers to these questions. Not Fortune 500 CEOs, nor small businesses like my Dad who's a farmer. My team and I are working on tools to help anyone better discuss, design, improve, invent and iterate their business models. Architects, engineers, bankers, everyone has custom designed tools to help them build stuff — but there's almost no practical tools for business strategy. We want to make this nebulous but extremely critical area more visual, practical, and accessible to everyone looking to build a better business.

What one thing could you not do without as part of your design process? Time for directions and variations. Exploring only one design direction, or ruling out a direction because the variation on the execution is wrong leads to bad results. This is tough because it's tempting to go with something that looks like it has promise, rather than spending time and money on alternatives you may throw away — especially when time and money are short. What I've seen though is the value from exploring pays off and saves time and money in the end. It's definitely 'smart money'.

What is the piece of work that you are most proud of in the last few years? The book *Business Model Generation* was a rare project. One where you look back at it and still wouldn't change a thing! The fact that 470 people — early adopters and co-creators — helped inform the design as we worked, and then started a movement that turned it into a worldwide phenomenon in 27 languages and 350k+ copies in just 2 years has been amazing. It's hard to believe, but people actually recognise me in coffee shops from my photo in the book!!

What does it take to be a better-than-average designer? 3 things. Ego enough to redesign one thing over and over. Frank Gehry has an excellent take on this, rather than taking critique and requirements to redesign with humility, he approaches it with ego. Each time he redesigns, it is from a place of higher understanding so of course he

will do better. You need to have that approach and welcome redesigning a process. Patience to see it unfold. The feedback cycle time is long here. Getting feedback from the market, from customers, from partners, to see if your design will live and breathe in the world takes time. Conceptual basics of the building blocks of business. Just like other forms of design, there are basics to learn. Most people tend to confuse the basics together into a big soup which leads to a lot of mistakes. You can't properly identify problems, you can't talk in a shared language with your colleagues, and you can't get a good process going if you don't have this. If you've been in business a while, chances are your 'soup' is completely congealed and you're going to have a hard-time shifting your world view. If you're newer, you're going to adopt clear thinking from the start.

Where do you go for inspiration? We do a lot of retreats, at least four times a year. High in the mountains, out on beaches, down the fjords, far in the woods, and other secluded landscapes are my favourites. If you're a naturally lazy person like me, you need inspiring places to help you work!

What's the new business model/idea you've seen recently that's just made you go WOW, that's awesome? The models where someone shows how an entire industry was broken and nobody knew it. I love how Trent Reznor of Nine Inch Nails has really altered the traditional 'band' business model. He's done everything from giving away music, making his ▶

▷ original studio files available to hardcore fans, and augmenting the conference experience via a smartphone app. Before him, it was sell your soul to a label, get radio play, hope for hits, and make money on the road. He showed musicians new ways of creating community and earning from that community. In another space, SunEdison did an amazing job of reinventing the way solar is sold. They reduced the upfront investment to zero by signing 'Power Purchasing Agreements' with customers and then using those as a collateral to Investment banks to get loans. They would use the loan to put up installations for customers and just sell the power, and then pay off the loan. Without a new business model, they'd never reach the types of customers, and never have achieved the scale of one the largest providers of solar energy in the US.

What is an example of a progressive/new business model in the arts sector which has worked really well? Small venues typically have a harder time booking big name performers. Recently, a great organisation in Ontario was able to create a value-network of 20 small venues, which offered to book 20 nights in a sequence to big names. The aggregate ticket sales were similar to the size of a few big events, with far less risk. The performers' tour managers didn't have to pay for a large venue or the larger crew required to set up, or large promotional costs. Keeping things lean in this format actually led to big-name size pay and a focus

on the artist — not the logistics of promoting the art. When the small venues and the big name each adjusted their business models to work together in a new way, they each profited more.

Where do arts organisations and non-profits tend to go wrong? Often, anyone who's not for profit, or mission driven makes the mistake of thinking they don't have a business model. Those are for capitalist greed-mongers with no values, not for us, right? Wrong. Every organisation has a business model, and every organisation has values that inform it's design. You provide a certain value proposition, to a group of people, and have revenue streams and costs. Every business model can be improved to better serve customers, produce desired outcomes within the organisation and in the world.

If you had the rapt attention of all the people who work in arts & culture in Scotland many of whom are interested in business model innovation what would you like to imprint on their brains? They can't afford not to free up time and resources for it. Everywhere, industries refusing to invent new business models are failing. In just hours, you can get a lot of low hanging fruit by patching up your current business model. Just by mapping your current business model with key stakeholders, massive holes and improvements will be spotted and ideas on how to fill those will organically arise. Then, once you've got the hang of it, you can start to design alternatives, and test your

assumptions before betting the farm on it. Using tools like the business model canvas make doing effective business model innovation social, tangible, accessible, and actually quite good fun!! ☐

Alan Smith is a Business designer and co-founder of Strategyzer. Based in Toronto he is the lead designer on the best selling Business Model Generation & Business Model You.

thinksmith.tumblr.com
[@thinksmith](https://www.instagram.com/thinksmith)



MARGARET ROBERTSON



↑ Photo by Lottie Davies

Abstract art, sharp pencils and absolutely no ghettos, 10 answers to 10 questions from a leading game designer.

ROHAN GUNATILLAKE

▷ **When asked “what do you do?” what do you say?** My go-to annoying answer to that most annoying question is ‘I make interesting games for interesting people’.

What are you working on at the moment? Right now I’m working on a plan to bring a game called *Drunk Dungeon* to market. It’s a physical space game designed for parties or pubs. Two teams compete to explore a dungeon and capture treasure hidden within it. Except, when they arrive, there is no dungeon. Instead, the teams build the dungeon themselves as the night goes on, out of the beer coasters they get each time they order a drink. Each coaster has a bit of map on it, and over the course of the evening everyone collaborates to build a map, get their team to the treasure and trap their opponents in a maze of dead ends and switch-backs. We did a hand-printed version at NYU’s annual No Quarter gaming event earlier this year, and a lot of people have been asking how to get hold of it, so we’re looking into options.

What one thing could you not do without as part of your design process? Big paper and sharp pencils. There’s nearly always a bit of the process where I need to write down everything I know about an idea and find the logic that underpins all the detail. I know post-it notes are traditional tool, but I like mapping everything onto one single sheet. Apart from anything else, it means you end up with a lovely archive of project maps. Plus writing/drawing things in place in pencil gives you

a nice balance of permanence. You need to be purposeful with where you put things in the first place, but you can fix mistakes if you need to.

What is the project you are most proud of in the last few years? I think we’re all very proud of the New Year Games, the city-wide game we ran as part of the 2012 Hogmanay festival in Edinburgh. *Hide&Seek* has long been built around a belief that play brings people together in powerful ways, but the New Year Games was the first chance we’d had to prove that on a really giant scale. Working with local artists, we threaded games all through central Edinburgh, in and out of some of its most iconic buildings, and brought thousands of people to play together. Hearing stories of friendships formed and seeing the passion and rivalry of huge crowds of team-mates who had so recently been disconnected strangers was an incredible vindication of our instincts about why games should be a bigger part of public life.

What does it take to be a better-than-average game designer? Increasingly you mostly need to be lucky, persistent and prolific. Make a lot of stuff, grit your teeth and see it through, and hope that some if it is good. I do find knowing a lot about other games helps me shortcut some design processes — games is definitely an arena where iterative design is a very valid way of being creative, as long as you’re open about the ideas you’re building on.

Where do you go for inspiration? I find very abstract art unbelievably

restorative. There’s something about the shape and colour and pattern and rhythm of it that feels very representative of how game systems feel in my head that I find very useful. I had a chance to go to Dia Beacon outside New York recently, and the Michael Heizer, Sol LeWitt and Richard Serra pieces there feel like they were born out of the same bit of the brain that perfect game ideas come from.

What is an example of a project or game that sits at the intersection of ‘arts/culture’ and games which worked really really well? I know it’s cheeky to call out our own work, but I do think *Hide&Seek*’s recent installation at La Gaité Lyrique in Paris is one of the most successful of these hybrid projects that I’ve seen. It was called *The Building Is ...* and it was an attempt to bring to life the spirit and the mood of the building, and let visitors interact with it via a sequence of games. People played with the buildings’ senses — its ears and nose, etc — and influenced its mood. It was a really high calibre project in terms of the quality of play, the completeness of the design vision and the provocative way it got visitors to reconsider the history and the value of the venue itself.

What is the one project you’ve seen recently that made you go WOW? I’m still a little gobsmacked at a game called *Floating Cloud God Saves The Pilgrims* — full disclosure, it’s made my some old friends of mine. It’s a small game, but it’s full of very interesting things. It has a very lean game mechanic — lots of coupling

together of opposing systems in the same game element. It's visually stunning, and it draws on some really interesting elements of Japanese mythology. It's also a really nice example of how games can have huge emotional impact without necessarily having a formal story or narrative.

If you had the rapt attention of all the people who work in arts & culture in Scotland what would you want to tell them? That games and play don't belong in a ghetto.

I think they're still often seen as something trivial, or something childish, or something that you have to adopt because it's the only way to appeal to a younger audience whose attention-spans have been ruined by the internet. Games to me have always been part of cultural, social heritage that goes back as far as music and storytelling and dance. We've been playing games together just as long as we've been expressing ourselves in ways we now understand to be conventional culture. There's been a brief, strange aberration in the last hundred years or so, where public play (whether in homes or pubs or streets) has been overshadowed by radio and TV, but it's already resurging.

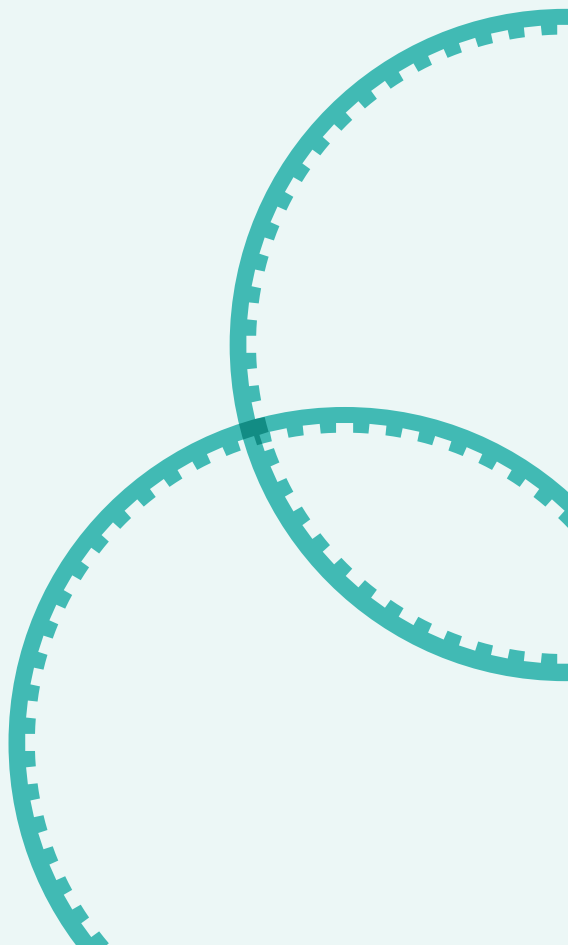
What game should everyone play RIGHT NOW?

I'm having a lot of ideas at the moment about an oldish game called Set. It's a very simple puzzle game — you compete against each other to identify sets within a deck of cards showing abstract patterns. It's wordless and contextless, but beautiful. You often play in

near-silence, but it's a very convivial game. People walking past nearly always end up joining in — it's contemplative and soothing at one level, but fiercely competitive and often weirdly funny at another. At a time when there's a lot of focus on narrative games, I remain really interested in defiantly abstract ones, and this is one of my favourites. □

Margaret Robertson is a designer and consultant who has worked on award-winning games for the commercial, cultural and educational sectors, most recently with Hide&Seek. Originally from Scotland, Margaret is now based in New York.

[@ranarama](#)



Philip Roberts breaks down the technical specifications of this massively multiplayer realtime hack, created at Culture Hack Scotland.

PHILIP ROBERTS

At Culture Hack Scotland (#chscot) in April, we won most playful and the grand prize for a real-time game we made using Rails, JavaScript and Pusher. I thought it might be interesting to break down the technical details of how it was developed and worked. Apart from a tiny bit of prep work, all the code in this project was written in 16 hours — so the architecture detailed below is not intended to be optimal.

And of course credit where it's due, the code and architecture I am talking about here was created by myself, Rory Fitzpatrick and Jim Newbery, with a little help from Phil Leggetter of Pusher.

TECH
TEARDOWN
// SHAKEY

The premise

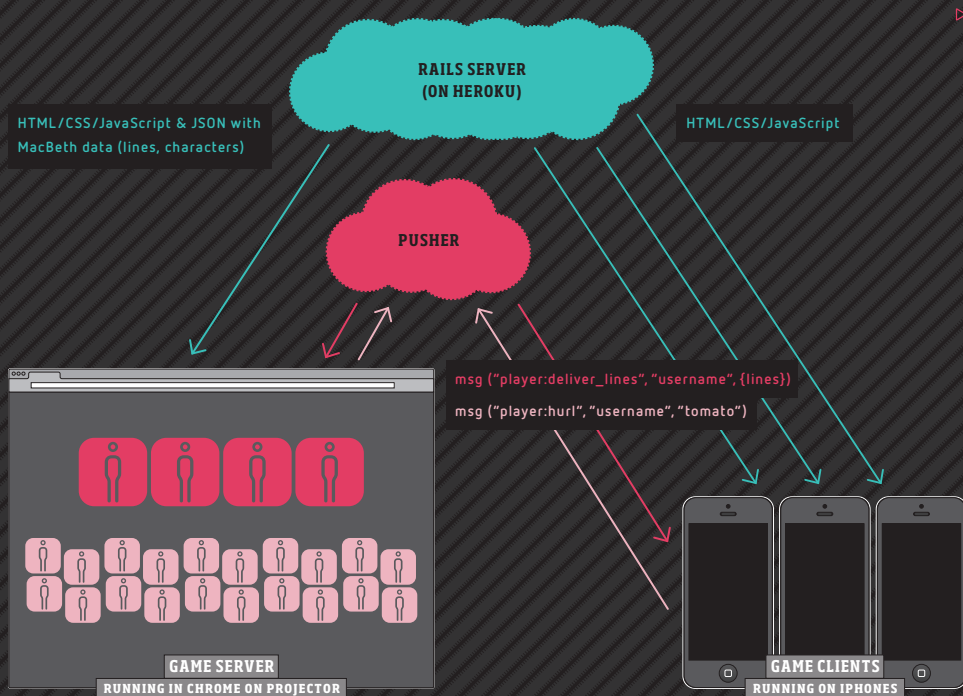
The idea of the game was thus:

- On a big projector screen would be an image of a theatre stage complete with actors and audience.
- Players register by visiting a url on their phones.
- Players are assigned to be in the cast, or in the audience, and appear on the big screen using their Twitter avatars.
- **The game starts.**
- The actors then recite a short piece of Macbeth, reading the lines from their phones as they are prompted to do so.
- The audience have the option to throw tomatoes / flowers depending on how well they think the cast members are doing.

Getting started [midnight Friday]

Since we wanted a game that worked in real-time, with multiple devices communicating with each other, we quickly settled on using WebSockets, which allows JavaScript on the browsers of two devices to talk to each other. We quickly settled on using Pusher which is a hosted solution for implementing websockets easily. We were pretty pleased with that decision as it was easy to use — the only drawback being no fallback support for the default Android browser (unless Flash lite is installed).

The rest of the app (serving assets etc) was served from a rails app running on heroku. Here's a diagram of the architecture: ↩



▷ I quickly spiced out JavaScript code to demonstrate two browsers talking to each other with Pusher.

Pusher is essentially a PubSub implementation on top of WebSockets. Pusher's normal operating mode is that you would have your server sitting on the internet somewhere publishing messages to a channel, and browsers (the clients) subscribe to those messages.

In Shakey however, we wanted the game server to be running in a browser (the left hand side of the image above), so as far as Pusher is concerned, even our game-server is a client. (Yup, it is confusing, try figuring this out at 2am, after cocktails!) This requires setting up Pusher to enable client to client messages.

Baby steps

Now that we had very basic communication between a server and a client working, we could comfortably split into two teams. To keep ourselves straight, we wrote down all the messages we would need to run the game. The beauty of having a nicely event-driven architecture like this was that Rory and I could develop the game-server, completely oblivious of what Jim was doing with the messages, and vice-versa. Indeed, Jim wrote his game-clients in JavaScript, and we wrote the game-server in CoffeeScript and it didn't matter a bit.

Building out the server

Now that we had the messaging setup, and the protocol designed, we could focus on building out the game-server. Its responsibilities (roughly in order) were:

- Grab the current scene we were going to act out, along with the characters in it.
- Listen for "player:register" events, and when one was heard, assign the new player to be in the audience or cast, and announce it to them by triggering a "player:assignRole" event.
- Wait for someone to click the "start" button, and when it was pressed, trigger a "scene:start" event to everyone, followed by a "player:deliver" event to the first cast member, who needed to speak, with their lines.

- While someone was speaking, listen for "player:hurl" events, and trigger the appropriate fart-noise and animation on the screen to indicate something had been thrown at the current speaker.

- Wait for "player:exuent" events, and when one was heard, send a "player:deliver" event to the next speaker.
- And so on.

We built the server using Backbone.js, as it makes breaking up the code into Models (for us Player and Game), Collections (of Players) and Views (the animated Player avatars on the screen) easy. The event driven architecture was really useful again on the game-server. We wanted to add a "news-feed" down the side of the display, with things like "@philip_roberts threw a tomato". This was in the end trivial, as we just had another little bit of JavaScript, completely independent from the rest of the game, listening for "player:hurl" events only, and updating a list when it did so.

Building out the clients

We left Jim to build out the game-clients that would be running on people's phones. Its role was pretty much the inverse of the server:

- Register a user by sending "player:register" events.
- Wait to find out which ("player:assignRole") role it had been assigned.
- If it was a cast member, wait till it received "player:deliver" events and display the lines to the player, and wait for the player to press "done", thus triggering "player:exuent".
- If it was an audience member, display "throw flowers", "throw a tomato" buttons, and trigger "player:hurl" events when clicked.

The game-clients were also built in Backbone.

Done [4pm Saturday]

Apart from some awesome visual polish, that was pretty much it. I've neglected to show much real code here, as it's pretty hideous, but you can dig into the repo.*

Caveats, lessons learned

A few things tripped us up using Pusher that are good to know if you are doing something similar.

- First, the presence channel and client setup isn't that hard, but takes a minute to get your head around.
- When using a presence channel, all clients receive all events. You can't just send an event directly to a single client. In our case that meant we always sent the 'username' of the intended client along with the data, and the client on the other end filtered out messages that weren't intended for them. We could have set up separate channels for each player, but decided this was simpler to manage.
- The exception to the above is that the client that sends a pusher event, doesn't receive the event itself. We tried to listen to events published by the game-server (which is a client remember!) within a different part of the game-server, and it doesn't work. It's easy fixed by using non-pusher events, but confusing when you bump into it.
- Because Pusher is hosted in the cloud, all your development/testing/production servers will be using the same pusher account (unless you setup different pusher accounts (we didn't)). This gets pretty mind boggling when 3 people are testing code on three separate machines, but they are still all interacting.

We could have fixed this by setting up different channel names on each machine, but we didn't figure that out at the time.

- 3G providers really like to screw with your internet. Before the demos everyone was asked to not use WiFi on their phones — which was less than ideal as companies like O₂ like to smush websocket traffic not sent over encrypted connections. Pusher will fallback to an encrypted connection if unsecured doesn't work,

but to ensure that it worked first time, Phil Leggetter from Pusher suggested we force encrypted connections: First encrypt the Pusher socket and then serve all the assets over ssl (easy done with heroku, just stick https in front of the urls). □

Philip Roberts is the CTO and co-founder of Float, a web-app that helps small business owners understand, monitor and forecast their cash-flow.

[@philip_roberts](https://twitter.com/philip_roberts)

* <http://bit.ly/scottish-play>

The (Sultan's) Elephant
in the Room.

ROHAN GUNATILLAKE

THE PRODUCER GAP



📷 Photo by Fimb via Flickr
(Creative Commons)

This December it will be the five year anniversary of the publication of *The Producers: Alchemists Of The Impossible*. Commissioned by Roanne Dods (at the time Director of the Jerwood Charitable Foundation) and David Micklem (Artistic Director of the Battersea Arts Centre), it is a collection of interviews with fourteen leading producers working across film, the visual arts and the performing arts. Remarkable practitioners all, *The Producers* is full of insight. The introduction very clearly states why the book was created:

“The producer is a role that has struggled to establish itself in the arts. Yet at this time of massive social, cultural and environmental change, perhaps we have never needed them more. This book is based on the belief that producers make an extraordinary contribution to the arts — to the artists whose ideas and creativity can be harnessed and

realised by these people as no others, and to the public whose engagement is the inspiration for the producer’s mindset and approach.”

While, half a decade on from the launch of *The Producers*, the role may still be under-championed, it is at least recognised as a significant element in the delivery of creative work. However, when it comes to this wobbly world of digital innovation in the arts, the same is not true. There’s a lack of discussion around the role of the digital producer. And this is a very real problem indeed.

In the context of the cultural sector, a digital producer is a person who can simultaneously hold the artistic, technical and business strands of a project. The role is more than just transactional project management: a digital producer has the translational leadership abilities to be able to talk to and inspire not only a project team but also an arts board and a journalist. She / he recognises that innovation is important but risky. She / he understands that the technological and organisational components should not obscure the human.

There are not enough of them in Scotland. We need more.

We need more digital producers because in this maelstrom of money, with all this attention on ‘digital innovation in the arts,’ they are the missing pieces of the jigsaw who will tip the scales in favour of projects being successful. There are plenty of so-called collaborations between arts organisations and digital companies. But they often fall over or under-deliver because project partners have very different objectives, aren’t able to understand what each other is saying, can’t share what needs to be done next.

Digital producers who are brought into a team solely for the purpose of developing and delivering a project will by definition only have the success of that project as their objective. Their multiple literacies and the adhocracy that they flock around a project will allow the impossible to become achievable. ▶

▷ I am constantly being asked by arts organisations — sometimes explicitly, sometimes via a pleading look in the eyes — for a silver bullet that will solve the impossible ‘how do we do more with digital’ question. I think the closest thing to a real answer that I can give is: work with a producer who you trust, and empower them to get things done.

I am pretty sure there will be growing demand for digital producers. I hope that many of the applicants to the forthcoming round of Nesta R&D include one in their pitch. However, I suspect it’s not demand that’s the problem, but supply. This is a relatively new specialism, and while there are clearly some talented digitally-savvy people within our cultural organisations, they are either trapped in linear communications roles and /or aren’t able to make the jump and start working as independent producers. Clearly there is the need for talent development processes to fill this gap. It’s not going to happen by itself.

Kate Tyndall, the writer of *The Producers: Alchemists of The Impossible*, says in her closing statements:

“My personal hope is that this book can help in a process where policy priorities include not just a focus on the individual artist and on institutional or organisational structures, but on the producer’s role as well, whatever structural form that takes. My view is that there should be a greater producer-led infrastructure in this country across the arts, and that producing talent should be spotted, nurtured and responded to, much as artistic talent is. We should all be eager to help the new generation of producers emerge across the range of landscapes, contexts and nooks and crannies which inspire them, and to create the structures that will empower their potential. They are amongst those who will help unlock the possibilities and complexities of the paths that lie ahead.”

Hear hear Kate. Now that digital innovation is flavour of the month — and will be for some time to come — if we continue to ignore the producer gap, we do so at our peril. □

Rohan Gunatillake is the creator of buddhify, combining design thinking with contemplative experience to create remarkable wellbeing apps and products ... and one of the Sync team producers, helping cultural organisations in Scotland have a more progressive relationship with technology, technologists, design and designers.

You can read *The Producers: Alchemists of The Impossible* online at: www.the-producers.org

