

**'A book of hope, inspiration, and a
beacon of what's possible'**

From the foreword by Archbishop Desmond Tutu



The Rise of the Reluctant Innovator

When problems find people, amazing things can happen

Edited by

Ken Banks

WHAT PEOPLE ARE SAYING ABOUT THIS BOOK

‘This important, timely book gives the reader an invaluable insight into the workings of the world of social entrepreneurship. It is a must-read for students, practitioners, policy makers and anyone with a passing interest in how to work for the greater good.’

Professor Klaus Schwab, Founder of the World Economic Forum and Co-Founder of the Schwab Foundation for Social Entrepreneurship

‘This book’s vivid, engaging stories – of ordinary people who have devoted their lives to solving problems and injustices they never expected to encounter – make a major contribution to understanding what social innovation is all about. This is an inspiring and essential read for everyone who cares about our flawed, messy, beautiful world and believes in its myriad possibilities.’

Hannah Bloch, Mission Projects Editor, *National Geographic* magazine

‘Ken Banks, whose own career has taken him from offshore banking to launching a brilliant communications tool for Africa, takes us on a social innovation journey. We meet ten entrepreneurs who happened on life-changing ideas – from solar lighting for African maternity wards to film subtitles to promote literacy in India – and then fought against every kind of obstacle to make them happen. Inspiring and instructive.’

Rory Cellan-Jones, BBC Technology Correspondent

‘Ken Banks offers us inspiration, wisdom and reluctance in just the right measure to help make lasting social innovation a discipline that others can help create and sustain, rather than having it remain an unfulfilled pipe dream.’

Cheryl Heller, Founding Chair, MFA Design for Social Innovation at the School of Visual Arts, New York

‘Ken’s work has transformed the lives of many people and shown how the appropriate application of technology can change the world for the better. In this important book he has generously brought together tales from other “reluctant entrepreneurs” to show how inspiration and application can begin to address the world’s pressing problems. It’s a great read, and a vital message.’

Bill Thompson, Writer, broadcaster, commentator for *Click* (on BBC World Service radio) and Visiting Professor at the Royal College of Art

‘There’s a lot of hyperbole at the intersection of technology and social entrepreneurship, but you won’t find any in here. This important book describes how pressing social problems are being creatively solved with appropriate technology by gifted people. Inspirational stuff!’

Alex van Someren, Managing Partner of Early Stage Funds,
Amadeus Capital Partners

‘If these ten extraordinary people are defined as reluctant then the world needs more of these Tesla-esque entrepreneurs, thinkers and doers who have engineered similarly game-changing innovations whose impact will be as profound as the enigmatic Nikola. Bravo to their brilliance.’

Toby Shapshak, Editor, *Stuff* magazine

‘Many of us are looking for ways to combine our passion and purpose in life and this book provides some great tips. This book is filled with stories that inspire us to remember the road is not always easy and tenacity and time are critical parts of the journey. The great news is that it really is possible to change the world – one marvellous reluctant innovator at a time!’

Grace Killelea, Founder and CEO of Half the Sky Leadership Institute
and 2011 Multichannel News Wonder Woman

‘This book is a refreshing antidote to pessimism about the potential of individuals influencing “social change”. The author of each chapter has a personal story to tell, but each in such a way that it helps us to better understand the different ways it is possible to make that change happen.’

Dr Elizabeth Harrison, Reader in Anthropology and former Head of
International Development, University of Sussex

‘What an inspiration! This book is a testament that we can all make a much bigger difference in the world than we ever dreamed possible. It has encouraged me to take bigger and bolder steps in my own foundation, “Together we can Change the World”, and in my business as well. Read it and treat yourself to a new way of thinking.’

Scott Friedman, Chief Celebration Officer at Scott Friedman & Associates and
author of *Celebrate! Lessons Learned from the World’s Most Admired Organizations*

‘*The Rise of the Reluctant Innovator* tells the poignant stories of entrepreneurs with such perseverance and passion that will be an inspiration to all those hoping to make a difference in the world. And it is an important reminder of the sacrifice that community leaders and development professionals make as they tackle the most pressing problems plaguing the world today.’

Priya Jaisinghani, Deputy Director of Innovation and
Development Alliances, USAID

'The Rise of the Reluctant Innovator gives an incredibly rare, personal and enlightening account of social entrepreneurs around the world. Their innovations demonstrate how technology can be a potent force for positive change in the world.'

Katie Jacobs Stanton, Vice President of International Market Development,
Twitter

'A revelatory view of world-changing innovators. Read these pages to find that life-passions are revealed in the most unconventional manner, and discover the path to success consists of battling enormous obstacles.'

John Siceloff, Emmy Award Winner and Founder/CEO of CatchTheNext.org

'These real – occasionally raw – stories do more to capture the life of the committed social entrepreneur than anything else I've read. Inspiring, yes, but even better, it works as a real world case-based manual for how to create change for the better.'

Kevin Starr, Managing Director, Mulago Foundation

'It seems that around the world we are witnessing a new collective consciousness of sorts. There is a heightened awareness of the need to help others. We feel compelled to have a real impact on the "bigger picture" and to do more for the "greater good". Social entrepreneurship is on the rise, and this book shines much needed light on how to transform inspiration into innovation.'

Darice Fisher, Public Relations and Media Expert

'Ken Banks is the quintessential explorer, driven by curiosity and purpose, strengthened by obstacles, and culturally mindful. In *The Rise of the Reluctant Innovator*, Ken – a collaborator by nature – has swung the spotlight onto the heroic work of a group of driven individuals who are creating a better future for people and communities around the world. Transcending trendy terms and structured models around social entrepreneurship, Ken's common theme is one of possibility and empowerment – anyone can effect social change. I believe this collection of stories of passion and impact will leave people hungering for more and will inspire more than a few readers to explore their passions and translate them into incremental stories of meaningful change.'

Alex Moen, Vice President of Explorer Programs, National Geographic

'The Rise of the Reluctant Innovator is required reading for any student or anyone interested in technology-based invention to improve peoples' lives, and social innovation as a potential life path. Its honest stories of unforeseen challenges and unexpected opportunities from the people encountering them both are an inspiration and refreshing reality-check.'

Joshua Schuler, Executive Director, Lemelson–MIT Program

‘Ken Banks has assembled compelling, insightful first-person accounts from remarkable people pursuing social change through technology. The book will be inspiring and informative to many others on similar paths.’

Jonathan Donner, Technology for Emerging Markets Group, Microsoft Research

‘Read this book and be inspired. And ask the question it poses: Can I, in however lesser-a-way, also find my passion, become a social entrepreneur and make our world a better place?’

Robert Chambers, Research Associate, Institute of Development Studies at the University of Sussex

‘As a pioneer in this field Ken knows more than anyone what it is to be a reluctant innovator. This is an inspiring book introducing us to those who have changed their worlds with their simple, elegant ideas.’

Chris Locke, Managing Director, GSMA Mobile for Development

‘As a social entrepreneur, educator and facilitator I believe these times call for innovation from all points in the spectrum, especially those of us that are unreasonable enough to hope we can make change in the world. Thank you for this book – it is just what the field needs!’

Rebecca Saltman, Disruptive Innovator and Educator,
A Foot in the Door Productions

‘A fascinating and insightful work. This book will serve as a guide and source of inspiration for all who seek to change the world.’

Terry Garcia, Executive Vice President of Mission Programs,
National Geographic

‘Why would anyone trade a life of comfort for the muddy boots of change-making? Ken Banks shows how global challenges trouble the waters of our conscience, and compel a new generation of innovators to action.’

Andrew Zolli, Executive Director and Curator, PopTech

‘The world’s most challenging problems are being taken on by people motivated by their personal passions, informed by their deep understanding of local realities and shaped by their frustration with inadequate solutions. Ken Banks and the other remarkable innovators here offer inspiration and insight into building practical solutions while calling into question established wisdom about social innovation. This is a must-read book for anyone who wants to solve problems with global implications through local knowledge and involvement.’

Ethan Zuckerman, Director of the Center for Civic Media, MIT

The Rise of the Reluctant Innovator

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Edited by
Ken Banks

LONDON PUBLISHING PARTNERSHIP



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*In memory of a wonderful
and supportive mother,
and for Henry, Madeleine
and Oliver, whom she
sadly never got to meet*

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Tutu for his friendship, mentorship, faith, unwavering optimism, and support for this book.

A special thanks also goes to Cliff Curry and Delight Stone from the Curry Stone Foundation, who have shown incredible friendship and support not just with this book, but for my wider work and ambitions.

Finally, to my family, who have never quite understood what it is I do for a living but have supported me nonetheless.

The very warmest of thanks and appreciation to each of them, and everyone else whose paths have crossed with mine over many years.

Ken Banks
St Ives, Cambridgeshire, UK

FOREWORD

Archbishop Desmond Tutu



For the world to be a better place for everyone, each of us needs to stand up against wrongs, show compassion and humility to others, and not turn our backs when we encounter hardship and suffering. These simple rules have guided me throughout my life, as they do for countless others who fight for the rights of the poor, marginalised and disenfranchised around the world.

That world is a much smaller place than it used to be. Thanks to the spread of the Internet and social media, many of these people's stories are being heard for the first time. Add to that the increasing numbers of young people wanting to make a difference in their lives, and we have all the makings of a positive force for change. It is my belief that it is down to each of us to help galvanise that change, and through his efforts with this book, Ken Banks clearly feels the same.

I had the pleasure of working with Ken during a recent voyage with Semester at Sea. Semester at Sea helps students get a better understanding of our world by giving them the opportunity to spend one

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university term out of the classroom travelling the globe aboard a ship, the *MV Explorer*. Ken was on a five-week leg of the same journey, mentoring technology-focused social entrepreneurs with Unreasonable at Sea. Towards the end of his time I had the opportunity to sit with him, and author Tori Hogan, in front of an auditorium full of students to talk frankly about how they can make a difference in the world. Everyone there was hungry for knowledge and opportunity, which I very much hope we gave them. Today's youth are not only the problem solvers but also the leaders of the future.

It is in that spirit of shared learning that I have pleasure in introducing this exciting new book. *The Rise of the Reluctant Innovator* is a collection of real-life stories that show what's possible if people are open, take an interest and don't take the easy option of turning their back, but instead doggedly search for answers to problems affecting not just the people in front of them but, in many cases, tens of millions of other people around the world.

Read this book and you quickly realise that these stories have changed the lives of the innovators themselves as much as the people they set out to help. It is a book of hope, inspiration, and a beacon of what's possible.

*Archbishop Desmond Tutu
Cape Town, South Africa*

The Rise of the Reluctant Innovator

INTRODUCTION

Ken Banks



'Don't ask yourself what the world needs. Ask yourself what makes you come alive and then go do that. Because what the world needs is people who come alive.'

Howard Thurman (1899–1981)

AN IDEA IS BORN (AGAIN)

This book has the unlikeliest of origins. It all started at 37,000 feet with a chance meeting with David Rowan, editor of *Wired* magazine's UK edition, in the aisle of a chartered flight to Johannesburg. It was June 2011. Dozens of journalists milled around, plotting in the back of the plane, with Prime Minister David Cameron and his ministerial colleagues camped up front. We sat in the middle, part of a fifty-strong

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British government business delegation set to visit South Africa, Nigeria, Rwanda and South Sudan over four days. We spent more time in the air than we did on the ground, and didn't even make it to our last two destinations. It turns out that four days, however well planned, is a long time in politics.

A few months after our return, David recounted our high-altitude conversations and decided to get back in touch. He wanted me to write an article for their 'Ideas Bank', something that 'people would want to talk about down the pub'. This somewhat limited my options. I dug deep into my drawer of half-thought-out ideas and dusted one down from several years earlier which sketched out what I'd begun calling 'reluctant innovation'. Things that people had either fixed or discovered by accident, or reluctantly, struck a chord with the 'Ideas Bank' theme and 'Genius Happens When You Plan Something Else' appeared in the May 2012 edition of the magazine.

The original article was short, so I was only able to briefly highlight the stories of two innovators. But the seed of an idea was reborn, and the concept of 'reluctant innovation' grabbed my imagination once more. I felt there was a much bigger story to tell, and many more reluctant innovators to seek out. Numerous calls for contributors, hundreds of emails, masses of editing and reading, cover and chapter design sessions, failed funding campaigns and eighteen months later, 600 words became 70,000 and the book you are holding in your hands today was born.

The half-baked idea that somehow turned into this book began to emerge several years earlier during my time at Stanford University – a whole story in itself – where I became increasingly exposed to social entrepreneurship, social innovation and design thinking as academic disciplines. I found myself meeting increasing numbers of smart young people looking to colleges and universities to equip them with the skills they felt they needed to 'go out and change the world'. I was a bit taken aback. You didn't need qualifications to change the world, did you? Often I'd dig deeper and ask what they wanted to do when they graduated. Answers such as 'I want to be a social entrepreneur' perplexed me. Few people I know in the messy, often frustrating world of social entrepreneurship ever set out with the explicit aim of becoming

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one. Rather, they stumbled across a problem, a wrong or a market inefficiency which bothered them to such an extent that they decided to dedicate much – if not all – of their lives to putting it right. It was rarely, if ever, part of a wider plan.

Many of the students I met were unlikely to experience that problem, wrong, injustice or market inefficiency within the walls of their college or university. Teaching the mechanics of social innovation may be helpful, yes, but only if matched with passion, and a cause, to which people can apply it. Desperately seeking that one thing that switches you on can be a lonely, difficult journey. I speak from personal experience. But more of that later.

What I was witnessing was the increasing institutionalisation of social entrepreneurship. I thought it unhelpful on many fronts, not to mention that it could easily be seen as a barrier by many motivated young people. Not only that, it implied that social change was a well-thought out process, when in reality it is far messier and random than that, as many of the stories here testify. It's an important message that I hope this book manages to get across.

Of course, it is far easier to learn the mechanics of social entrepreneurship – business plans and elevator pitches among them – than to manufacture a passion or a calling in life. You may be the person best-qualified to solve a particular problem in the world, but that's of little use if you don't find it. Finding purpose is often the toughest part of the process, and there are few short cuts other than to leave your comfort zone and get yourself out there. One of the first bits of advice I give anyone who wants to make a difference in the world? It's to 'go out and make a difference in the world'. Find your passion first. The rest you can learn later – if and when you need it.

Each of the ten authors in this book did just that. And, in many cases, they weren't even aware that the particular problem they ended up experiencing – and fixing – even existed. In other words, the problem or solution found them. And that can only happen if you're somewhere it can find you. You won't, after all, get to experience 'Third World' maternal care in London, Paris or New York but you will if you follow Laura Stachel's lead and spend hard time on the ground in maternity wards in West Africa.

THE MEANING OF RELUCTANCE

Given the nature of how Laura's innovation (and the nine others in this book) came about, you might be wondering why they're not accidental, or serendipitous, innovators. Why reluctant?

Over the past eighteen months, as this book gradually turned from idea to reality, everyone from publishers to authors to friends and colleagues have challenged my choice of the word 'reluctant'. Once or twice I was almost convinced to change it, but held firm. If the contents of this book generate anywhere near the level of debate that the title has, I'll be more than happy. The title is deliberately provocative, and I hope you get to experience reluctance in all its forms as you read each of the stories we've assembled here.

Some of the authors do prefer to call themselves 'accidental innovators', but I don't think this does justice to them or their story. I'd argue that it wasn't by accident that they found themselves in a situation that changed the course of their lives. Accident implies luck, but it wasn't luck that Laura Stachel found herself in Nigeria, or Sharon Terry's children were diagnosed with a genetic disorder, or Erik Hersman found himself deeply troubled by a crisis tearing his home country apart. I prefer the idea of reluctance, the idea that many of these people weren't looking for a cause to occupy their time or dominate their lives, and that in many cases they were fairly happy with everything before life got complicated. Sure, the rewards of a successful 'career' in social entrepreneurship can be significant if you stick to your path and fight like your life depends on it, but for all the romance of the discipline it is an often difficult, frustrating and lonely journey, and far from romantic. The very fact that someone would choose this path over one much easier to me also speaks of reluctance. The easy option isn't the one they took. They took the hard one for the greater good. You'll relive much of this pain, angst and frustration as you work your way through the pages of this book.

Reluctance also speaks of an awareness of that greater good, of a story and a cause bigger than any one person. Very few people would willingly put themselves in harms way – confront armed soldiers taking orders from a dictatorial president, for example. But activists do this around the world day after day, risking everything for a cause

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they believe in. They do it in pursuit of a bigger goal of freedom, for everyone. In an ideal world they wouldn't have to take those risks – the oppression and corruption wouldn't exist. But it does. Like them, many innovators reluctantly make their lives more dangerous, complex, frustrating or challenging for the bigger goal they chase. It's a decision they don't take lightly. For many, it's a considerable sacrifice, yet few would say no to a quieter, simpler life – one which all of them could likely have had. They're just not those kinds of people.

If one thing drives this home more than any other, it's family. While some people might dismiss their idea and continue as they were before, Sharon Terry, whose story you'll find in Chapter 9, had no such choice. Following a shock diagnosis that her children were suffering from a rare genetic disease about which very little was known, Sharon and her husband's lives turned in a completely new direction. Their reluctance was obvious. In her own words:

As we fell asleep each night amid piles of photocopied papers and enormous medical dictionaries, we knew we had to take the bull by the horns. I remember an evening when we looked at each other, and thought, no, no, no – we don't want to do this – we do not want to create a system for this disease. Wasn't it enough to live with it, to cope with it, to walk our kids through it? Couldn't someone else make sense of it, fix it, give us a call when the cure was in? I begged the universe to please take care of us. No. Reluctantly, we had to admit that this was our burden. There was no one else.

Wes Janz, whose chapter closes the book, has his own take on the role of reluctance, arguing that what we need, in essence, is more of it. When faced with a problem, he gives this advice to budding social innovators:

*Don't do anything.
Hesitate. Doubt. Be unsure. Be undecided.
In other words, be reluctant.
People determined to 'do something', or 'change the world' or 'make a difference' in someone else's life ... well, these folks scare me. Too often it is the case that the interventions of well-intentioned people are soon ignored by or bring harm to locals. Sometimes the best thing we can do for someone else (and ourselves) is to walk away. Let it be. Let them be.*

DOING THE RIGHT THING IN THE RIGHT WAY

While we certainly want to encourage people to take an interest in helping others, we also need to make sure they go the right way about it, and do it respectfully. Wes's concern chimes closely with my own, where I frequently argue that we shouldn't develop solutions to problems we don't understand, that we shouldn't take ownership of a problem that isn't ours, and we certainly shouldn't build 'solutions' from thousands of miles away and then jump on a plane in search of a home for them. This, in the technology-for-development world I spend most of my time in these days, is generally what tends to happen. Good intentions, often poorly executed.

In a recent guest piece in the *Stanford Social Innovation Review*, I argued this very point. My argument was well received, but one commenter asked what I suggest all the people who lived far away from the problems of the developing world should do with their passion and time. My response was that there are problems everywhere, including where they lived, and it might be better to try and solve some of those instead. If people really do want to contribute to solving the problems of 'others' then they really need to go and live under the same conditions as them for a while. Each of the innovators in this book had exposure to the problems they decided to solve. I only felt remotely qualified to help grassroots non-profits in Africa with their communication problems because I'd spent the best part of twenty years living and working with them. It gave me an insight which was not only crucial to my solution working for them, but it also gave me credibility among the people I was trying to help.

A PERSONAL JOURNEY

I've had my own share of reluctance, and difficulty, over the years. A cosy career in offshore banking beckoned at a young age, and while it promised to deliver materially, spiritually it felt far removed from the kinds of things I felt I should be doing. A trip to Zambia in 1993 changed everything, and exposed me to the realities of life for people much less fortunate than myself. And there were many. I soon realised that life

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sucked for 90% of people on the planet, and this deeply troubled me. It does to this day. Here was my call to action, but for longer than I remember I struggled to figure out precisely what that action should be. How could I personally contribute to fixing these huge, global injustices?

It's a question than can easily eat you up. I did get myself 'out there', though. I sold everything I owned on more than one occasion and left what I called home, a liberating experience as it turned out, even if it didn't feel that way at the time. I lived in places like Calabar, Southern Nigeria for a year running a primate sanctuary – twelve months in suffocating heat and humidity mixed with the odd bout of malaria. I'd often sit in my room at night with a candle, trying to capture my thoughts and frustrations in a diary, continually searching while drinking cheap Nigerian beer. As with much of the previous ten years, I didn't find anything.

It took a late night motorcycle accident on a busy Calabar road for my own particular life to turn. After eight days my leg was finally put back together in a hospital in Jersey, in the Channel Islands, where I was born. I lay there in pain with no money, no mobility, no job, nowhere to live and still no idea where my life was headed. This was the lowest I was to get. Soon after I received an unexpected phone call from an ex-colleague offering me work on a very early mobile-for-development project. I upped sticks once more and hobbled over to England to live. It was January 2003, ten years after my search began. Figuring out how mobile phones, still rare in number but rising quickly across the developing world, could help solve some of the more pressing conservation and development problems of our time was a perfect fit for me, blending my passion for technology with a passion for international development and a desire to help people solve their own problems.

FrontlineSMS, a text messaging communications platform today in use in over 150 countries around the world, was conceived two years later over a beer and a football match, and it quite literally saved me. I finally found purpose, an outlet for my passion and energy that I could believe in. The way people I had never met took it and did remarkable things for themselves and their communities genuinely inspired me, and kept me going during the many dark and challenging days ahead, particularly at the beginning. FrontlineSMS became my springboard,

one which allowed me to move on and do other things I cared about. This book would not be here today without it, and perhaps neither would I.

The very real frustrations of life as a social innovator come alive on many of the pages of this book, and is testament to the great storytelling abilities of those who have contributed. But not all ventures end in success, and it would be wrong of this book to give that impression. Indeed, the social innovation graveyard is littered with ventures that either ran out of money, ran out of time, or ran out of ideas. The successful projects you read about here are among the few that didn't suffer that fate.

PERSPIRATION INTO INSPIRATION

When I started out there were few people I could turn to for advice and support, moral or otherwise. That's the price you pay, I suppose, for getting into something early. But things are different now – I found my purpose, threw everything at it, and came out the other side. I've learnt a lot along the way, and feel the least I can now do is help others who might be at the beginning of their own journey. Whether that be giving advice or a positive critique on an idea, a shot of encouragement, helping raise awareness through blog posts, giving tips on fundraising, making introductions to other projects and people with the same interests, or offering to be a future soundboard as ideas grow and develop. These are all things I didn't have when I started out, and using them productively now that I do is one of the biggest contributions I believe I can – and should – make to the future growth of our discipline. This book is testament to that commitment.

Our legacy shouldn't be measured in the projects or tools we build – or, indeed, in the books that we write – but in the people we serve and inspire, and the future we help create.

In the social innovation world we talk a lot about project sustainability, but little about human sustainability. If we're to have any chance of ongoing success in our battle against the many problems facing society then we need to attract the brightest young minds to the field, and then give them all the support they need to keep them there. Empowerment

isn't just something we do in a distant land. There's plenty we can be doing on our own doorstep. It's a different kind of empowerment, but that doesn't make it less valuable. If anything, it's more so.

ADVICE FOR SOCIAL INNOVATORS AT HEART

I'll close as many of my fellow contributors have, and share a few lessons I've learnt as I stumbled my way through the world of social innovation. I hope some of these prove useful as you travel your own path.

- Ask yourself: do you really understand the problem you're trying to solve?
- Are you the best person to solve the problem? Be honest, and if not go and support the work of someone else who is.
- Don't be competitive. There's plenty of poverty to go around.
- Don't be in a hurry. Grow your idea or project on your own terms.
- Don't assume you need money to grow. Do what you can before you reach out to funders.
- Volunteers and interns may not be the silver bullet to your human resource issues. Finding people with your passion and commitment willing to work for free can be time consuming and challenging.
- Pursue and maximise every opportunity to promote your work. Be relentless.
- Suppress your ego. Stay humble. Remain curious.
- Remember that your website, for most people, is the primary window to you and your idea.
- Learn when to say 'no'. Manage expectations. Don't overstretch.
- Avoid being dragged down by the politics of the industry you're in. Save your energy for more important things.
- Learn to do what you can't afford to pay other people to do.
- Be open with the values that drive you. People will respect you for it.
- Collaborate if it's in the best interests of solving your problem, even if it's not in *your* best interests.

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- Make full use of your networks, and remember that the benefits of being in them may not always be immediate.
- Remember the bigger picture, and that whatever you're trying to solve is bigger than any one person or organisation.
- Don't beat yourself up looking for your passion. You'll find it in the most unlikely of places, and if you don't it could very well find you.
- Finally, strive to be a good person, a role model for others. And if you do succeed, remember the importance of giving back.

Fuelled by the spread of the Internet and the ubiquity of mobile phones, there are more people working to solve pressing social and environmental problems in the world today than ever before in human history.

For anyone wanting to join them, it is my hope that *The Rise of the Reluctant Innovator* will show the way, or at least one way, and prove that the only qualifications you need to change the world are a little faith, hope and determination.

Join the conversation online:

Twitter: @ReluctantsBook

Facebook: facebook.com/ReluctantInnovation

Website: reluctantinnovation.com

5

WHERE THERE IS NO LIGHT

Laura Stachel



After watching local doctors and midwives struggle to treat critically ill pregnant women in near-total darkness on a Nigerian maternity ward, where an untimely power cut can mean the difference between life and death, obstetrician Laura Stachel delivers a solar-based solution that greatly enhances their survival prospects.

The woman had been in labour for hours and was suffering extreme pain. Her condition was deemed critical by the Nigerian medical staff and the decision was made to operate. The power grid was down. A nurse lit a kerosene lamp in the maternity ward. It barely lit the ward and was certainly inadequate for the operating theatre. We waited in the maternity ward, with the patient sitting in a wheelchair. The power surged back on, and we wheeled the patient to the surgical ward. A portable surgical lamp provided weak illumination in the operating room, adequate only by African standards. Using my flashlight, nurses prepped the patient for surgery. At the foot of the operating table, a

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nurse held my flashlight and directed a beam of light towards the patient. This aided considerably, particularly during the subsequent two power outages that occurred mid-procedure.

— *Research notes, Nigeria, 2008*

In my obstetrical practice in the United States, I loved being a part of the birth process – and considered it a privilege to be included in the intimacy of childbirth. It was my duty to support and empower the women I cared for. During labour, I often imagined an ancestral line of women who had given birth, each bearing the next generation, leading to this moment in time.

It wasn't until I spent time in the darkened maternity unit of a Nigerian hospital that I began to struggle deeply with the complexity of what is medically known as maternal mortality – women dying in childbirth. For most pregnant women, the idea is an anachronism. But in the developing world, particularly in sub-Saharan Africa, death from 'complications of childbirth' happens hundreds of times a day.

As an obstetrician, I am trained to solve problems in pregnancy and labour. I analyse what I see and chart a course of action. But the problems I confronted on my first trip to Africa – the erratic electricity, surgical delays because of poor lighting and lack of mobile communication, the scarcity of medical instruments, the inadequate staffing and limited training – were symptoms of a systemic failure. Maternal care was in dire straits for reasons far beyond any medical techniques I could offer: poverty, lack of infrastructure, gender inequity, illiteracy and politics all conspired against the health and survival of pregnant women. Within the hospital, lack of reliable electricity stood out as a major obstacle to providing effective maternal care.

I never expected to be a social innovator in the developing world, let alone an advocate for solar energy for maternal health care. But as I witnessed women struggling to survive childbirth in Nigeria, and health workers trying their best to provide care in darkened maternity wards, I knew I couldn't turn my back on this problem.

My first passion in life was music and dance. At the age of 17, I entered Oberlin Conservatory and College to study for a career as a concert pianist and modern dancer. I devoted myself to practice, spending eight hours a day in the music conservatory and dance studio.

In my sophomore year, my doctor discovered an irregularity with my ovaries. Without surgery, he couldn't discern whether this was cancerous or not. As I was wheeled into the operating room for diagnostic surgery, my doctor informed me, 'If it is cancer, you'll wake up with a big bandage and all your reproductive organs will have been removed. If it is benign, you'll only have a small bandage.'

In the recovery room, I reached for my abdomen before opening my eyes. A small bandage. I hadn't lost my ovaries. But the surgery had identified an ovulatory disorder that prompted a lot of questions. So many, in fact, that my gynaecologist quipped, 'If you have so many questions, why don't you become a doctor!'

It was a thought that had never occurred to me, but the idea resonated. Medicine would allow me to blend traits from my father (a scientist) and my mother (a clinical social worker). In my junior year, I left the familiarity of music and dance studios and enrolled in my first science classes. Medicine was a far cry from piano and dance, but the discipline I had developed in my artistic pursuits proved to be helpful in my classes. I studied alongside pre-med students who understood formulas and concepts that were absolutely foreign to me. It was a struggle, but I persisted.

My interest in medicine and healthcare deepened. I took an active role in women's health issues on the Oberlin campus. I became a volunteer peer counsellor at the college 'Sexual Information Center,' co-taught a course on the 'History and Politics of Women's Health Care,' organised campus-wide health education events, and worked with the Oberlin College Health Plan Board to expand student access to reproductive health services. These initial activities in health policy and education were immensely formative. An idea took shape in my mind: to become a physician who would have the power to make changes within the health care system.

After finishing up my pre-med requirements in the summer following college graduation, I spent a year in a research lab at the University of Chicago. I applied to medical schools all over the United States and was thrilled to be accepted at the University of California, San Francisco. As I moved through clinical rotations with my classmates, I found myself drawn to psychiatry – why people behave the way they

do – and women’s reproductive health, especially obstetrics. I also loved surgery, and believe that my years as a pianist endowed me with a manual dexterity that was an asset in the operating room.

At San Francisco General Hospital I had the privilege of conducting deliveries under the tutelage of seasoned midwives, and learned about natural childbirth, as well as the complications that could threaten the health of mother and baby. I was honoured to witness and participate in the miracle of childbirth. When it came time to select a specialty, I chose obstetrics and gynaecology, which allowed me to be part of the birth process, as well as to practise surgery. The field also satisfied my desire to connect deeply with my patients at such an important and vulnerable time in their lives.

I stayed at the University of California, San Francisco for my obstetric residency – four years of a non-stop training that occupied up to 130 hours each week. At the time it was believed that arduous working hours, including thirty-six-hour shifts, were necessary to prepare young obstetricians to handle any situation. The hours were intended to expose us to a wide range of complicated cases. As an intern, I remember being so tired on one occasion that I tried to decline my supervisor’s request to assist with a Caesarean section. I was told that if I refused, I would be denied future opportunities to gain valuable experience in surgical skills.

My first full-time job was at a progressive holistic women’s practice in Oakland, California, where I worked in tandem with midwives and nurse practitioners. From the start of my clinical practice I subscribed to the midwifery model – pregnancy as a state of health – rather than the traditional Western medical model – pregnancy as a time of risk, fraught with peril. This outlook would make it all the more jarring, years later, when I encountered women dying from complications of pregnancy and birth that I knew need not be fatal events.

As my career unfolded I had three children of my own, gaining first-hand experience of pregnancy and motherhood. It was quite a juggling act. My children recognised that their mother could be abruptly summoned out of the house to attend to a woman in labour. Family time together was often interrupted by an emergency call prompting me to bolt out of the door. My practice was extremely busy, and the thousands

of patients who identified me as their doctor knew that there could be a six-week wait for a routine appointment. I gained a reputation as a caring physician who loved to talk with her patients and include family members in the process of birth, often encouraging them to help with the delivery. In my practice, complications of pregnancy were unusual and tragic outcomes were rare. Joy and happiness infused my work every day.

In 2002 I was plagued by persistent back pain that eventually radiated to my neck and arms, sometimes delivering an electric-shock sensation to my hands. During one particularly arduous delivery, a searing pain tore down my back, and I knew something was very wrong. An MRI revealed the cause – severe degenerating disc disease in my cervical spine, compressing the nerves to my right arm. I was told I had to stop doing deliveries, and later, to stop my practice altogether.

My hectic life as a physician came to a halt. No more piles of charts with messages needing my attention, emergency rooms calling for consultations, phone calls in the dark of night alerting me to impending deliveries. I was the patient, and my job was to get better.

I found a physical therapist, a masseuse, and an acupuncturist. I spent hours each day lying on my back, using neck traction and doing gentle exercises in an attempt to strengthen the muscles supporting my neck. I couldn't get through the day without pain, but learned to modify my activities to minimise the stress. I used a special anti-gravity chair at home, and learned to do many activities in the reclining position. I couldn't sit up for long, and my family came to expect to see me lying down during dinner and car rides. I did make some modest improvement, but a neurosurgeon told me I couldn't return to my work until I could go for a month without pain. That month never came.

A year after I had taken leave from my practice it became obvious that I needed a vocation that would be less physically stressful. What I initially viewed as a devastating setback, I now consider the beginning of the most fulfilling chapter of my life.

I had a long-held interest in population health, and enrolled in the School of Public Health at University of California, Berkeley. Sitting up for classes wasn't easy, but I loved being a student again, and was excited to be introduced to new fields of study. Through weekly physical

therapy my physical endurance improved. Four years later, when an opportunity came to consult on a maternal health research project, I jumped at the chance. At that time, half a million women died each year in childbirth, 99% of them in developing countries.

The project fascinated me. In collaboration with Ahmadu Bello University Teaching Hospital (ABUTH) in northern Nigeria, UC Berkeley investigators sought to prepare local doctors to conduct research in maternal health. This was an issue of urgent importance, given Nigeria's high maternal mortality ratios. At the time of the study, Nigeria accounted for 2% of the world's population and 11% of the world's maternal deaths.

I obtained a research fellowship from the Bixby Center for Population, Health and Sustainability. Daniel Perlman, a medical anthropologist from UC Berkeley, was spearheading the Nigerian research efforts, and he shared with me the 'verbal autopsies' conducted by local research fellows – interviews with family members about the sequence of events leading to maternal death. Reading these transcripts introduced me to the depth of the challenges facing these pregnant women in need of emergency care. The obstacles they listed are known as the 'three delays', an extremely helpful framework for understanding the high rates of maternal mortality.

The first delay begins at home. Impoverished, far from a medical facility, and typically without decision-making authority, rural women are often reluctant to ask for help until labour is seriously compromised. Culturally, the male head of the household is the one who will make the decision to seek medical care, a move that is likely to involve spending a significant sum of money on clinic fees and transportation costs. Much time is lost as the family weighs these factors.

Transportation is the second delay, as more time is lost trying to find public transportation, a car, or a motorcycle to transport the woman. It was the third delay, though, that troubled me the most.

According to the field notes from Nigeria, many women who sought medical care for severe complications of labour were turned away from health facilities – as many as four or five health centres – in their quest to get care. Some of those who were finally admitted to an appropriate facility were so critically ill that little could be done to save them. But

the reports suggested that sometimes the health facilities failed to provide timely care.

Daniel Perlman was looking to conduct research inside the hospitals to understand more about hospital delays. Being an obstetrician in public health school made me uniquely qualified to help. I was invited to meet with the Nigerian team and conduct participant observation at a Nigerian hospital.

In March 2008, I boarded a plane to Abuja, Nigeria. It was my first time in West Africa and I was eager to utilise my obstetric knowledge in some way. I knew little about what to expect. As an anthropologist, Daniel suggested I keep an open mind and avoid excessive literature research in advance of my visit. My job was to observe obstetric care, and to report on what I learned.

We drove from Abuja to Zaria, a predominantly Muslim city in the Nigerian state of Kaduna. Daniel introduced me to the principal members of the research team – the Population Reproductive Health Partnership – obstetricians and family health physicians who were committed to improving maternal health research and outcomes. Soon he planted me in Kofan Gayan State Hospital, a large state hospital on the border of Zaria's 'Old City.'

Inside the metal gates I took note of the layout of hospital. Each medical ward had its own building. Most of the divisions – maternity, gynaecology, male medical and surgical, female medical and surgical, and paediatric – were familiar to me as an American doctor. What wasn't familiar was the 'VVF' ward, occupied by women suffering from vesico-vaginal fistula – one of the worst obstetric consequences of prolonged obstructed labour. VVF is a permanent fistula, or hole, between the bladder and vagina, resulting in permanent leakage of urine. In my time at the hospital, I learned that women in this ward waited weeks for a specialist surgeon to arrive to repair the defect, then more weeks to heal from surgery. Because the fistula, and the resulting urine leakage, had caused many of the women to be shunned by their communities, they utilised their tenure in the hospital to learn new skills, such as sewing.

For my research, I was drawn to the maternity ward – a one-storey building containing the labour and delivery room, the maternity room,

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and the eclampsia room. The maternity room had twelve metal patient beds in two rows and a nurses' station at the other. Newborn babies shared their beds with the mothers. I learned that 150 deliveries occurred in this hospital each month, with significant loss of life.

I was immediately struck by the grim conditions. The labour room had four bare metal delivery tables, a limited collection of obstetric instruments, a newborn incubator that hadn't worked in years, a broken lamp, two newborn scales in poor condition, and little else. There were no mattresses, sheets, bright lights or monitors characteristic of an American hospital. Most striking were the frequent power outages that left the hospital in darkness, creating an immense barrier to care.



Maternity ward in Nigeria with a nurse working in near-darkness. Photo by author.

I learned that electricity was rationed in Nigeria, that the public utility grid in Kaduna operated only a portion of each day – at most, twelve hours. When the hospital had power, it could use its lights, refrigerator, surgical suction and other energy-dependent devices. When the power was down, the hospital was incapacitated. A diesel-fuel generator tried to compensate during evening hours, but fuel was expensive, and the generator was used sparingly.

I had not predicted the challenges facing my Nigerian colleagues. At night, I observed maternity care, watching helplessly as doctors and midwives struggled to treat critically ill pregnant women in near-total darkness. The dim glow of kerosene lanterns often provided the only illumination. Without electricity, doctors had to postpone Caesarean sections and other life-saving procedures. When the maternity ward was in darkness, midwives were unable to provide emergency care and, on occasion, would turn patients away from the labour room door, despite their critical need for care.

The most upsetting example of this was when a woman in labour was brought to the hospital late at night, bleeding heavily. She had a critically low blood pressure. The presumed diagnosis was uterine rupture – a life-threatening condition requiring immediate surgery. The hospital was in darkness, unable to conduct surgery or provide the immediate blood transfusion necessary to save the woman's life. The midwife advised the family to go elsewhere to get care, and the family was sent back into the darkness. It was hard to imagine she would survive.

One night, I witnessed an emergency that set me on the path to where I am today. The labour room was in near darkness, and I settled at the foot of the bed of a seriously ill pregnant woman with eclampsia. Brought to the hospital unconscious, she had suffered several seizures at home in labour, according to the family members who hovered at her bedside. Although she had been given a single dose of anti-seizure medication at the hospital, the woman had another convulsion; her family attempted to hold her body down. When the seizure was over, she lay still, her breathing abated, and I thought she had died. Tears welled in my eyes.

Anyone would have found this woman's suffering disturbing, but as an obstetrician, I found it intolerable. Eclampsia, although serious, was an eminently treatable complication of pregnancy. I stood by the bed, feeling helpless. The woman stirred. Still alive.

I thought about all the women like her, suffering in obscurity, unable to access life-saving care that I had always considered routine. I vowed to change this.

I described the desperate hospital conditions in an email to my husband, Hal Aronson, who had taught solar energy technology in

California for more than ten years. Hal immediately focused on solar power as a way to provide electricity to the hospital.

When I returned home to Berkeley, Hal sketched a design for a solar electric system to help the Nigerian hospital. He recommended installing stand-alone solar electric systems targeting four parts of the hospital important to maternal survival: the maternity ward, the labour room, the operating room, and the laboratory, where we would install a solar blood bank refrigerator. In each system, solar panels would generate electricity that would be stored in a sealed lead-acid battery for night time use. The system had a charge controller to regulate electricity going into and out of the battery, as well as a load centre to power appliances. Included were 12V DC lights, a charging station for walkie-talkies, and power for other devices, such as surgical suction in the operating room and a blood bank refrigerator in the laboratory. With these systems, labouring women – and their care providers – would no longer have to be in darkness.

The project was compelling, but we needed funds. A campus-wide competition at UC Berkeley advertised a \$12,500 grand prize for a technology offering a social good. The deadline for a proposal was eleven days after my return from Nigeria, and provided great incentive to draft a paper and engage the talents of two other Berkeley graduate students: Melissa Ho, from the IT department, and Christian Casillas, from Energy Resources Group. I submitted a ‘white paper’ on our project and crossed my fingers. A few weeks later, we learned that our project was one of twelve finalists. All of us joined forces to prepare a poster for the competition finals. Melissa and I, along with my seven-year-old daughter, Rachel, dressed in African fashion at the event as we displayed a solar panel, two-way radios, and photos of scenes I had observed at the Nigerian hospital. Our efforts yielded an honourable mention, which carried a \$1,000 award, but it wasn’t enough to fund my dream.

I came home from the competition, dejected, and called Nigeria to speak to Dr Muazu, the head of Kofan Gayan Hospital. ‘We didn’t win enough money to do the project,’ I apologised. Dr Muazu was unfazed. ‘Don’t worry, Laura,’ he assured me. ‘You planted a seed, and from this a great tree will grow.’

A few hours later, I received a call from Thomas Kalil, a campus official who had been at the competition. 'You should have won,' he told me. 'How much do you need for your project?' I knew that our true budget exceeded the competition prize, and hastily doubled the amount originally offered as the grand prize. Within three weeks, Kalil had found us funding through two campus organisations – The Blum Center for Developing Economies and Berkeley Big Ideas.

We could start. The project that would later become We Care Solar had begun.

We set to work mapping out the details of our installation. Our plan was to hire a Nigerian solar company to install solar equipment using Hal's design. We conducted research over the Internet, contacted seven companies, interviewed key representatives by phone, and arranged to meet with one promising solar installer in Nigeria.

I wanted to include my Nigerian hospital colleagues in our planning. Would they like to use walkie-talkies for mobile communication to reduce delays in assembling a surgical team? Would the LED lights we found be bright enough for surgery? Would doctors and nurses find our headlamps (powered with rechargeable batteries) acceptable for clinical care? Their responses would guide our design.

As I planned a return trip to Nigeria I wanted something tangible to show my colleagues – something compact enough to fit in my suitcase. I didn't want the hassle (or potential danger) of explaining our project to customs officials at Abuja airport. I needed this to be discreet.

Hal's solution was a demonstration solar kit to bring on my next journey. He packed my suitcase with compact solar panels, a solar electric control board, a sealed battery, high-efficiency LED lights, headlamps and walkie-talkies. And he invited me to take a workshop on solar energy that he was teaching to educators.

When I returned to Nigeria, I unpacked the case in front of the surgical staff and hospital administrator. I attached the wires and plugged in the battery as Hal had taught me. A doctor flipped the switch and the lights turned on, bringing wide smiles to the hospital staff. The light was indeed bright enough for an operating room. The rechargeable walkie-talkies meant that a surgical team could be assembled in minutes instead of hours, avoiding lengthy searches for doctors and

surgical technicians on the hospital grounds. The headlamps with rechargeable batteries were immediately put to use.



Unpacking the first Solar Suitcase in a Nigerian hospital. Photo courtesy of We Care Solar.

I met with the Nigerian solar installer whom Hal and I had interviewed by phone, and together we surveyed the hospital, measuring the power requirements for various medical devices. Dr Muazu approved of our plans for a larger installation in six months. But one operating room technician, Aminu Abdullahi, had another idea.

‘You must leave your suitcase here,’ he insisted. ‘This will help us save lives now.’ Aminu convinced me that he would care for Hal’s equipment in my absence. Indeed, Aminu took charge of the solar devices, dutifully setting the solar panel outside each morning, taking it in at night, and using the system to keep batteries charged for headlamps and two-way radios. The first We Care Solar Suitcase had found a home.

Six months later, I returned to conduct the larger hospital installation, including procurement of a blood bank refrigerator for the laboratory. The hospital was immediately transformed. Midwives could

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perform obstetric procedures throughout the night, surgical teams were assembled in minutes rather than hours, Caesarean sections were conducted regardless of time of day, and patients were no longer turned away for lack of power. We celebrated the solar installation with a community event, including a ribbon-cutting ceremony from the Kaduna State Minister of Health. Though the hospital staff was clearly pleased with their facility upgrade, staff at one nearby medical clinic felt left out.

‘We conduct deliveries in the dark as well,’ the clinic manager lamented. ‘Why are you only helping the hospital?’

I was initially a bit defensive, explaining that we only had funds for the hospital. However, it soon occurred to me that the suitcase-size system Hal had made for the hospital demonstration could be transplanted to the clinic. We brought the cobbled-together system to the clinic, much to the delight of midwives who no longer needed to rely on candles and kerosene at night.



Bringing an early Solar Suitcase prototype to a Nigerian clinic. Photo courtesy of We Care Solar.

I continued to conduct research at Kofan Gayan hospital, returning every few months to observe care. It wasn't long before additional local

clinics asked for the 'solar doctor' and the suitcase that would light up maternity care. Hal was glad to accommodate these requests, and started assembling small solar kits for each clinic. On each trip to Nigeria, I would include a Solar Suitcase or two in my luggage.

Word continued to spread, and I was invited to talk about our experience at several US conferences. At one of these meetings, New York Times writer Nicholas Kristof gave a stirring keynote address. After his talk, I told him how his own articles had inspired our work in Africa. The next day, Kristof wrote about our mission in his online blog, and requests for We Care Solar Suitcases arrived from around the world. The need for reliable electricity for maternal health care extended far beyond Nigeria.

Each time I returned to Nigeria I visited the clinics using our solar equipment, making note of any failures as well as the successes. Incorporating feedback from our field installations, the design of our Solar Suitcases became increasingly refined. The suitcase components became more rugged and easier to use. Bare wires needing screwdrivers for installation were replaced with plug-and-play connectors. Safety fuses were replaced with breaker switches. Our simple wooden board was swapped for a plastic panel. And seeing how dirty our equipment became after months of use prompted us to enclose our components in a plastic protective case.

Hal enlisted local volunteers to help with assembly in our backyard. Soon, our Solar Suitcases were travelling to midwives in Burma, clinics in Tibet, and doctors in Tanzania. Solar Suitcases would reach their destination by volunteer couriers who would arrive at our home for training, and then personally transport a Solar Suitcase to a remote clinic or hospital.

When the devastating Haiti earthquake struck in 2010, we had no choice but to get Solar Suitcases into the field as quickly as possible. Medical relief groups made numerous requests for our portable solar power stations, and many small donations poured in as well. In four days, Hal had assembled a team of volunteers to assemble the Solar Suitcases, which we promptly dispatched to several medical groups.

As the Solar Suitcase was introduced to new countries, we worked to adapt the suitcase configuration to meet local requirements.



Hal Aronson leading the backyard assembly of Solar Suitcases for Haiti. Photo by author.

Sometimes we learned the hard way. We discovered, for example, that an initial design short-cut – using an American AC-style outlet for our DC lights in Nigeria – was confusing in Haiti, where AC wall outlets accepted (and overpowered) our 12V DC lamps. We redesigned the outlets, and I flew to Haiti with a volunteer engineer, Brent Moellenberg, to retrofit our Solar Suitcases with the new design.

After our experience in Haiti, it became clear to us that our programme was gaining traction. Hal and I dived into the project, converting our home into a Solar Suitcase assembly line. Equipment was strewn all over the house and the living room became our shipping and packing line. We juggled a steady stream of part-time volunteers, including many who were quite talented, but none who could sustain a hefty long-term commitment without remuneration.

Eager to gain increased exposure and support, we entered several competitions, enlisting the support of a talented UC Berkeley MBA student, Abhay Nihalani, and a recent MBA graduate from Duke, Michael MacHarg. In 2010 we applied for (and won) ten competitions

and fellowships, including the Global Social Benefit Competition at UC Berkeley, the Ashoka Changemakers Healthy Mothers, Strong World Award, the Global Social Benefit Incubator at Santa Clara University, and a PopTech Fellowship.

This whirlwind year brought me into contact with other social entrepreneurs and mentors, and helped me gain perspective about ways to extend our reach. As I shared our limited experience in Nigeria and Haiti with social entrepreneur groups, we were asked to scale up our operations.

Hal and I had no experience in this realm. Hal had been a solar educator for years, initially creating hands-on solar electricity projects for students, and later, developing a curriculum for educators. My career in medicine demanded clinical and surgical acumen, not project management skills. We needed a thoughtful approach to scale up.

Some advisers suggested the best approach would be mass production of a simplified prototype. They encouraged us to immediately strip down some of the more costly features of our early design, and to manufacture a cheaper, less ambitious version of our product. ‘Fewer bells and whistles’, we were told.

We were worried about this approach. We had used an iterative approach, evolving the design of the Solar Suitcase to meet the needs of health workers working in unfathomable conditions. We didn’t want to downgrade the functionality of our product, and we weren’t ready to commit to one particular design without more field research.

Our dream was to create an optimised version of the suitcase incorporating existing feedback from our field installations, and to conduct further research on this model in a limited number of health facilities. Since our formative experience began in northern Nigeria, we thought this would be a good testing site. But we knew this would require staff, time and money.

We applied for independent non-profit status. The recognition we received through awards and fellowships helped us with donations. We got our biggest boost when The MacArthur Foundation funded us specifically to bring our innovation to scale. In awarding us a coveted grant, the foundation recognised the potential for our Solar Suitcases to ‘bring light’ to an area of maternal health care that had previously

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been largely ignored. Our grant targeted four areas – technology design, educational programming, field research, and scale-up of operations. With this funding, and additional research support from the Blum Center for Developing Economies, we could hire key personnel, and we were on our way.

Our learning curve was steep. We had never run a non-profit organisation, managed international programmes, or interacted with contract manufacturers and government officials. We asked for help wherever we could find it, thankful to receive mentorship from business consultants, lawyers, industrial engineers, designers, social entrepreneurs and academics. We are fortunate to be based in the San Francisco Bay Area, which enabled us to collaborate with a diverse talent pool: students and professors from UC Berkeley and Stanford, scientists from Lawrence Berkeley National Laboratory, other technology-oriented non-profits, and advisers from Silicon Valley.

Hal and I devoted ourselves full time to We Care Solar. We hired consultants to help lead operations and provide financial oversight.



Brent Moellenberg, Hal Aronson and Christian Casillas preparing version 2.0 of the Solar Suitcase. Photo by author.

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Brent Moellenberg, the engineer who had led our technical activities in Haiti, was brought on board full time. As our organisational capacity expanded, we developed systems for accounting, data management and inventory. Hal and Brent met with lighting designers, solar manufacturers and contract manufacturers. Our aim was to ‘design for manufacturability,’ which meant making user-friendly, rugged Solar Suitcases in a factory rather than our house! We found that our mission – to use solar light and power to improve maternal health – attracted generous in-kind support. So we were able to accomplish a great deal with a limited budget.

We realised that the technology alone was not sustainable without proper usage and long-term maintenance. In addition to developing photo-rich user manuals, we printed bright laminated posters, recognising from our site visits that in rural clinics, posters were the most common form of written information. We created educational programmes for health workers, and a basic curriculum on solar energy and optimal use of the Solar Suitcase. We prepared more advanced materials on installation and maintenance for technicians. And we piloted this programme in Liberia with sixty health providers, before



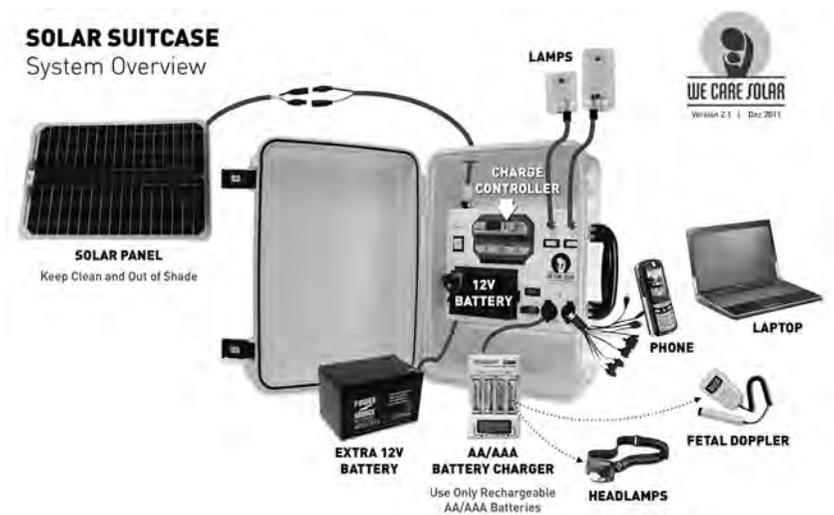
Training Nigerian health workers to use the Solar Suitcase. Photo courtesy of We Care Solar.

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extending the programme to Nigeria, Sierra Leone, Uganda and Malawi.

As we travelled from country to country, we conducted facility assessments at diverse health centres, which exposed us to variations of health facility layout, construction materials and energy needs. As a result of our research, we expanded the capacity of the Solar Suitcase, and included hardware and tools to facilitate installation. Our newer version accommodated larger panels and batteries, included a foetal heart rate monitor, and had the option for additional lights that could be plugged into a 'satellite' receptacle.

We interviewed health workers before and after they used the Solar Suitcases, and monitored system performance with electronic data loggers.



Poster of the Solar Suitcase; this is used in the training curriculum. Photo courtesy of We Care Solar.

Midwives told us of how they previously struggled to provide care at night by using candles, kerosene lanterns, or cellphone lights. At times, they were forced to hold their only light source in their mouths to keep both hands free for medical care. Perhaps the most striking example came from a Nigerian midwife who was unable to finish a delivery in the dark. There was no kerosene, no candle, nothing to provide

light in her clinic. In desperation, she asked her assistant to set a match to the calendar on the wall, and she finished the delivery by the glow of the burning paper.

We learned that Solar Suitcases enabled health workers to perform procedures throughout the night. Specifically, midwives explained that it was easier to conduct routine and complicated deliveries, treat bleeding mothers, administer medication at night, keep phones charged for emergency referrals, and resuscitate newborn babies. Many clinics stayed open longer hours, and patients were more likely to seek skilled care in a facility that they knew had light. We heard again and again that reliable lighting and phone charging improved health worker morale and reduced the fear that used to go hand-in-hand with working in a darkened health centre.



Liberian health workers receiving a Solar Suitcase at night. Photo by author.

We have been surprised to receive requests for Solar Suitcases from large maternity wards and hospital operating theatres in need of reliable power. Even though we explain that our Solar Suitcases have a limited light supply not intended for larger rooms, hospital administrators insist that our Solar Suitcase lighting is vastly superior to the candles and kerosene lanterns that are the only source of lighting when the

power grid is down. The Solar Suitcase is seen as an essential back-up source of power to the utility grid.

Indeed, when we visited eastern Uganda in the summer of 2012 to assess the impact of the Solar Suitcase, I was privy to a night-time Caesarean section during which the main power stopped functioning. With a Solar Suitcase light above the operating table, the surgery continued without interruption. The doctors told us the Solar Suitcase lights were better for surgery than their usual lights, and there was no longer the need to send patients to distant hospitals when night falls.

We now have more than 400 suitcases in over twenty-five countries, helping tens of thousands of women give birth more safely every year. Each small success has been celebrated, but is often supplanted by an array of new tasks and responsibilities of larger magnitude. The biggest challenge has been in designing programmes to scale up distribution and maintenance in countries with poor physical and political infrastructure. We are now partnering with NGOs and UN agencies such as the World Health Organisation (WHO), the United Nations Population Fund (UNFPA) and UNICEF to implement our programmes.

Sometimes the pressure feels overwhelming – we have a limited staff and we are tackling an enormous problem. It would be so much easier to ignore the problem of energy poverty in health care. As we approach our breaking point, we often receive an inspiring story of how the Solar Suitcase is helping a health provider, or a clinic, or saving a life.



*A Ugandan surgeon uses a Solar Suitcase light to conduct an emergency C-section.
Photo courtesy of Jacqueline Cutts.*

One such story came from Dr Jacques Sebisaho, a New York-trained doctor who operates a clinic on the island of Idjwi in the Democratic Republic of the Congo. The village has no power and, when night falls, it is impossible to provide adequate medical care. On this trip, the doctor had a Solar Suitcase, which was quickly put to use to illuminate a twin delivery.

More alarming, his arrival coincided with the onset of a cholera epidemic. The clinic was flooded with patients needing intravenous fluids, antibiotics and constant monitoring. The clinic could not house all the patients in need of care, and mats were placed outside on the ground, creating a makeshift outdoor infirmary. The Solar Suitcase lighting was brought from patient to patient, and enabled the team to provide constant monitoring.

Although Dr Sebisaho feared many lives could be lost, he and his team achieved something they considered a near-miracle. All 122 patients treated that month survived – not a single man, woman or child was lost despite the severity of many of the cases. He had expected 50% of the patients to die, and said that 80% of deaths occur at night.

In the case of Dr Sebisaho, the Solar Suitcase was a lifesaver, boosting the morale of health workers and inspiring the entire community.

I believe the light was the force behind everything. I have no words to describe how confident we all were, knowing we could do anything any-time (day or night). This sounds obvious to a person here [in the USA], but the light meant the world there.

We are witnessing what light can do in a community and how it can save lives in regions where night means death if [you are] sick or in need of emergency care after the sun goes down!

The stories of Dr Sebisaho, and hundreds of midwives, nurses and doctors who are grateful for the light they need to do their work, infuse us with the energy we need to continue our journey. So despite the sacrifices, the endless challenges, the constant stream of work ahead, we continue to move forward.

Just as I could not have predicted how my life would unfold at seventeen when I was a dancer and pianist, nor at forty when I could no longer continue my beloved medical practice, so too I cannot predict

WHERE THERE IS NO LIGHT

the journey that lies ahead for We Care Solar. What I do know is that every day women and their infants are struggling in childbirth in the dark, in remote (and not so remote) corners of the world. And beyond the health clinics there are orphanages, schools, refugee camps and other institutions where human needs are compromised because of a lack of reliable electricity.



Dr Jacques Sebisaho (just right of centre) on Idjwi Island introducing the Solar Suitcase. Photo courtesy of Jacques Sebisaho.

With the Solar Suitcase, I know that we have the power to change that. And as long as We Care Solar and Hal and I are here, we will continue our efforts to harness the power of the sun to improve people's lives.

ACKNOWLEDGEMENTS

My life partner, Hal Aronson, was the driving force behind the Solar Suitcase. From the moment I shared my observations of the effects of energy poverty in a Nigerian hospital, Hal dedicated himself to developing a solution for this problem. In addition to being the true innovator

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of the Solar Suitcase and the co-founder of We Care Solar, Hal provided technical expertise, engaged countless volunteers, offered constant emotional support, and became the primary caretaker for our family during each of my trips abroad. Hal's endless devotion to creating solar solutions to serve last-mile health centres is the reason for our success.

ABOUT THE AUTHORS

FOREWORD: ARCHBISHOP DESMOND TUTU

Archbishop Desmond Tutu is a Nobel Peace Laureate and former Archbishop of Cape Town who played a key role in the fight against apartheid in South Africa. In 1995, President Nelson Mandela appointed him Chairman of the Truth and Reconciliation Commission, a body set up to probe gross human rights violations that occurred under apartheid. Today, Archbishop Tutu is considered an elder world statesman and is widely regarded as a moral voice promoting peace, reconciliation and justice.

INTRODUCTION: KEN BANKS

Ken Banks, Founder of kiwanja.net, devotes himself to the application of mobile technology for positive social and environmental change, and has spent the last two decades working on projects in Africa. His early research resulted in the development of FrontlineSMS, an award-winning text message communication system today powering thousands of social change projects in over one hundred and fifty countries around the world.

Following a management transition at FrontlineSMS in mid-2012, Ken has been focusing on a new project, Means of Exchange, which looks at how everyday technologies can be used to democratise opportunities for economic self-sufficiency, rebuild local community and promote a return to local resource use.

ABOUT THE AUTHORS

Ken graduated from Sussex University with honours in Social Anthropology with Development Studies, was awarded a Stanford University Reuters Digital Vision Fellowship in 2006, and named a PopTech Social Innovation Fellow in 2008. In 2009 he was named a Laureate of the Tech Awards, an international awards programme which honours innovators from around the world who are applying technology to benefit humanity. He was named a National Geographic Emerging Explorer in May 2010 and an Ashoka Fellow in 2011, and was the recipient of the 2011 Pizzigati Prize for Software in the Public Interest. That summer he won the Curry Stone Design Prize for his pioneering work with FrontlineSMS, and was selected as a member of the UK Prime Minister's delegation to Africa. In 2012 the Cambridge business community presented Ken with a 'Special Achievement Award' for his work as a social entrepreneur. Later that year he was made a Fellow of the Royal Society of Arts.

Ken represents Sussex University as their Ambassador for International Development, and is a founding member of the British Government Department for International Development's 'Digital Advisory Board'. In addition to his own work, Ken mentors early-stage entrepreneurs through PopTech and the Unreasonable Institute.

Ken is also well known for his writing and blogging on Africa, technology and innovation and his work has been published online by CNN, the BBC and the Guardian among others. He has also written for the print edition of *Wired* magazine, and has had guest chapters published in a number of collaborative books. When he's not working, Ken spends much of his time being bossed around by his young son, Henry, and twins Madeleine and Oliver.

Website: kiwanja.net

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CHAPTER 1: BRIJ KOTHARI

Brij Kothari is on the faculty of the Indian Institute of Management, Ahmedabad (IIM-A) and the founder of PlanetRead.org (non-profit)

ABOUT THE AUTHORS

and BookBox.com (for-profit), both dedicated to literacy and language learning through popular culture, mass media and Information and Communication Technologies.

At IIM-A and PlanetRead, Brij and his team have innovated, researched and implemented Same Language Subtitling (SLS) on television for mass literacy. SLS on Bollywood film songs delivers reading practice to 200 million early-readers in India, prompting Bill Clinton to call it 'a small change that has a staggering impact on people's lives.' He has represented his SLS work at the Clinton Global Initiative in New York (2009 and 2011) and the World Economic Forum in Davos (2011 and 2013).

BookBox produces animated stories for children, integrated with SLS to deliver reading and language learning in over thirty languages. BookBox content is freely available on YouTube.

Brij was elected Schwab Foundation Indian Social Entrepreneur of the Year (2009), Ashoka Fellow (2004) and Reuters Digital Vision Fellow at Stanford University (2003). His research publications have primarily focused on literacy, primary education and indigenous knowledge. He is a regular columnist on social innovation and entrepreneurship for the *Financial Chronicle*.

The SLS innovation recently won the 2013 International Prize of the Library of Congress Literacy Awards. It is also the recipient of awards from the All Children Reading Grand Challenge (USAID), Tech Museum of Innovation (San Jose), the Institute for Social Inventions (London), Development Marketplace (World Bank) and the NASSOM Foundation (Social Innovation Honour). Brij is a Finalist for the World Technology Award for Education (2013).

Brij grew up in the Sri Aurobindo Ashram in Pondicherry, India. He has a PhD in Education and a Masters in Development Communication from Cornell University, and a Masters in Physics from the Indian Institute of Technology, Kanpur.

Website: PlanetRead.org

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CHAPTER 2: ERIK HERSMAN

Erik Hersman is an entrepreneur, writer and speaker on the boundless spirit of technology innovation in Africa. He is the co-founder of Ushahidi, which allows users to share breaking news through text messaging that continues to revolutionise and empower journalists, watchdog groups, and everyday people around the world. He also founded the iHub in Nairobi, the innovation hub for the technology community, which is bringing together entrepreneurs, hackers, designers and the investment community and is built around the vision of an epicentre for Kenya's booming tech industry. He is also the founder of the BRCK, a new connectivity device that is considered a back-up generator for the Internet, and is a general partner in the Savannah Fund, which makes small seed investments in Africa's tech start-ups.

A TED Senior Fellow and PopTech Faculty Fellow, Erik grew up in Kenya and Sudan and keeps two influential blogs: WhiteAfrican, where he writes about technology on the African continent, and AfriGadget, a group blog that celebrates African ingenuity.

Website: whiteafrican.com

Twitter: @whiteafrican | @AfriGadget | @Ushahidi |
@iHub | @BRCKnet

CHAPTER 3: JOEL SELANIKIO

Dr Joel Selanikio leads DataDyne's efforts to develop and promote new technologies and business models for health and international development, including multiple award-winning Magpi mobile data collection software (formerly EpiSurveyor) – the most widely scaled mobile technology ever created for international development, with over 24,000 users in more than 170 countries.

Dr Selanikio is a frequent speaker and consultant in the fields of social entrepreneurship, innovation, public health and the use of technology for development ('ICT4D'). He is a judge for the GSMA Global Mobile Awards, was named by Forbes as one of the most powerful innovators

of 2009, and is a winner of the Lemelson–MIT Award for Sustainability and the Wall Street Journal Technology Innovation Award.

He has been profiled by *The Guardian*, *Wired*, *Forbes*, *The Economist*, *The Wall Street Journal*, the BBC and *The Washington Post*, among many others. His public speaking includes presentations at The World Economic Forum in Davos, TED, Foo Camp, Google, Clinton Global Initiative, the Royal Society of Medicine, SciFoo and many other venues.

Dr Selanikio is a practising paediatrician, as well as a former Wall Street computer consultant, and former CDC epidemiologist. In his role as an officer of the Public Health Service, Dr Selanikio served as Chief of Operations for the HHS Secretary’s Emergency Command Centre in the aftermath of 9/11. In 2005, he was given the Haverford Award for Humanitarian Service for his work in treating tsunami victims in Aceh, Indonesia.

Website: about.me/jselanikio

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CHAPTER 4: JOSH NESBIT

Josh Nesbit is the CEO and co-founder of Medic Mobile, a non-profit technology company on a mission to improve health equity in underserved communities. Medic Mobile supports 10,000 community health workers across nineteen countries in Africa, Asia, Latin America and the USA. Josh also created Hope Phones, a cell phone recycling campaign designed to engage millions of Americans. He is an Ashoka Fellow, PopTech Social Innovation Fellow, Echoing Green Fellow and Rainer Arnhold Fellow. Josh was selected by Devex as one of 40 Under 40 Leaders in International Development, received the Truman Award for Innovation from the Society for International Development and was named by Forbes in 2011 as one of the world’s top thirty social entrepreneurs.

Website: medicmobile.org

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CHAPTER 5: LAURA STACHEL

Dr Laura Stachel, co-founder and executive director of We Care Solar, is a board-certified obstetrician-gynaecologist with fourteen years of clinical experience. She holds an MD from the University of California, San Francisco and an MPH in Maternal and Child Health from the University of California, Berkeley. Her research on maternal mortality in Nigeria in 2008 alerted her to the deleterious effects of energy poverty on maternal health outcomes. Along with Hal Aronson, she co-founded We Care Solar to bring simple solar electric solutions to maternal and child health care in regions without reliable electricity. We Care Solar has equipped hundreds of health facilities in more than twenty-five countries with the Solar Suitcase, a compact solar energy system providing essential lighting and power.

Laura is passionate about promoting sustainable energy solutions for women's health and speaks around the world on this topic. She has been active in the UN Foundation's Sustainable Energy for All Initiative and co-chairs the Working Group on Energy and Health. Laura is one of the Top 10 CNN Heroes of 2013. For her work with We Care Solar, Laura received the 2012 Clean Energy, Education and Empowerment Award, the 2012 United Nations Association Global Citizens Award, the 2011 Tech Award, the 2010 Jefferson Award for Public Service, and the 2010 UC Berkeley Chancellor's Award for Civic Engagement.

Laura is on staff at the Blum Center for Developing Economies at the University of California, Berkeley. She has taught in the UC Berkeley School of Public Health and serves on the editorial board for the *Berkeley Wellness Letter*.

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CHAPTER 6: LOUISA SILVA

Dr Louisa Silva enjoys practicing medicine in a way that integrates Western medicine, Chinese medicine and Public Health. She had no

ABOUT THE AUTHORS

plans to go into research until the son of a dear friend was diagnosed with autism and she became aware of the devastating lack of options for families. She decided to do something about it. She was awarded grants from Northwest Health Foundation and the Curry Stone Foundation and, over the next ten years, carried out research on a daily parent-delivered massage therapy for autism, based on Chinese medicine. Her research studies have been published. They show that five months of therapy reduces the severity of autism by 25% and improves sleep, digestion and behaviour.

Dr Silva is the first person to show the connection between an abnormal sense of touch and autism, and to research a massage programme whereby parents can normalise their child's sense of touch. She holds a medical degree from UCLA, and a Masters in Public Health and Preventive Medicine from the Medical College of Wisconsin. She lives in Oregon and San Francisco.

Website: qsti.org

CHAPTER 7: LYNN PRICE

Lynn Price is a social entrepreneur, author and inspirational speaker featured on the front page of the US National Speakers Association magazine. With wit, wisdom and compelling stories, she moves corporate and non-profit communities to balance making a living alongside making a difference. Her expertise is Vision For A Change, guiding individuals and groups to bring business ventures to fruition and thrive with the Power of the Ripple to replicate and grow.

Passionate about social responsibility and making change in the world, Lynn is the recipient of the US Points of Light President's Service Award, presented by President Bill Clinton, and Oprah Winfrey's Angel Network Use Your Life Award. Lynn is Founder and President Emeritus of Camp To Belong, an international non-profit organisation dedicated to re-uniting brothers and sisters placed in separate foster homes or other out-of-home care at summer camps and year round experiences. Previously, Lynn was a sales, business development and

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communications professional with ESPN, Group W Westinghouse Satellite Communications, The Golf Channel and National CineMedia (NCM). She is author of *Vision For A Change: A Social Entrepreneur's Insights from the Heart* and *Real Belonging: Give Siblings Their Right to Reunite* available at amazon.com. Lynn is an Ashoka Fellow, recognised as one of approximately 2,000 global social entrepreneurs around the world.

Website: lynnprice.com

CHAPTER 8: PRITI RADHAKRISHNAN

Priti Radhakrishnan is Co-founder and Director of Treatment Access at I-MAK. She obtained her law degree from New York University (NYU) School of Law and has worked as a health attorney in the United States, Switzerland and India. Prior to founding I-MAK, she served as the Senior Project Officer of the Lawyers Collective HIV/AIDS Unit in India.

In 2007 Priti coordinated the efforts of TEAM VINAY – a movement that registered 25,000 new bone marrow donors in the South Asian American community, which received the National Marrow Donor Program's Lieutenant General Frank E. Peterson Jr. award for innovation and commitment to minority recruitment & retention of bone marrow donors. In 2008, she was awarded the Echoing Green Fellowship for social entrepreneurs, the PopTech Social Innovation Fellowship and was selected as one of 160 dynamic young leaders for the 2008 Asia 21 Young Leaders Summit in Tokyo. The Asia Society also selected Priti as one of three young leaders from the United States for its 2009 Class of Asia 21 Fellows. Priti was awarded the 2010 Black, Latino, Asian Pacific American NYU Law Association's Young Alumni Award. She was named NYU School of Law's Alumnus of the Month (November 2009) and was the 2010 Honoree of the NYU Law Women of Color Collective. Priti was also selected by the King Baudouin Foundation as one of a group of young visionaries making change for its Spotlight on the Millennials series.

In 2011, Priti was named an Associate Fellow by the Asia Society. In 2012 she served as a Mentor at the Unreasonable Institute, an

international accelerator for high-impact entrepreneurs. In 2012, Priti was a recipient of the South Asian Bar Association of New York's Legal Trailblazer Award. She is currently serving as a Fellow with the India-Pakistan Regional Young Leaders Forum, as an adjunct faculty member at the St Luke Foundation/Kilimanjaro School of Pharmacy and as Faculty for PopTech's Social Innovation Fellows Program. In 2013, Priti was also awarded the National South Asian Bar Association's Public Interest Achievement Award and was named to the Good 100, a selection of the 100 most innovative individuals changing the world.

Website: i-mak.org

CHAPTER 9: SHARON TERRY

Sharon F. Terry is President and CEO of Genetic Alliance, a network of more than 10,000 organisations, of which 1,200 are disease advocacy organisations. Genetic Alliance enables individuals, families and communities to reclaim their health and become full participants in translational research and services.

She is the founding CEO of PXE International, a research advocacy organisation for the genetic condition pseudoxanthoma elasticum (PXE). As co-discoverer of the gene associated with PXE, she holds the patent for ABCC6 to act as its steward and has assigned her rights to the foundation. She developed a diagnostic test and conducts clinical trials. She is the author of more than 120 peer-reviewed papers, of which 30 are PXE clinical studies.

Sharon is also a co-founder of the Genetic Alliance Registry and Bio-Bank. In her focus at the forefront of consumer participation in genetics research, services and policy, she serves in a leadership role on many of the major international and national organisations, including the Institute of Medicine Science and Policy Board, the IOM Roundtable on Translating Genomic-Based Research for Health, the PubMed Central National Advisory Committee, the National Coalition for Health Professional Education in Genetics Board, the International Rare Disease

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Research Consortium Executive Committee and as Founding President of EspeRare Foundation. She is on the editorial boards of several journals. She was instrumental in the passage of the Genetic Information Non-Discrimination Act. In 2005, she received an honorary doctorate from Iona College for her work in community engagement; the first Patient Service Award from the UNC Institute for Pharmacogenomics and Individualized Therapy in 2007; the Research!America Distinguished Organization Advocacy Award in 2009; and, in 2011, the Clinical Research Forum and Foundation's Annual Award for Leadership in Public Advocacy. In 2012, she became an honorary professor of Hebei United University in Tangshan, China, and also received the Facing Our Risk of Cancer Empowered (FORCE) Spirit of Empowerment Advocacy Award. She was named one of FDA's '30 Heroes for the Thirtieth Anniversary of the Orphan Drug Act' in 2013. She is an Ashoka Fellow.

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@trialsfinder | @babysfirsttest | @genesinlife

CHAPTER 10: WES JANZ

Wes Janz, PhD, RA, is a professor of architecture at Ball State University, Muncie, Indiana. In 2006, he was the recipient of the university's Outstanding Teaching Award. He is the founder of onesmallproject, a collection of global and local initiatives that foreground the lives of people many observers consider to be in need or at risk. Wes was one of five finalists for the inaugural Curry Stone Design Prize, an international award established in 2008 to recognise and encourage breakthrough projects that 'engage communities at the fulcrum of change, raising awareness, empowering individuals and fostering collective revitalisation.' He is married to Marcia Stone and lives in Indianapolis, Indiana.

Website: onesmallproject.org

Twitter: @onesmallproject

FURTHER DISCUSSION

1. What do you feel about the use of the word 'reluctant' in this book? Was the editor right not to change it to 'accidental' or 'serendipitous'? Does 'reluctant' innovation lead to more meaningful or lasting solutions?
2. Does everyone have the potential to be a social entrepreneur? Can you learn how to be one, or is it something you are born with?
3. Do you agree that it's better to find your passion, or your calling, before you learn the mechanics of running a social enterprise? What are the advantages of learning first, or getting out in the world first?
4. Is setting out to 'change the world' realistic? Is it even possible? Looking back, how many social entrepreneurs can claim to have done that? Is it realistic to expect to make such a global impact?
5. Why is there a tendency for people to prefer building solutions to the problems of 'others' far away? Why are problems closer to home seen as less attractive? Is there a certain romance to working in Africa or the developing world? What are the pros and cons of such an approach?
6. What common themes run through some, or all, of the stories in this book? How many resonate with you? How many don't? Why?

FURTHER DISCUSSION

7. What are your views on the practicalities – the nuts and bolts – of social innovation after reading this book? Have they changed? Are you surprised by the struggles and challenges many of the innovators in this book faced? Does it put you off?
8. How can businesses and governments work more closely with social entrepreneurs to shorten the time it takes to research, develop and scale a social innovation?
9. Do the personal stories of the people behind the innovations matter? Does it help to know what drives them? Does it make social innovation feel 'more real' or achievable?
10. What is the most important attribute of a social entrepreneur? What attributes can you think of?
11. What do you think holds people back from engaging in their innovation, and introducing the vision to others?
12. What are the biggest barriers to innovating solutions to global problems? How might we rectify them?

USE ARTISAN KNOWLEDGE TO CREATE A RESILIENT SOCIETY
DESIGN INCOME-BOOSTING SOLUTIONS FOR RURAL MYANMAR
BRING DIGNITY THROUGH DESIGN TO WAR-TORN REGIONS
DESIGN LIKE YOU GIVE A DAMN
INCREASE CIVIC PARTICIPATION THROUGH DESIGN
TURN A SODA BOTTLE INTO A SOLAR LIGHT
DESIGN HOSPITALS THAT PREVENT CONTAGION
CREATE ART TO MEND NEIGHBORHOODS
RESTORE PALESTINE TO PROTECT CULTURAL IDENTITY
DEFINE STRATEGIES FOR A NEW URBAN ECOLOGY
START A GRASSROOTS MOVEMENT WITH A TEXT MESSAGE
TEACH PEOPLE HOW TO BUILD POST-DISASTER
HELP GIRLS STAY IN SCHOOL WITH AFFORDABLE MENSTRUAL PADS
MAKE LOW COST HOUSING PARTICIPATORY
POWER LOCAL BUSINESS WITH BICYCLES
REIMAGINE A CITY FROM THE POOREST END
BUILD A TWO-STORY SCHOOL BY HAND
IMAGINE A SELF-SUFFICIENT SOCIETY

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Despite the tens of billions spent each year in international aid, some of the most promising and exciting social innovations and businesses have come about by chance. Many of the people behind them did not consciously set out to solve anything, but they did. *Welcome to the world of the reluctant innovator.*

'This important, timely book gives the reader an invaluable insight into the workings of the world of social entrepreneurship. It is a must-read for students, practitioners, policymakers and anyone with a passing interest in how to work for the greater good.'

Professor Klaus Schwab, Founder of the World Economic Forum and Co-Founder of the Schwab Foundation for Social Entrepreneurship

'This book's vivid, engaging stories – of ordinary people who have devoted their lives to solving problems and injustices they never expected to encounter – make a major contribution to understanding what social innovation is all about. This is an inspiring and essential read for everyone who cares about our flawed, messy, beautiful world and believes in its myriad possibilities.'

Hannah Bloch, Mission Projects Editor, *National Geographic* magazine

'Ken Banks, whose career has taken him from offshore banking to launching a brilliant communications tool for Africa, takes us on a social innovation journey. We meet ten entrepreneurs who happened on life-changing ideas – from solar lighting for African maternity wards to film subtitles to promote literacy in India – and then fought against every kind of obstacle to make them happen. Inspiring and instructive.'

Rory Cellan-Jones, BBC Technology Correspondent



Ken Banks, founder of kiwanja.net, devotes himself to the application of mobile technology for positive social and environmental change in the developing world. He is a PopTech Fellow, a Tech Awards Laureate, an Ashoka Fellow and a National Geographic Emerging Explorer, and has been internationally recognised for his technology-based work.



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