An Excerpt From

The Social Labs Revolution
A New Approach to Solving Our Most Complex Challenges

by Zaid Hassan
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ZAID HASSAN

THE
SOCIAL LABS
REVOLUTION

A NEW APPROACH TO SOLVING OUR
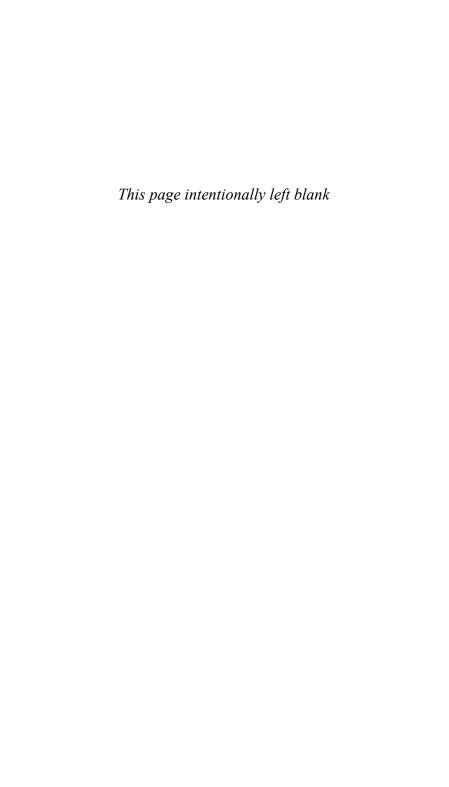## MOST COMPLEX CHALLENGES

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THE SOCIAL LABS REVOLUTION

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A NEW APPROACH TO SOLVING OUR MOST COMPLEX CHALLENGES

Zaid Hassan

The Social Labs Revolution

For Mia

Corruptio optimi quae est pessima.

CONTENTS

FOREWORD
by Joi Ito, Director, MIT Media Lab

The Media Lab, the interdisciplinary research center I direct at the Massachusetts Institute of Technology, faces a challenge: how do we connect the discoveries we make in our labs with the real problems people face in their communities?

I found myself confronting this problem when I organized a group of students, faculty, and advisors to visit Detroit, the city where I grew up, to explore how the Media Lab might help address the many challenges the city faces. Community organizer Shaka Senghor quickly set me straight. Hundreds of people come to Detroit hoping to solve the city's problems. The only way these solutions work is when they're developed in partnership with the people actually affected by these problems. The Media Lab can be a powerful contributor to addressing the problems Detroit faces, but only in partnership with citizens, organizations in the community, and local government.

Zaid's book offers practical insight into how to make such partnerships work. This book offers a new approach to the complex, real-world problems facing communities, organizations, cities, nations, and the world as a whole—just the sorts of problems we enjoying tackling at the Media Lab. Social laboratories

bring together civil society, industry, government, and the people directly affected by the challenges in question to seek creative new solutions from a cooperative and interdisciplinary perspective. This approach to problem solving—bringing together the best thinking from different disciplines, approaching a problem from different perspectives—is precisely the approach that leading research labs in the hard sciences are taking to address the thorniest problems in their fields.

One of the challenges research labs have is moving from thought to action. My experience with technology start-up companies has taught me that prototyping and iterating is how agile companies succeed. Zaid has taken these and other ideas that have found traction in Silicon Valley and applied them to complex social problems.

Zaid builds on his decade of experience to offer a book that is an effective, practical, and exciting guide to implementing a visionary new approach to social challenges. Whether you are trying to transform a dysfunctional school in your neighborhood or help a nation escape a cycle of famine, you will find powerful new ideas, approaches, and methods in this book that will inspire and transform your work.

We will see
That day. . .
When the cruel mountains of injustice
will blow away like cotton-wool. . .
We will see

— from *Hum Dekhenge,* by Faiz Ahmed Faiz

Since 1942 my family has fled from our home four times, leapfrogging from India across continents, twice within my own lifetime. On three occasions we witnessed civil war, communal violence, and mass murder. Each time, we've had to rebuild our lives, having left virtually everything behind. The fourth move came as tanks were rolling into Kuwait not far from where we lived, in the first Gulf War.

My childhood memories begin in 1970s South London. They include my uncle coming home out of breath and covered in blood after being attacked by skinheads on his way back from work. He moved back to Karachi soon after that, where he has been living happily since. In 1980 we moved peacefully from London to New Delhi, after a year in Bombay. My parents had decided that we needed to widen our horizons beyond Margaret Thatcher's Britain.

A few years after we moved to New Delhi, the Indian prime minister, Indira Gandhi, was assassinated by her Sikh bodyguards. Widespread communal riots followed. I remember looking out of a car window toward a burning house, set on fire by rioters. In my mind, I can still see the slow movement of the curtains on fire and the shimmering flames pouring out of the window. Seeing black scorch marks on the New Delhi pavement, I remember asking what they were and my shock at the answer. Roving mobs had targeted members of the Sikh community, dragged people on to the streets, and set fire to them. I remember my parents making the decision to leave India with the words, "This place hasn't changed."

We moved to the United Arab Emirates, where we spent several largely uneventful years. Then Saddam Hussein invaded Kuwait, launching the first Gulf War. I remember craning my neck out of my bedroom window in the middle of the night to watch US military convoys pass by, sometimes taking hours to pass. I remember playing Ping-Pong with GIs on shore leave, most of them only a few years older than me. I remember tuning into US Armed Forces Radio after everyone had gone to bed and listening to bands singing US college hits.

There are numerous stories, told over the years by my grandmother and great uncles and aunts of the Partition of India, leading to the creation of Pakistan, when a million people died. Our community was split across the subcontinent and beyond. Then from my parents and uncles and aunts came the stories of the civil war that led to the creation of Bangladesh. I remember feeling an underlying frisson of adrenalin in talking about such bloodshed and the experience of surviving, of being here and not there.

My entire life I've reflected on the universal nature of conflict and loss, and why such events transpire. I've pondered the

sequences of events that bring them about and asked what we can do to ensure they don't happen again.

In seeking the answer to these questions I've been driven, sometimes reluctantly, to take on many different roles. Throughout my time as a student, an apprentice, a dot-com entrepreneur, an activist, a writer, a facilitator, a consultant, a process designer, and a strategist, I've reflected on the experiences I've been blessed with and on my own practice with a view to understanding and preventing violent conflict. I've written down these lessons. Each phase of my journey has contributed, in unexpected ways, to a practice focused on effectively addressing complex social challenges. This book represents a summing up of what I have learned so far.

My aim in writing this book is to address the question of what it takes to tackle our most profound social, environmental, and political challenges in practice.

My experiences and reflections over the years have led me to conclude that violent conflict is a largely avoidable product of ineffective approaches to complex social issues. Dominant efforts to address our most serious challenges waste precious resources, time, and talent. These planning-based approaches—so common across government, civil society, and even business—represent a neo-Soviet paradigm, one that is spectacularly out of step with what we now know about complexity, about systems, about networks, and about how change happens. Another approach is needed.

This book has four core goals:

1. To make *the case* that the planning-based approach of addressing complex social challenges leads to certain widespread social collapse.

2. To describe *the principles* of social labs—a new, more effective prototyping-based approach for addressing complex social challenges.

3. To describe *the practice* of social labs through an account of two "first generation" social labs, demonstrating their effectiveness.

4. To outline *a practical theory of systemic action* that can be used to design next-generation social labs.

In 2004 I started working for Generon Consulting, a small, highly innovative Boston-based organization. Generon's unofficial, courageous, and insane mission was to address "ten global problems in ten years." The means to achieving this mission was the Change Lab, a prototype social lab that Generon developed working with others in the Boston/MIT/Society for Organizational Learning (SoL) community. The following years were spent conceiving, convening, designing, and running social labs around the world. Some of these succeeded wildly; others failed painfully.

During this time I read hundreds of books on social change and group processes in an effort to grasp the foundations of the approach we were undertaking. I produced a number of documents and a few articles. I also wrote hundreds and hundreds of pages of journal entries filling a couple of shelves of black Moleskine notebooks.

In early 2007, I helped cofound a successor organization to Generon called Reos Partners. *Reos* is derived from the Greek word *rheos* meaning *flow*, the opposite of *stuck*. Since then, we have continued to develop the work started with Generon. Designed to be international from the outset, Reos currently has offices in eight cities around the world. In addition to consulting work, Reos focuses on capacity building and launching new labs.

In this decade we have convened many thousands of stakeholders, including CEOs of global corporations, young executives, ministers, civil servants, civic leaders, and grassroots activists. We have worked on all continents on issues as diverse as global food systems, climate change, child protection, public health care, community development, and making financial systems more sustainable.

The materials I have drawn on to write this book come from work conducted by my colleagues at Generon Consulting, Reos Partners, and the wider community that we are a part of.

While I see our work as being on the cutting edge, I'm also deeply conscious of the bleeding edge, a place where my colleagues and I struggle with gaps in our practice. This bleeding-edge practice is explored later in this book through the idea of next-generation laboratories.

The approach taken to write this book is formally known as an inductive approach to research, resulting in what is known as *grounded theory*.[1] The principle behind inductive approaches is that *in the particular lies the universal*, which means examining specific experiences and drawing general conclusions from them. The theory of action outlined in this book is directly built on my experiences running multiple "first generation" social labs.

This book aspires to tell a story, the story of our greatest challenges and how we might address them. This story unfolds in three parts.

The first part concerns the unique nature of the challenges we as humanity are facing. Chapters 1 and 2 explore why these challenges are different from those of the past and why planning-based responses to complex challenges fail.

The second part outlines the struggle to come up with a better response. Chapters 3 and 4 show two social labs—the Sustainable

Food Lab, focused on the global food system, and the Bhavishya Lab, focused on child malnutrition in India. Chapter 5 discusses the results of first-generation social labs, outlines a new framework for understanding these results, and begins articulating the broader implications of these experiences.

The third part of this story goes further in sketching out the general implications of the social-labs approach. Chapter 6 explains why this approach is effective at addressing complex social challenges and introduces the rise of a new type of practitioner, the *agilista*. Chapter 7 outlines steps toward a theory of systemic action built on a decade of prototyping social labs. Chapter 8 shows how to start social labs in seven steps. Finally, the conclusion outlines a number of next-generation social laboratories and offers a broad vision of how some of our most serious challenges might be solved.

What Are Social Laboratories?

The power of solutions lies primarily in the people who believe in and own them.

— V. Srinavas

Current approaches to addressing complex social challenges are not working. There is much to celebrate: the number of people involved in change initiatives, the increasing amounts of money being invested in those initiatives, the steadily declining costs of technology and the attention being given to social innovation. The underlying problems however, from species loss to public debt, continue to grow.

Social fabrics are increasingly strained under loads they were never intended to contain. Inequality is growing. Direct action has either become a strident call for someone else to take action or the frantic alleviation of symptoms that leave underlying causes largely intact. There's increasing pressure on individuals to change their behavior around environmental issues and to take on the burden of austerity measures or cuts in basic services. The sociologist Ulrich Beck describes this situation as an attempt to find "individual solutions to systemic contradictions."[1]

Throw an ashtray in any direction, and you'll hit a messy, com-

plex challenge. It's difficult to escape the persistent feeling that while our problems are already big and bad, they're in fact getting bigger and badder. It's harder and harder to believe people who tell us that things are actually getting better. The future is changing in our lifetimes from a magical place to a place best avoided, a dark place that's becoming difficult to contemplate.

Into this situation comes a very simple premise. We have scientific and technical labs for solving our most difficult scientific and technical challenges. We need social labs to solve our most pressing social challenges. Thomas Homer-Dixon explains:

> The public not only needs to understand the importance of experimentation within the public service; it needs to engage in experimentation itself. To the extent that the public explores the solution landscape through its own innovations and safe-fail experiments, it will see constant experimentation as a legitimate and even essential part of living in our new world. To the extent that the public understands the importance of—and itself engages in—experimentation, it will be safer for all of you in the public service to encourage experimentation in your organizations.[2]

Social labs have been quietly brewing for almost twenty years. Hundreds of people around the world have been and are developing social labs. Thousands more have participated in them. There are labs focused on eliminating poverty, on water sustainability, on transforming media, on government, on climate, on social innovation, and on many more issues. A growing number of people are focusing their heads, hearts, and hands on addressing complex social challenges.

The people running these labs represent a new breed—they're not simply scientists or academics, and neither are they activists or entrepreneurs. They're all of these things and a few things we

don't have good names for yet. They're making the case for and launching social labs around the world, trying to address some of our most difficult challenges.

Social labs are platforms for addressing complex social challenges that have three core characteristics.

1. *They are social.* Social labs start by bringing together diverse participants to work in a team that acts collectively. They are ideally drawn from different sectors of society, such as government, civil society, and the business community. The participation of diverse stakeholders *beyond* consultation, as opposed to teams of experts or technocrats, represents the *social* nature of social labs.

2. *They are experimental.* Social labs are not one-off experiences. They're ongoing and sustained efforts. The team doing the work takes an iterative approach to the challenges it wants to address, prototyping interventions and managing a portfolio of promising solutions. This reflects the *experimental* nature of social labs, as opposed to the project-based nature of many social interventions.

3. *They are systemic.* The ideas and initiatives developing in social labs, released as prototypes, aspire to be *systemic* in nature. This means trying to come up with solutions that go beyond dealing with a part of the whole or symptoms and address the root cause of why things are not working in the first place.

These characteristics are not arbitrary. Nor are they convenient. Getting really diverse groups of people to simply step into a room together is hard, let alone trying to get them to act together. Taking an experimental approach requires not only discipline but also

a degree of stability and commitment rare in a project-obsessed world. Addressing the root causes of challenges eschews easy and popular political wins in favor of longer time frames and greater uncertainty.

While none of these characteristics is convenient, each is necessary, deeply so. Each characteristic represents hard-won conclusions wrestled at great cost from many thousands upon thousands of hours of trial and error. Each represents countless workshops where many stakeholders shared their most agonizing and difficult challenges. And perhaps more than anything else, together they represent integrity and honesty—they are not what we want solutions to look like, but what we have found they actually look like when effective.

There are, of course, aspiring social labs that do not meet these characteristics any better than programmatic or project-based responses. My contention is that social labs or any intervention aiming to address social challenges that do not have these three characteristics "baked in" will be ineffective or fail.[3] The reasons for this are the nature of complex social challenges, explored in Chapters 1 and 2.

The Sustainable Food Lab was the first social lab I was involved in that embodied these three criteria. Its focus was how to make the global food system more sustainable. The global nature of the challenge meant that participants came from around the world, as well as from different sectors.

The Food Lab initially brought together approximately thirty participants, drawn from corporate food companies, such as Unilever and General Mills; civil society organizations, such as World Wildlife Fund and The Nature Conservancy; and government officials, including representatives from Brazil and the Netherlands.

These participants formed the lab team, who committed to

physically working together for approximately twenty days over two years. They were supported by a secretariat, of which I was a part. The role of the secretariat was to design, facilitate, document, and organize the overall lab, building what could be thought of as its *container*. Over two years, we met together five times: in the Netherlands, Brazil, the United States, Austria, and Costa Rica. Since then, the team has grown and met many times in many other countries.

The lab team started working together by gaining firsthand experience of the system we were trying to change. They traveled as a group to different parts of the food system, such as food distribution centers, big companies, supermarkets, and small and larger farms in several countries. We reflected together on what they had learned. From this reflection came a broad portfolio of initiatives, which were tested and implemented in a process called prototyping. These initiatives ranged from working with small farms in the Global South to trying to shift procurement practices in large corporations, mostly headquartered in the Global North.

WHAT DOES IT MEAN TO BE WINNING?

How successful has the Sustainable Food Lab been?

Director of the Center for Organizational Learning at MIT Peter Senge said, "The Sustainable Food Lab is the largest and most promising systemic change initiative I know of."[4]

The first formal meeting of the lab took place in 2004. What has happened since then? Today sustainability is well entrenched on the radar of global food companies. The Sustainable Food Lab has played a key role in making this happen, having grown to become a platform for innovation in the global food system. From

an initial group of twenty-two institutions, today it has almost seventy members.

One business leader reflected on its value, "I am convinced that the world is not capable of feeding nine billion people in the second half of this century, in our grandchildren's world. . . . We see the system cannot work. What the Sustainable Food Lab is doing has never been done before, this intersection of private and public institutions. This is the greatest hope I have for finding a way through these complex dynamics to a livable world."[5]

So has the Sustainable Food Lab solved the original problem it set out to address? One of its missions was to move sustainability practices from niche to mainstream. This shift has clearly been achieved—the global food system is more sustainable today than when the lab was conceived and launched, and it can claim no small credit for this.

Many more decision makers are aware of the challenges they face and many more organizations are engaged in actively addressing these challenges. Prior to the lab it was clear that lots of individuals in the mainstream food system were concerned about broader sustainability issues, but most were not. Corporate attitudes were either defensive or, at best, focused on minimal compliance, as opposed to seeing sustainability as a competitive advantage or as being part of their broader civic role.[6] A key example of this shift is Unilever's sustainability policies, which were heavily influenced by their long-standing participation in the lab. In 2012 Unilever announced, "it would endeavor to decouple growth from its environmental impact. By 2020, Unilever aims to halve the environmental footprint of its products and to improve the lives of a substantial number of smallholder farmers."[7]

The Food Lab, and other social labs, generate at minimum four sets of outputs: *physical capital* (new services or infrastruc-

ture), human capital (new capacities and skills), *social capital* (increased trust and collaboration), and finally, *intellectual capital* (new knowledge and learning). As we will see in the cases that follow, these outputs contribute directly to preventing the collapse of key systems.

The success of any lab—scientific, technical, or social—must be measured through multiple indicators, as opposed to relying on a binary logic of did it work or not. Particularly when concerned with either basic science or long-term challenges, such as cures for cancer, for example, progress is sometimes hard to measure in the short term. It may be premature to ask a medical technician, "How many people have you cured this quarter?" But just because the answer to this question might be "none," this does not indicate progress is not being made. Over time, however, progress is much easier to see, and results can be more clearly articulated.

The contrast between how we approach scientific and technical challenges and how we treat social challenges is stark. Whereas the natural sciences have moved on from a Newtonian worldview, it sometimes feels in the social spheres that we are still trapped in mechanical, linear ways of thinking. Instead of supporting talented and committed teams to seek permanent solutions to our most serious challenges as we do in the sciences or in the technology sector, we fund tightly controlled five-year plans. This leaves little space for learning, innovation, and change.

Teams that create real and lasting change on the ground are rarely invested in or funded. When it comes to social challenges, plans are what get funded. The teams responsible for both the formulation and implementation of plans come as afterthoughts, if at all. The nature of plans requires that we predict the future, telling funders and sponsors in advance what we will produce every quarter, sometimes for years on end.

Imagine a company like Google, at inception, being asked to package its work into a five-year plan. Imagine an investor telling Larry Page that he has to tell them what inputs he needs every quarter and what outputs he will produce every quarter. And if there is a difference between his predictions and reality, his funding will be at risk. And while he's at it, overheads must be kept below 20 percent. Further imagine that the investor doesn't really care about where the talent will come from. Clearly such a scenario is absurd. Google is famous for its anti-planning stance.[8] Yet imposing this neo-Soviet model is the norm when it comes to addressing complex social challenges. We have to ask ourselves not only what does it mean to be *winning* or *losing* in the social sphere but what does it actually mean to play?

PLAYING IN THE WORLD CUP

Nothing in this world is difficult, but thinking makes it seem so. Where there is true will, there is always a way.

— Wu Cheng'en

Everywhere I go, I meet people who want to change things. They want to change the education system or address issues such as climate change or eliminate extreme poverty. Sometimes these people are young, and sometimes they are experienced. Sometimes these people are activists or entrepreneurs; sometimes they are government employees or elected officials; sometimes they work in business as chief executives or corporate responsibility professionals. Sometimes they are resource rich, and sometimes they are not.

The first thing that usually strikes me about these encounters is the nobility of the intention. People really care fiercely about each

other. By and large they want to help each other and do something about the suffering, unfairness, or injustice in the situations we are all confronted with. More and more people are taking up the hard work of changing such situations. A belief that we can change things is spreading. I feel hopeful.

The second thing that strikes me is the lack of realism that all too often accompanies such intentions and desires. I often hear from people who do not seem to entirely grasp the nature of the challenges they seek to address. Many people are working as individuals, even as they work within massive institutions, on problems that affect many thousands, or even millions, of people. Then when I talk to well-intentioned and resource-rich organizations, they do not seem to be very effective. Reports recommending action seem to be drowning out action. It's as if we believe that writing a report is 90 percent of the work. Finally, I feel there is too much contentment with whatever is being done, regardless of impact. I start feeling less hopeful.

People approach my colleagues and me to help them with problems that are on par with winning the World Cup: eliminating child malnutrition, addressing climate change, or making the global financial system more sustainable, and so on.

A typical conversation goes something like this:

Person: I want to house the homeless (or address poverty or any one of a dozen honorable intentions. . .)

Me: That's great. How do you want to do that?

Person: Well, I'm very passionate about it, but I'm not sure. . .

Me: Ok, well to start, what kind of resources are investing in this venture?

Person: I plan on working on it one day a week and would like your help running a two-day workshop.

You might think this is a crazy conversation, but it happens in various forms all the time, albeit usually couched in slightly more sophisticated language. And I struggle. How do I respectfully break the news that an individual working one day a week is highly unlikely to address poverty in Africa? For starters, you need a team. Would someone think it was possible to train for the World Cup only one day a week?

What about those institutions that have overcome the challenges of time and resources? What about all the multibillion-dollar initiatives with hundreds of employees? What about a resource-rich organization like the World Bank with its mission "Working for a World Free of Poverty"? What about governments?

Well, as anyone who has watched any competition knows, there are winners and losers. And the correlation between wealth and winning is not always clear cut. All too often we believe that the solution is simply a matter of money or resources. This isn't true for sports and it isn't true for complex social issues.

Brazil, to take one example, has won the World Cup five times, while simultaneously having a low GDP and being one of the most unequal societies in the world. Michael Lewis, in his best-selling book, *Moneyball*, tells the story of the Oakland Athletics, where he explores the question, "How did one of the poorest teams in baseball, the Oakland Athletics, win so many games?"[9] There are also countless examples of teams spending millions of dollars and getting nowhere. As Michael Lewis points out, "It still matters less how much money you have than how well you spend it." Money is certainly a factor, but the challenge clearly goes beyond material resources.

The most important question about winning the World Cup, or achieving any big goal, is to ask how badly do I want this? And critically, how badly do *we* want this? If we don't want it badly enough,

if we're unsure, then it's highly unlikely we will be willing to go through the pain, make the sacrifices, and build the skills required to win a World Cup. Everything flows from this commitment to play.

I remember seeing a documentary about Usain Bolt, the fastest man in the world. At one point during training, he staggered off the track and spent a few minutes throwing up. He scowled up at the camera and said, "I hate training." Hubert Dreyfus, a sociologist who has studied how we acquire skills, comments, "To become competent you must feel bad."[10]

THE SCALE-FREE LABORATORY

> I don't want to scale things up, I want to get them right.
> — Derek Miller, *The Policy Lab*

All this talk of World Cups implies that social labs can be applied only to big challenges, like the sustainability of the global food system. Interestingly, scale is one of the issues that most preoccupies actors working in the social realm. The usual assumption is that we start small and then grow big. Common questions, particularly in donor communities, include "How will your initiative scale up?" and "What is your scaling strategy?" These concerns are, however, largely irrelevant.

Just as a game of football can be played almost anywhere with very little equipment or can be played with professional teams in vast stadiums, social labs can be run at any scale. This could range from a school or an organization to a community, a city, a country, a region, or the world. A good example of this comes from South Africa.

In mid-2007, my colleagues Marianne Knuth and Mille Bojer helped launch a South African initiative called Kago Ya Bana (KYB), which means "Building Together for Our Children." The work was located in Midvaal Municipality, located midway

between Johannesburg and Pretoria with a population of just under one hundred thousand people. It focused on the challenges faced by children and families suffering from HIV and AIDS. KYB represents a successful lab undertaken at community level.

One of the participants reflected on what she had learned working on KYB: "Since KYB, I feel hopeful because every stakeholder is taking responsibility and there is shared ownership of the problem. Every part of the child feels represented—from nutrition, to access documentation and involving parents. We are tackling the problem at all levels and it feels like, wow, we are a village raising a child."[11]

The decision of scale is, in many ways, the first decision that needs to be made about what sort of social lab to run. People who want to play football have a decision to make: are they going to play informally and kick a ball around with their friends, play in a local league, or strive to play professionally? The same decision needs to be made around a lab. What level of challenge are we up for? And there is no wrong answer.

Instead of seeing social interventions as always needing to take scaling up into account, the social realm is scale-free by nature.[12] A social lab can be designed to operate at any scale, depending on the intentions of the people in it. It will grow in whatever direction and way is needed and doesn't necessarily require central planning.

There is one caveat in creating purely local labs. When we start examining purely local challenges, we discover that the source of our problems lies far outside the boundaries of our communities—be that the death of manufacturing or adverse environmental effects brought about by climate change. In other words, while a social lab can be run at any scale, we soon discover that we're not cleanly separate from the big, bad world.

If successful, a social lab will produce direct results addressing

the challenge at the scale it's designed for, be that a community or a country. Labs can also, however, produce results *beyond* the scale they're designed to work in. This happens when inspiring innovation and disciplined use of the intellectual capital—inevitable parts of a lab—build capacity in people who go on to do other things.

Once we're clear that we really do want to try to win a World Cup (or eradicate unemployment in our community, or address climate change, etc.), we're faced with the question of how best to proceed, of how to play. It's not simply that we lack resources, time, or people willing to tackle our most complex social challenges. Rather, we lack a theory of action; we need some way of guiding our actions, a practical theory. How do we deploy our talents, our time, our money, and our resources as a society? Where do we find the will to tackle complex challenges?

The practice of social labs aspires to answer these questions. This practice offers anyone interested in addressing complex social challenges an option. In contrast to this option, however, is the dominant planning-based response. It's into this dominant response that most attention, energy, and resources go. If we understand complex social challenges better, then we'll see that such investments are nothing short of disastrous—hence the dire need for a different approach.

A CASCADE OF SOCIAL LABS

The prize for solving the problems we now face will be to have more interesting problems to solve in the future.

— Alex Steffan

A social lab is not, of course, a silver bullet that solves our most complex social problems. Social labs represent a new direction,

different from business-as-usual (BAU) responses. They represent a pragmatic attempt to act in the face of increasingly complex situations in a way that increases the odds of addressing situations systemically at their roots.

Perhaps one of the most exciting developments in the last few years is the birth of many new social labs. While each on its own is exciting enough, an ecology of labs together promises a revolution in how we address complex social challenges. Some of these labs are what could be thought of as social labs, while others represent a democratization of scientific and technological labs. The possibilities generated by these labs working together are endless. Given enough social labs, we will see vibrant ecologies sprouting up to support them. The wonder of it is that this is what's actually happening.

There has been an explosion in the number of labs focused on addressing complex social challenges. SociaLab, based in Chile, focuses on new enterprises to alleviate poverty. Some of these labs, such as the Abdul Latif Jameel Poverty Action Lab (J-PAL) at MIT, are formally labs in the sense of being housed in a university and staffed by academic practitioners.[13] Others are not formally known as labs, but, for all intents and purposes, are because of their practices. For instance, my friend Bob Stilger has helped create Resilient Japan, which is focused on community responses to the 2011 earthquake and tsunami.[14]

Labs are also springing up as a way for organizations to learn with their partners, such as Greenpeace's Mobilisation Lab, or MobLab, which is "designed to capitalize on Greenpeace's fearless embrace of the experimental . . . [and] provides the global organization and its allies a dynamic, forward-looking space to envision, test, and roll out creative new means of inspiring larger networks of leaders and people around the world to break through and win on threats to people and the planet."

At Reos, my colleagues and I have been busy with several labs, including ones on climate change, community resilience, and state collapse.

With support from us, the Rocky Mountain Institute runs the eLab, which is "a state-of-the-art forum to accelerate the transformation of the U.S. electricity system."[15] Another example is the Open Contracting Initiative. Along with the World Bank and numerous other stakeholders we are working toward transparency in government contracting.[16]

In addition to social labs, there has been an exponential increase in a number of *maker* or *fab* labs. These labs deploy technologies such as 3-D printing in order to democratize the manufacture of just about anything imaginable. A movement springing from MIT's Centre of Bits and Atoms, Fab Labs, has open-sourced its technology, and now we are seeing labs popping up from Afghanistan to California.[17] The potential of social labs increases when coupled with this new generation of tech labs.

Considering the development of an entire ecology of social labs and having uncovered the theoretical and practical gaps in first-generation social labs leads us to an exciting question: what would we have if we built on first-generation social labs, theoretically and practically, making the improvements we know we need to make? We would have a battle-tested, mature approach. We would have a theory of systemic action to help guide us in addressing complex social challenges. We would have a revolution in how we address humanity's most pressing challenges.

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1

The Perfect Storm
of Complexity

When you want to know how things really work, study them
when they're coming apart.

— William Gibson, *Zero History*

For every complex problem there is an answer that is clear,
simple, and wrong.

— H. L. Mencken

Humanity has always suffered plagues, famines, floods, and war-
fare. In modern times we have faced new horrors, such as nuclear
weapons and AIDS. One common stance toward our current
challenges is that we will adapt just as we have always adapted.
The trouble with this stance is that our current challenges are pro-
foundly different from those of the past. Our familiar modern
responses no longer work because they're based on a fundamental
misunderstanding of what we are facing.

THE PERFECT CHALLENGE

Just how different our challenges are crystallized for me in the summer of 2008. It began with a mysterious call from two strangers. I met them in an empty cafe on Cowley Road in Oxford, not far from where I live. Both had been working in Yemen for a number of years. They wanted to know if we could help. I knew very little about Yemen and so asked them to explain the situation to me. The pair, Henry Thompson and Ginny Hill, spoke in hushed voices, occasionally looking around to make sure no one else was listening. I was bemused at their behavior and not quite sure what to make of them.

Yemen, they told me, was in serious trouble. It was collapsing. The facts were startling. Bordering Saudi Arabia and Oman, on the other side of the Red Sea from Somalia, Yemen occupied a geostrategic location due to the Suez Canal and its proximity to the oil fields of Saudi Arabia and the United Arab Emirates. One of the oldest civilizations in the Middle East, it also had the youngest and fastest growing population in the region, over twenty-three million people, 50 percent of whom were under fifteen.[1]

First, Al Quaeda was using Yemen as a major base for operations. Second, the country was suffering from two incipient civil wars, which threatened to flare up at any moment. One was a secessionist movement in the south, and the other involved a religious minority in the north. In addition, Yemenis were running out of what meager resources they had: water, oil, food, and foreign exchange to buy food. Yet, Yemen had four times as many AK47s as people.[2]

Finally, they explained, the crux of the problem was that a cabal of criminals and quasi-criminals ran the country, a situation sometimes known as state-capture. This *shadow elite* lived

behind anti-missile walls and in some cases held no official positions despite wielding great influence. When I asked about official channels, they looked at each other and shrugged. Could we help?

WHAT IS A COMPLEX SOCIAL CHALLENGE?

The situation in Yemen is a textbook example of a complex social challenge because of three characteristics: (1) the situation is *emergent*, (2), as a result, there is a constant flow of *information* to negotiate, and (3) this means actors are constantly *adapting* their behavior.[3]

Complex social challenges are *emergent* because their properties arise from the interaction of many parts. Imagine the difference between throwing a rock and throwing a live bird. The rock will follow a path that is *predictable,* that is, it can be predicted with a high degree of accuracy in advance. The path of the bird, on the other hand, is *emergent,* which means that path cannot be predicted in advance. It emerges from the interactions of many factors from the physiology of the bird to environmental factors. The *system* of the person (throwing the bird) and the bird is therefore said to be characterized by emergence.

In complex systems new *information* is constantly being generated.[4] When we study a complex system, we are deluged by new information. If we tied a GPS to the bird and tracked its movements, we would be capturing a new stream of information about where the bird was going. (According to Nate Silver, "IBM estimates we are generating 2.5 quintillion bytes of data per day, more than 90 percent of which was created in the last two years."[5])

This new information gives rise to the third characteristic of a complex system, that of *adaptive* behavior. This means that actors in complex systems are constantly and autonomously adjusting

their behaviors in response to new information. This feedback loop in turn gives rise to a whole new set of emergent characteristics. If our task is to re-capture the bird once it's been thrown, then we use information to adapt our behaviors to ensure we succeed.

These three characteristics make complex challenges distinct by nature from technical challenges. Ronald Heifitz and his colleagues at Harvard's Kennedy School of Government define a challenge as being technical when the problem and the solution are clearly defined.[6] And they point out that confusing adaptive, or complex, challenges with technical challenges is a classic error.

An example of a technical challenge is sending a man to the moon. The problem is clearly defined and the solution unequivocal. Implementation may require solving many difficult problems, but the desired outcome is plainly understood and agreed upon. In contrast, multiple perceptions of both the problem and the solution are characteristic of complex systems.

Complex challenges are therefore dynamic and can change in unexpected ways over time, whereas technical challenges are relatively stable and static in comparison. The nature of gravity, for example, is not changing while we try to come up with solutions for putting a man on the moon. This is just one reason why it is hard to address complex social challenges.

In the past, everything was less connected. Today, interconnectivity is rapidly increasing, creating an age defined by its complexity. This connectivity has many dividends, but it also means that our landscape of challenges has changed dramatically in the last few decades. In the past, problems could be dealt with in isolation, while today, most of our most intractable social challenges are deeply interconnected. They don't respect man-made boundaries, such as national borders. The nature of interconnectivity

means that we are seeing challenges that are entirely new *and* fast changing.

These challenges are sometimes referred to as *wicked problems*, a phrase coined in the early 1970s.[7] The trouble with the word *wicked* is that it makes us think that complex situations are somehow deviations from a *non*-wicked norm, that they are somehow temporary aberrations. And the problem, if you like, with the word *problem* is that it conveys the impression that everyone thinks of the situation as a problem (when some actors, typically those holding minority positions, might not).

One practitioner compares christening complex challenges as wicked to a story of a grandfather and the coming of cars.[8] The grandfather couldn't understand why cars didn't behave like horses (resulting in many accidents) and considered them wicked. Much as we might love our grandfathers, calling complex social challenges *wicked* betrays a way of thinking that doesn't make much sense today. Forty years ago we had just started to wrap our heads around the idea of complexity. Since then we have learned a lot, and many ideas from complexity science are in common use. Complexity is the norm for us—not an anomaly—and there is no returning to a simpler "non-wicked" time.

THE FUTILE OPTIMISM OF OPTIMIZATION

> It's 1959. The USSR is on the brink of Utopia. Comrades, let's optimize!
>
> — Francis Spufford, *Red Plenty*

Today it is common to address a wide range of complex social challenges using methods that are technical and planning based. Together they define a culturally dominant technocratic approach,

which characterizes efforts at addressing challenges as diverse as public health care, environmental degradation, poverty, and inequality.

This dominant technocratic approach was born during the early twentieth century, a time when the belief that science would solve all human problems was widespread. The work of mathematicians such as Kurt Gödel and physicists such as Werner Heisenberg shattered this belief. By then, however, the technocratic paradigm had rooted itself deeply in an entire generation of problem solvers, who then passed it on.

Technocratic approaches typically seek to optimize, that is, to incrementally improve a situation through efficiency gains. For example, if ten thousand people are hungry, then a technocratic approach would seek to ensure that every day some of these people were fed, thus incrementally improving the situation. The end goal, of course, is to ensure that all ten thousand people are fed. This is a classic optimization strategy.

Optimization makes sense in some instances, such as when the number of hungry people is static and not increasing. Economists call this *inelastic* demand, as opposed to *elastic* demand.[9] This means that if we manage to feed two hundred hungry people per day, in fifty days we would have fed all ten thousand people, therefore optimizing our way toward solving the problem of ten thousand hungry people.

This strategy is dramatically less effective in dynamic situations. Imagine that we feed ten thousand hungry people at a rate of two hundred per day. If, for whatever reason, the number of hungry people increases by 5 percent per day (compounded), then we're in trouble. After five days of feeding two hundred people a day, we end up with just under 11,300 hungry people. After 10 days we end up with just over 13,300 hungry people, after 50 days we wind

up with nearly 70,000, and so on. The dream of optimization, of course, is the other way round—that we increase the number of hungry people we feed every day by a percentage, which, when compounded over years, leads to a utopian society free of hunger.[10] Of course, all of this assumes that gains will not be wiped out by unexpected events, such as a famine or some other natural disaster.

Another problem with technocratic approaches, including optimization, is that it addresses parts in isolation, rather than the whole. This could look like feeding a small number of hungry people by cutting down massive swathes of rainforest, which helps a small minority, while vast resources are spent with massive long-term negative impact. A side effect of optimization is that the underlying causal dynamics are frequently untouched.

This is what's happening in Yemen with malnutrition. The system is generating more malnourished people every day than can be fed. Efforts to support them are helping small parts and are being outstripped by the dynamic nature of the challenge, where the problem as a whole is getting worse day by day.

The same logic applies to many issues, including climate change, deforestation, and poverty. Imagine that ten new light bulbs are turned on every second, each emitting a tiny puff of carbon dioxide. This pumps greenhouse gases into the atmosphere, which increases the risk of dangerous climate change.

An optimization response would be to turn off three light bulbs every second, striving in time to turn off four or five, and believe this is adequate. Unfortunately this leaves us with a net increase of emissions, despite our efforts. That is what's happening with greenhouse gases dramatically increasing the probability of dangerous climate change.

All complex challenges have what could be thought of as an engine that produces the symptoms we are most concerned about,

be that too many hungry people or too many greenhouse gas emissions. We see these symptoms as trends. For example, one of the trends governing the situation in Yemen is population growth, which, in itself, is not a problem. But when coupled with other trends, such as steadily declining agricultural productivity, we can see how it creates the complex social challenge of malnutrition.

This reflects a situation where demand for different forms of capital is increasing, including natural capital, such as fossil fuels and food. Simultaneously, there is a decline in our ability to meet this increasing demand sustainably. This is represented, for example, by declining forests, topsoil loss, less fresh water, and the shrinking envelope of carbon dioxide we can safely emit—which puts limits on how much fossil fuel we can safely burn. In other words, we are now hitting boundaries beyond which our actions seem to be causing irreparable damage to critical ecosystems.

It's not simply that we're running out of resources. The story is more complex. Ramez Naam demonstrates how we have used technological innovation to produce greater output from the same natural resources. For example, we have managed to dramatically increase yields from the same acre of land and convert greater percentages of solar energy into electricity. While the efficiencies are getting better and costs are dropping, they are not dropping fast enough to shift the underlying negative trends. Furthermore, market-based approaches have yet to figure out what to do with the environmental consequences of economic growth.[11]

Technocratic approaches, therefore, represent a bet, a "grand wager" that our ability to optimize will be faster than the rate at which our problems grow.[12] If our problems are growing exponentially and our ability to optimize is growing linearly (or worse, declining), then we are staring at a mathematical certainty of collapse. This is what happened with the Soviet Union and what's

currently happening with many responses to complex social challenges across the world.

YEMEN AS A NATURAL EXPERIMENT

My first response to the request for helping in Yemen was "No, of course we can't help." The situation was too far along in its trajectory of collapse. Henry and Ginny wanted to bring the elite—including the shadow elite—into a room and run a scenario planning exercise on the future of Yemen.[13] The elite would then see the implications of what they were to the country, and this insight would cause them to act proactively in the interests of the whole.

I pointed out that the shadow elite would not voluntarily step forward into such a conversation. Our usual approaches would not work with people who were loath to step up in any formal way, which is what defines a shadow elite.

Originally I assumed this situation was unique to Yemen. However, I later came across the work of Janine Wedel, a professor and author, who argues that the phenomenon of the shadow elite is widespread: "A new breed of players has arisen in the past several decades . . . whose manoeuvrings are beyond the traditional mechanisms of accountability. They, for example, play multiple, overlapping, and not fully disclosed roles."[14] And what she describes applies to Yemen as well as many other places, including the United States, Europe, and China.[15]

Even if by some miracle the shadow elite did agree to participate, I was dubious that such a top-down exercise would result in fundamental change. I offered advice relating to the nature of the problem but largely felt that I didn't have anything useful to say. My two guests politely thanked me and left.

A few months later they invited me to a talk called "Crisis in Yemen: A Holistic Approach?" being given by a state department official, who had worked at the US Embassy in Yemen for many years. Out of curiosity, I put on a suit and tie and caught the train to London.

The talk was at the Royal Institute of International Affairs, known as Chatham House. Ginny worked there, helping organize a forum on Yemen. Officially a think tank, Chatham House serves as a global rallying point for those concerned with foreign affairs issues. This constellation, including both Yemenis and non-Yemenis, was out in full force that day.

As the talk ended, I turned to my neighbor and asked, "I might have missed something, but what's the holistic approach?" He looked at me a little blankly and said, "Oh, he doesn't really have a holistic solution, he's just saying that we need one."

Later, I quizzed organizers on the purpose of the talk. One person told me that the speaker was there to deliver a message to friends of Yemen. The startling message was that there was time to act in order to avert disaster in Yemen, but if this window was passed, the response would unfortunately shift to the Pentagon and the military planners.

Soon afterward I read a *New York Times* article with the headline "Is Yemen the Next Afghanistan?" which made me both intensely concerned and curious. In it Robert Worth writes, "I spoke to a number of American officials in Washington and to a variety of diplomats at the embassy in Sana. They all told me the same thing: no one has a real strategy for Yemen."[16]

Over the next few years I went to Chatham House whenever there was a talk on Yemen.

My colleagues and I had worked on many challenges singularly: food and energy security, child malnutrition, water stress, and secu-

rity issues. Almost all of these were happening in Yemen simultane-
ously, creating the perfect storm of complex challenges.

Yemen is what Jared Diamond calls a "natural experiment."[17]
These are situations we could not recreate for reasons both practi-
cal and ethical. We are unable to cause a drought in order to study
the effects of water instability on communities; nor would we do
so in good conscience. Naturally occurring phenomena present us
with options to study situations and learn from them.

Yemenis were facing down all the problems that other coun-
tries, regions, cities, and people were conceivably going to face in
the future. A lot could be learned from examining not just the
trajectory of challenges in Yemen but also the responses to these
challenges. Yemen represents the future of a lot of places.

While the circumstances are unfortunate, Yemen is at the fore-
front of developing innovative strategies for how to address com-
plex challenges. It is a little like the Dutch experience of build-
ing dikes. With the challenges of climate change, the Dutch are
working all over the world helping communities build dikes to
protect themselves from the rising oceans. It's conceivable that
the Yemenis will build a skill set to address a complex series of
interlinked problems before anyone else.

The Yemen Forum gatherings I attended were consultations
with civil society on what should be done. They were also often
attended by Yemeni government representatives. But it seemed
that few people had any faith in the ability of Yemen's government
to do anything.

At the end of a Chatham House event I chaired, I conducted
an impromptu straw poll, asking the audience to raise their hands
if they had faith in the government's ability to come up with a
centralized response to Yemen's problems (as opposed to a decen-
tralized one).[18] The only people who voted in the affirmative were

a handful of Yemen government officials sitting in the front row. To my astonishment, all other hands stayed down. I was astonished because these were the same people who told me that plan A for Yemen ran straight through its government.

When I asked one foreign office official (FCO) why they haven't tried to catalyze a track-two effort, involving NGOs and other civil society actors as well as government, he gave me the official line: they had to deal directly with the government of Yemen because doing anything else would be seen as interference in the sovereignty of a nation. This was not even vaguely true in practice. When I asked the same question to the head of a UN agency struggling with a myriad of problems in Yemen, he responded, "Plan A has to be to work with the government; perhaps if that fails, we will examine a plan B."

TOO BIG TO FAIL, TOO BIG TO JAIL

What seemed both obvious and crazy to me about Yemen was that everyone seemed to be saying that plan A had not only failed but had been failing for years. The unfortunate narrative in the international community was that the government of then President Saleh had little capacity to implement anything; it did not keep its promises and could not be trusted.

Every couple of years the government of Yemen would come up with a new plan and present a "Christmas list" of requests to the international community—asking for the plan to be funded. Each time this happened, the international community would demand assurances that the plan would be implemented, and of course very little actually happened.

The government representatives from Yemen who came to these meetings were repeatedly lectured on their failings by their Western counterparts. They sat with their arms crossed, listening

mostly in silence, occasionally responding to questions or to say that they needed more resources and support. I asked one deputy minister how he managed to sit silently while being repeatedly patronized like that. He gave me a wry smile and shrugged.

I felt there was little cognizance in the international community of the nature of the challenges being faced by the Yemenis. From my work globally, I knew that it wasn't as if someone else had figured out how to deal with these issues effectively, resource rich or not. It wasn't simply that the Yemenis were doing a bad job, as was implied—they were also faced with a titanic set of challenges that no one anywhere really knew how to address.

Yemen was too big to fail. This idea, first popularized during the US 2008 financial crisis, applies to countries and development programs as well.[19] In these situations, a system, be it a government or a program, is deemed as too politically sensitive to fail. So it is kept alive at massive cost, despite the fact that it may be failing in almost all dimensions beyond the political.

The situation in Yemen was fascinating because there was such widespread agreement about the failure of the Saleh regime, but the international community seemed to think it was powerless to do anything. Saleh was not simply too big to fail—he was too big to *jail*.[20] Indeed, during the Arab Spring, it was the Yemenis who forced Saleh to resign, but he managed to negotiate an immunity deal in which he would not be held accountable for anything that happened during his tenure.

What was I seeing? What were the stakeholders who came to Chatham House hoping would happen? What were they doing? It felt like people were operating on autopilot—they were all doing their jobs, and, almost regardless of what was *actually* happening, they would keep doing them. They were going through the motions of business as usual, or BAU.

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A New Approach to Solving Our Most Complex Challenges

by Zaid Hassan
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