SYSTEM INNOVATION
INITIATIVE

System Innovation On Purpose

Charles Leadbeater & Jennie Winhall
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THE ROCKWOOL FOUNDATION
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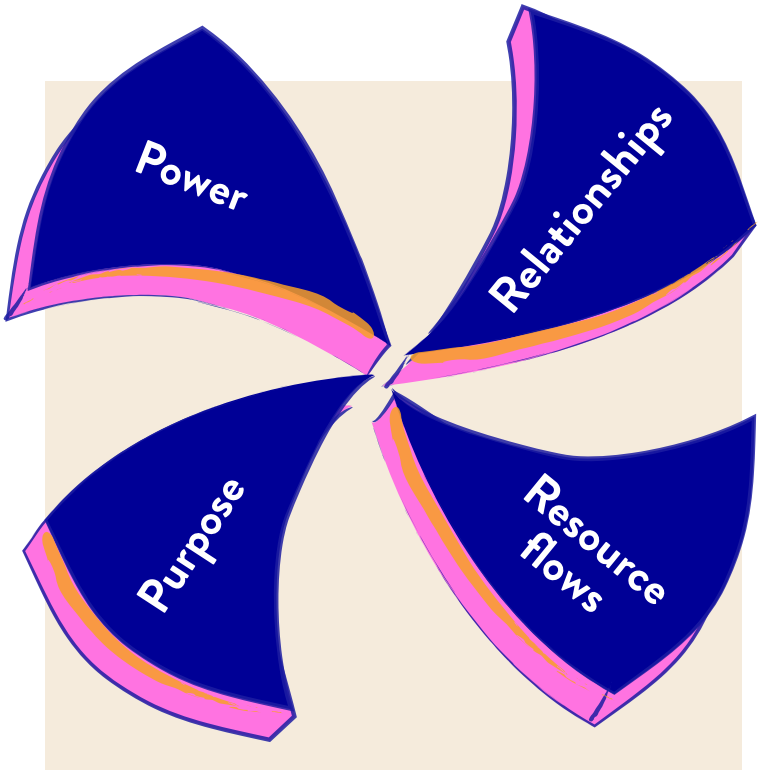


Introduction

In ***Building Better Systems***[1], we introduced four keys to unlock system innovation: purpose and power, relationships and resource flows.

These four keys make up a set. Systems are often hard to change because power, relationships, and resource flows are locked together in a reinforcing pattern to serve the system's current purpose. Systems start to change fundamentally when this pattern is disrupted and opened up. Then a new configuration can emerge, serving a new purpose.

In this essay series we delve deeper into these four keys and provide practical advice on how they can be put to use.

This essay is about the role that purpose plays in orchestrating complex systems and how system innovators can create a new system around a new sense of purpose.

On Purpose

The most powerful lever to shift a system is to change what it is for, the purpose it serves. Creating a new system invariably involves establishing a new sense of purpose. It is easier said than done.

The potency of purpose was one of Donella Meadows' key ideas in her groundbreaking book *Thinking in Systems*.[2] Yet Meadows' insight still leaves us with many pertinent questions: how can an established sense of purpose be dislodged? How can a new sense of purpose be developed? How does the new purpose become operational, translated into the system's daily work?

Amidst the disruptions wrought by climate change, the spread of digital technologies and widening social inequalities, fundamental questions are increasingly being asked about the purpose of social and economic systems, not just by citizens and social movements, but by professionals working inside those systems who are keen to be part of that change.

Proposals for fundamental system change are emerging from many sources, from technological utopians advocating exponential innovations[3] to radical traditionalists who want to take us back to pre-industrial methods and mindsets[4]; from social activists pursuing racial justice and gender equality[5] to those advocating more protectionist and nationalistic approaches.[6]

In *Doughnut Economics*[7] the economist Kate Raworth proposes a shift to an economy which is circular, regenerative and distributive by design. Advocates of a Green New Deal to propel a new phase of green growth vie with those who argue that economic growth should no longer be our goal in order to save the planet.[8]

Paul Polman, the former chief executive of Unilever, is proposing that companies should not be rewarded for putting shareholders first but instead for making a net positive contribution to society and the environment[9]. He is just one among many people arguing that capitalism needs to be remade from within by companies adopting a new sense of social purpose.[10]

There are a myriad of proposals emerging for radical rethinking of the welfare state in the face of an ageing and more fluid, flexible patterns of work. The OECD is among those advocating a fundamental shift in education systems away from a dominant focus on academic achievement towards equipping young people to become collaborative problem solvers.[11] The social entrepreneur Alex Fox, of Shared Lives Plus is reimagining our systems of care around the need to support people with lasting relationships rather than services and money[12]. The activist Ai-Jen Poo of the US National Domestic Workers Alliance is trying to remake care from the point of view of those employed to provide it as well as those receiving it.[13]

Beyond that there are proposals for fundamental change to systems for food production; fashion; urban mobility; city living; land ownership and housing.

The success of these initiatives rest on being able to shift the purpose of systems. How does that happen?

In this essay we outline a three stage process to develop a new sense of purpose for a system.

The first step is to work out whether and why a system is open to change.

The second step is to find the right mix of a directive and an emergent approach. Some systems respond to a new purpose set from above. In others a new sense of purpose has to grow bottom-up. We argue that often the best approach is to combine the two.

The third step is to find the path to the preferable future.

That means engaging in a cycle of collective learning, imagination and experimentation to bring people together from inside and outside the system and across all its levels from the macro to the micro. This allows them to see a wider range of possible purposes for the system and to create a shared sense of direction.

Before going into those three steps, we examine why purpose is so influential in both shaping how systems change and in making them hard to budge.

The Power of Purpose

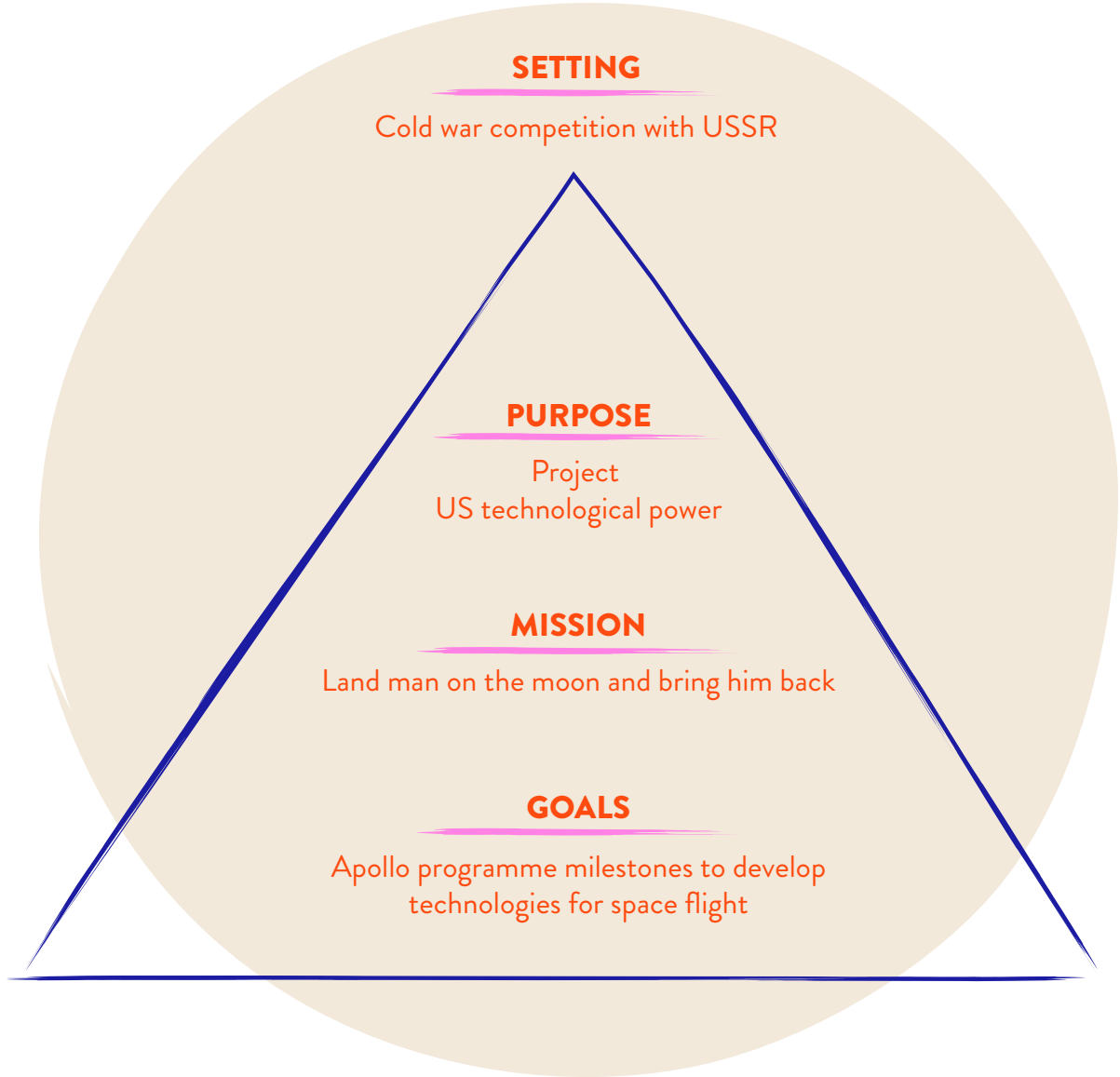
Purpose has become a fashionable word, especially in business. Many companies claim to put purpose alongside making a profit. Business consultant Simon Sinek[14] has become famous for urging companies to base their strategy on what they stand for. Yet as the pursuit of purpose has become more ubiquitous, the idea has become more difficult to pin down.

Psychologists argue that purpose gives life meaning and direction in answer to questions such as: what do I stand for? What do I care about? What greater good do I want to make a contribution to?[15] Without a sense of purpose there is a danger that life will be aimless and shallow, reactive and drifting. The same is true for systems.

Purpose combines identity with intent. What and who you care about is a matter of identity; it's fundamental to who you are. Yet purpose also expresses what we want to achieve and who we are becoming. That intent needs to be made real by being acted upon; our purpose should propel us forward into the world.

A real sense of purpose is anchored in identity (who we are, what matters to us), intent (what change we want to bring about) and action (how we can make this change demonstrable). You do not shift the purpose of a system by coming up with a good slogan. A shift in purpose involves putting in question our sense of identity and our commitment to act on our intent.

Purpose is often confused with the missions and goals, targets and outcomes that make it real. A purpose is deeper and more enduring than a mission. When President John F. Kennedy launched the Apollo programme, the mission was to land a man on the moon. The purpose was to project US technological and military power in the context of the Cold War. One danger in systems is that the mission can come to be seen as if it were the wider purpose.



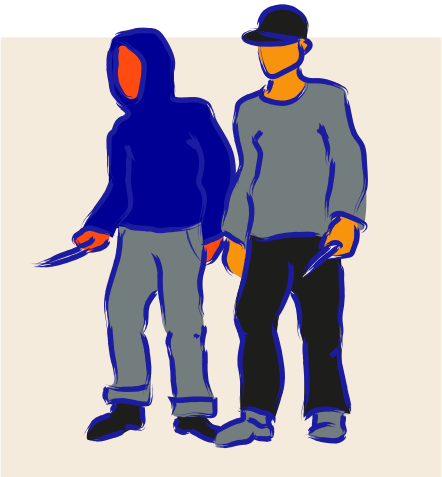
Reframing Purpose

Purpose creates a framework for thinking about how a system should work to achieve the outcomes it seeks.

Take Karyn McCluskey's work to reduce knife crime in Glasgow.[16]

When McCluskey started the Strathclyde police's Violence Reduction Unit, the police's mission was to arrest criminals and bring them to trial so they could be punished.

McCluskey was not alone in being frustrated with that approach. It was having little impact on knife crime and the toll of grief and distress it created.



So McCluskey encouraged the system to reimagine itself. Violence was like a disease, she argued, a virus that needed to be prevented from spreading. McCluskey shifted how people inside and outside the system thought of their purpose (eliminating knife crime rather than arresting perpetrators); how they needed to work (more akin to a public health campaign to prevent transmission); and what success amounted to (a city free from violence rather than criminals in jail).

By reframing the purpose she propelled a collaborative effort, bringing together the police and social services, education and employment, voluntary and community groups. In the process, unforeseen solutions emerged, new relationships formed and resources flowed in new ways through the city. Economic development and training initiatives targeted young men at risk to give them a better chance of finding work. Dentists were enlisted to fix the broken teeth of men going for their first job interview. There was much more emphasis on early intervention in families where there were warning signs of domestic violence. For example, with vets reporting cases where men had been violent to household pets.

By shifting the purpose from "arresting perpetrators" to "stop the spread of violence", McCluskey brought an entirely new, community-based system into being, one that achieved its purpose by addressing the problem at its source.

Without a shared purpose, collective innovation efforts lack meaning and coherence. Shared purpose breeds commitment and coordination and resilience and innovation across a coalition of actors.

Yet the power of purpose is a double-edged sword. Once a system becomes established around a purpose it can be enormously difficult to dislodge it. Homelessness is a good example.

From helping the homeless to ending homelessness

Over many years communities have responded to homelessness by providing shelters and emergency services to give people respite from living on the streets. For shelters, the key metric of success was the proportion of beds occupied each night. Catering for more homeless people meant shelters were more successful. That was their purpose.

Yet it has also been clear for a long time that shelters might keep a lid on the problem without encouraging long-term solutions.

Ending homelessness by preventing it at source, by providing people with permanent places to live, requires a completely different approach, according to David Peter Stroh in Systems Thinking for Social Change:[17]

"Ending homelessness requires a complex, long-term response involving affordable permanent housing, support services for the chronically homeless and economic development. This means establishing new relationships among the various providers who prevent homelessness, those who help people cope with being homeless and those who develop permanent housing, with support services and jobs, that enable people to end homelessness. Aligning providers along the continuum of care towards the goal of affordable permanent housing with support services enhances everyone's ability to solve the problem."

Making the shift from "helping the homeless" to "ending homelessness" threatens long-established identities and vested interests. It's a matter of self-image and raw economics. Take the case of Boston's Pine Street Inn, one of the most respected shelters in the US.

Lyndia Downie, the Inn's then president and executive director committed to an approach called Housing First[18], which provides homeless people with permanent housing with a range of support services wrapped around them. That new purpose meant giving up a self-image based on caring for the homeless, and developing a new sense of identity and purpose as real estate developers, home builders and landlords. It was painful for staff and supporters committed to the traditional mission who felt they were turning their back on people in need as shelters were closed and resources shifted into home building.

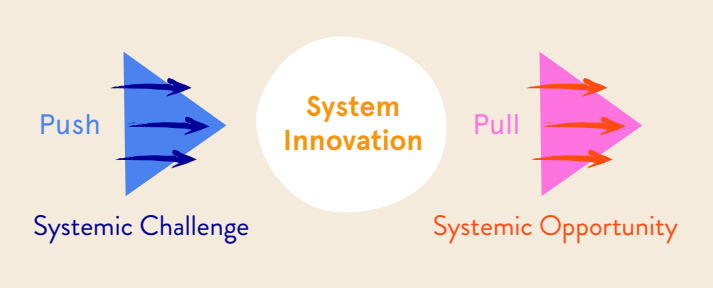
Purpose expresses our sense of identity and our intent in the world. Changing the purpose of a system threatens the identity of those who work in the system and makes them question how they act. That's an uncomfortable experience. That's one reason why system change is so hard.

Step One: When is a system open to a shift in purpose?

Spotting when a system is ready to fundamentally question its purpose is vital.

Systems become open to fundamental change when two conditions come together: society faces a **systemic challenge** which requires a systemic response and a **systemic opportunity** emerges to create a new kind of system. This raises questions which are not just about how a system *works*, but about what a system is *for*.

Systemic challenges *push* innovation forward; systemic opportunities *pull* it. The first is about tackling a problem, the second about realising a possibility. Either of these factors on their own can create the conditions for system innovation.



Systemic challenges are problems which are deeply 'stuck': there has been no significant change in outcomes despite sustained investment in conventional solutions. An example is the persistent minority of Danish young people who do not complete further education or participate in work[19]. There are also new and growing problems which current systems were not designed to deal with, even if they were expanded. The population is ageing, putting new pressures on families, care providers, health and pensions systems. Society needs new systems to enable people to age well, not just more day care centres.

Systemic challenges are **deep rooted:** the problem keeps coming back despite attempts to fix it within the system. That produces a **persistent** pattern of failure which does not stem from a single component, nor even a single sub-system, but from the **interconnections** between different systems. These challenges are difficult to deal with because the response requires coordination across many government departments and agencies, as well as the private sector and civil society. Solutions designed in organisational silos do not work for challenges which spread across those boundaries. Systemic challenges reveal a growing **mismatch** between a system and how it serves society; what society needs and what the system is set up to provide.

The stresses and strains this mismatch creates inside the system lead to a variety of responses. One will be to double down to make the existing system more focussed and efficient. Another is to start looking outside for alternative models, partnerships and solutions. A growing mismatch between the system and society creates challenges which are deep-rooted, persistent and interconnected, thus provoking further questions about the system's purpose.

The search for alternatives will be hastened by signs that new opportunities to reconfigure the system and so new possible purposes are opening up. Sometimes new systems develop even in the absence of a clear and compelling failure in an existing system.

When jet airliners were introduced in the 1970s they opened up entirely new ways and reasons to travel[20]. The technology was ready to be used before people knew what it might be for. Jet travel opened a wider world of opportunities for trade and leisure, initially for an elite and then, with the advent of low cost airlines, for almost everyone. The Boeing 707 opened up a systemic opportunity. Air travel organised around propeller planes was not a system in trouble nor was it facing insurmountable challenges; it was more that the system based on the jet engine opened up new, unforeseen possibilities: a new purpose to enable rapid, mass, long-distance mobility. **A systemic opportunity** is never just a different way to achieve an existing goal: it opens up a new way of life.

A systemic opportunity is **fundamental** because it involves finding a new way to organise a system around a new sense of purpose. Costa Rica's community-based health system, Ebais, which delivers world class outcomes at a fraction of the cost of hospital-based systems in Europe and the US is a case in point. Costa Rica has surpassed America's life expectancy, reduced deaths from communicable disease by 94%, made decisive progress against non-communicable diseases and reduced premature mortality among the poorest families, while spending less than half the world average on health care. Those achievements stem from the system's purpose: Costa Rica's health system's purpose is to "build a healthy community" rather than "treat individuals who are ill".[21]

A new purpose for a system does not arrive like a pizza delivered to your home. It takes time to **unfold**, as people explore what a new technology is capable of. The scale of that possibility is rarely apparent to the initial innovators who may open it up. When Douglas Watson launched the Vegan Society in 1944 to promote plant based diets he was in a tiny minority; he could not have foreseen that 60 years later vegan food would come to be seen as both fashionable and ethical.

Often the first signs that a new systemic purpose is feasible is the appearance of "hybrids" which combine elements of the old and the new: the hybrid electric car which uses a battery as well as a petrol engine; the first containers that were carried on the decks of traditional cargo ships; the decision made by companies to measure their environmental and social impact alongside their financial returns. All of these are slightly ungainly hybrids. They are a sign that bigger change is on the way.

This is the first step. Systems are open to being reorganised around a new sense of purpose when a dynamic is created between systemic challenge and possibility; when criticism of the current system feeds the search for new workable alternatives; when insiders and outsiders start to work together to find solutions, across all levels of the system, from the macro to the micro.

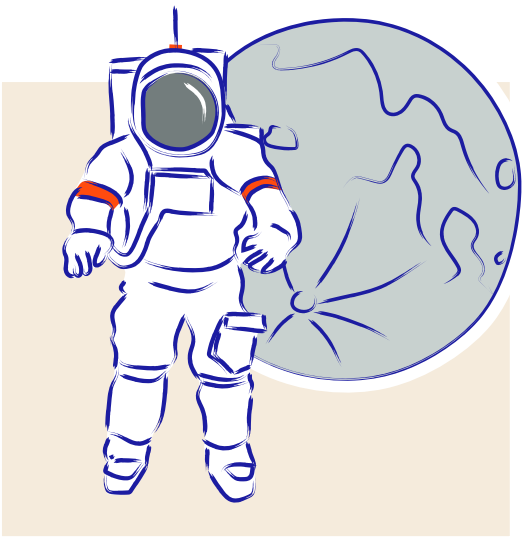
All of this starts the search for a new sense of purpose. How do people involved with a system establish a new sense of purpose for it?

Step Two: Finding A Purpose

A new purpose to guide a system can develop in two quite different ways, one more directive and the other more emergent, exploratory and bottom-up. It's important to know what kind of approach will work for the challenge and the opportunity you face.

Take the directive model first.

The Directive Model



In September 1962 in a speech at Rice University, President John F. Kennedy launched what was to become the most famous example of large-scale, purpose-driven innovation: the mission to land a man on the moon and bring him back safely, within the decade.

Only seven years later, on July 20th 1969, with a spellbound world watching on television, the US achieved its goal and landed two men on the moon. The Apollo programme cost about $283bn in 2020 prices. It involved more than 400,000 staff at the National Aeronautics and Space Administration (NASA), at universities and in private contractors. Hundreds of teams worked to solve a myriad of specific problems with space flight, propulsion, re-entry, navigation and sustaining life in space. That multitude had to contribute their different knowledge into a common programme, organised around a shared mission.

What integrated all their efforts and gave them direction was the inspirational mission they were set. That catalysed and gave coherence to the efforts of multiple actors, public and private, across many different sectors of the economy. The mission expressed Kennedy's underlying purpose which was to project US technological power.

The story of the Apollo programme is the foundational account of mission-driven innovation, set out by the economist Mariana Mazzucato in her book Mission Economy: A Moonshot Guide to Changing Capitalism[22]. Mazzucato says a "mission oriented approach [...] means choosing directions for the economy and then putting the problems that need solving to get there at the centre of how we design our economic system. It means designing policies that catalyse investment, innovation and collaboration across a wide variety of actors."

For Mazzucato that means public policies aimed at creating tangible benefits for citizens and setting goals that matter to people, driven by public interest considerations rather than profits. Crafting the right mission involves setting targets that are inspirational yet concrete.

This directive model makes sense in settings that the systems theorist Béla Bánáthy[23] describes as deterministic and purposive.

According to Bánáthy, **deterministic** systems are relatively closed; they have a clear, unitary goal set from the top. People within the system have very limited freedom even to change the methods to achieve the goal. An Amazon warehouse is a deterministic system.

Purposive systems allow greater scope for innovative problem solving around the shared mission. People within these systems have greater freedom to adapt new methods so long as they are demonstrably better at achieving the goal. The Apollo programme was purposive. The quality improvement systems created by Japanese car manufacturers are purposive[24].

Deterministic and purposive systems can be changed by a directive approach in which a new purpose is set from the top.

However, this directive approach will not work especially well for many social challenges. Most public challenges are not like a Sudoku puzzle for which there is a single, definitive answer. Many of the deepest public challenges are often ill-defined and complex; which goals and which solutions matter is not obvious to begin with. For those challenges we need a different model for the way that purpose orchestrates system innovation. We call this the emergent model and it explains why the Dutch got clean water.

The Emergent Model

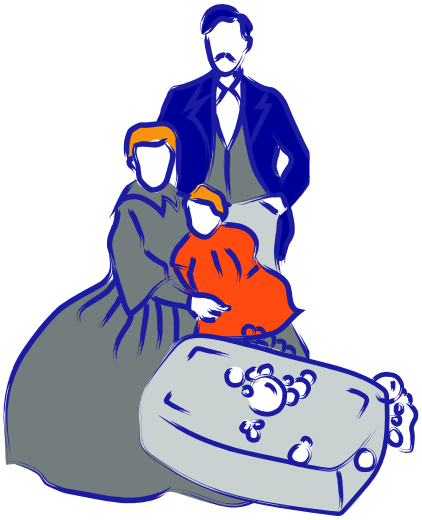
Most Dutch people did not drink clean water until the 20th century. Mainly they drank water from wells, rivers and canals, or they collected rainwater in barrels, because it was free. They also put most of their waste in the canals and rivers that they drank from. Polluted water created water-borne diseases, especially cholera, dysentery and typhoid which killed tens of thousands of people.

As medical knowledge advanced and it became clear that dirty water caused disease, it paved the way for systems to provide clean, piped water which helped to bring the death rate down. By 1900, about 40% of the population had piped water. By 1951, it was more than 80%. Looking back, it seems clear that piped water systems were developed to improve public health.

Yet according to Frank Geels' detailed history[25] of this transition, that is not what happened at all.

Piped water systems developed for a variety of reasons in different settings before any coherent rationale for a system emerged. One of the earliest clean piped water systems in the Netherlands was developed in Den Helder, a naval port, where water was piped to ships that were departing on long voyages.

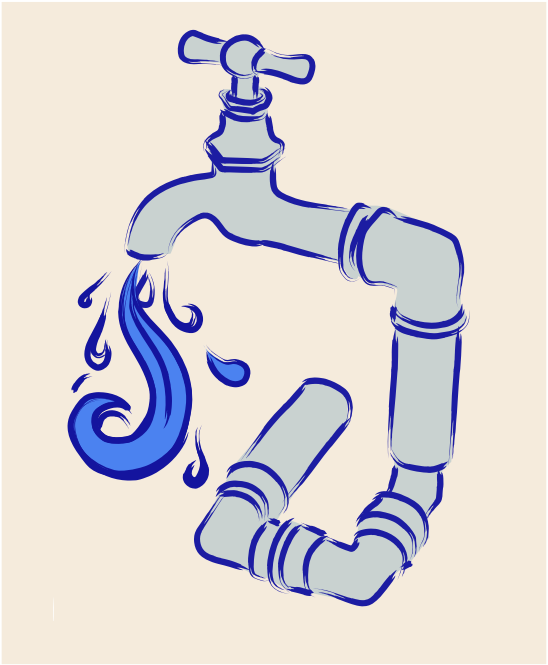
Neither the state nor citizens were much interested in clean water. Through much of the 19th century, government was relatively small, confined to defence and policing. Health was not part of the state's remit. The first water systems were not created by public authorities but entrepreneurs keen to make a profit from places that lacked reliable supplies, like Amsterdam. Health was a purely private concern and people thought having a body covered in grime provided protection against disease. Doctors advised against bathing as it would eliminate that protection.



Clean water started to become important in the final three decades of the century as the middle classes set themselves apart by being clean and washing with soap. That was a cultural shift rather than a scientific one; a social change rather than a policy change. It took many years for the new science of infectious disease to become widely accepted, even among doctors. When those theories finally became more accepted in the medical profession, this scientific understanding made common cause with the middle-class ethic of cleanliness. Clean water became a social priority.

By the late 19th century the growing recognition that governments needed to take responsibility for tackling poverty and poor living conditions in cities paved the way for what Geels calls a public "ideology of cleanliness". This then led to public investment in and mass adoption of clean water systems which improved and saved millions of lives.

Piped water eventually emerged as a system with a stable, widely accepted moral and public purpose. But the process of arriving at that purpose was anything but directive, rational and linear. The system cohered around a purpose that emerged long after piped water had been developed as a technical solution. The purpose did not spur the innovation; the innovation eventually found the purpose it needed to propel it. The means and the ends, the understanding of the opportunity and the solution, evolved together.



In the directive model the system's purpose is decided by figures of authority. In the emergent model the purpose comes into focus through an often ill-coordinated process of experimentation and exploration, creating visible attractors for others to change their behaviour. Political authority eventually endorses the purpose but only once that purpose has been established within society. In the directive model there is a clear statement of purpose: Kennedy's speech marked the launch on the mission. In the emergent model the purpose is embodied in changing behaviour and norms rather than statements.

The directive model assumes a system needs a clear purpose, singular. Yet most systems are trying to reconcile the competing claims of different purposes, plural. The Canadian system of National Parks, for example, was created through finding a common interest between the demands of conservation science, real estate development and the leisure and tourism industry[26]. To this day the Parks are a meeting point for the different interests involved. There is no common purpose, more a stable way to reconcile different interests. Systems of any complexity have to respond to a plurality of purposes which are not always in accord with one another. Then it is not a question of finding a purpose so much as finding the right combination of several different purposes.

The emergent model is a better fit for shifting systems that Béla Bánáthy[27] calls **heuristic** and **purpose-seeking.**

Heuristic systems are open to initiative and change, from within and without. They have to be adaptive, not just in the means they employ but the purposes they serve. A health system is a heuristic system. Not only are health systems trying to treat patients well, they are also trying to prevent disease and promote mental and physical wellbeing. Health systems have multiple goals and competing priorities based on different definitions of good health in a constantly shifting environment.

Purpose-seeking systems are like mountaineers constantly looking for higher peaks to scale, as well as new techniques to do so. Purpose-seeking systems co-evolve with shifting environments, aspirations and new knowledge to seek out new, better purposes. An example is the way that trams were introduced into French cities to reduce dependence on and provide an alternative to cars. After 10 years of experimentation, trams enabled a wider vision of the walkable 15-minute city urban life. Public systems can be platforms for citizens to pursue their own purposes: public libraries are a case in point.

The directive model is the right approach when the challenge is well-defined, the authority to set the purpose is clearly established and the potential solutions fairly knowable.

The emergent model will be more appropriate when there are many different possible solutions and purpose will only come into focus through discovery and experimentation, from within society rather than set by those in authority.

Directive, mission-driven innovation approaches will not work in all situations, as the business economist John Kay points out:

"Where objectives are clear and simple and policy and implementation can readily be distinguished; when interactions with others are limited and predictable; when we are confident in our ability to specify completely the available options and the risks to our objectives and when we understand the systems with which we deal then our approach can be more direct and linear.

However most of the time life is not like that. Most of the time high level objectives and goals are loosely defined and multi-dimensional. There is no clear distinction between objectives and implementation because the actions we take to achieve the goals reveal what goals we should have. In the process of attempting to realise our goals we learn not just how to work better but what better goals we could have."[28]

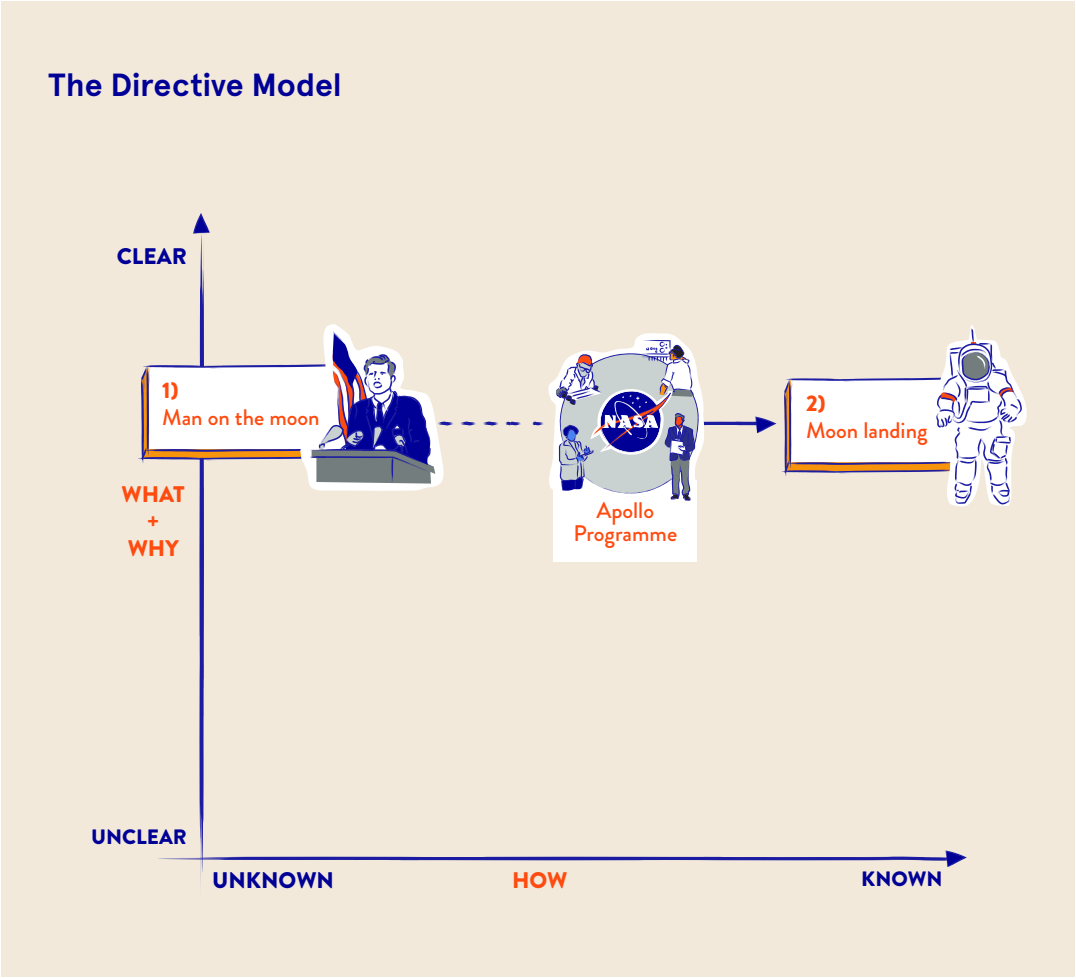
Missions and Meanders

This simple grid helps to distinguish the two approaches.

The *what* and the *why* of innovation - the mission - go along the vertical axis, from unclear at the bottom to clear at the top. The *how* of innovation - the means to achieve the goal - goes along the horizontal axis from unclear on the left to clear on the right.

Success lies in the top right hand corner where there are reliable and effective means to achieve a clear purpose.

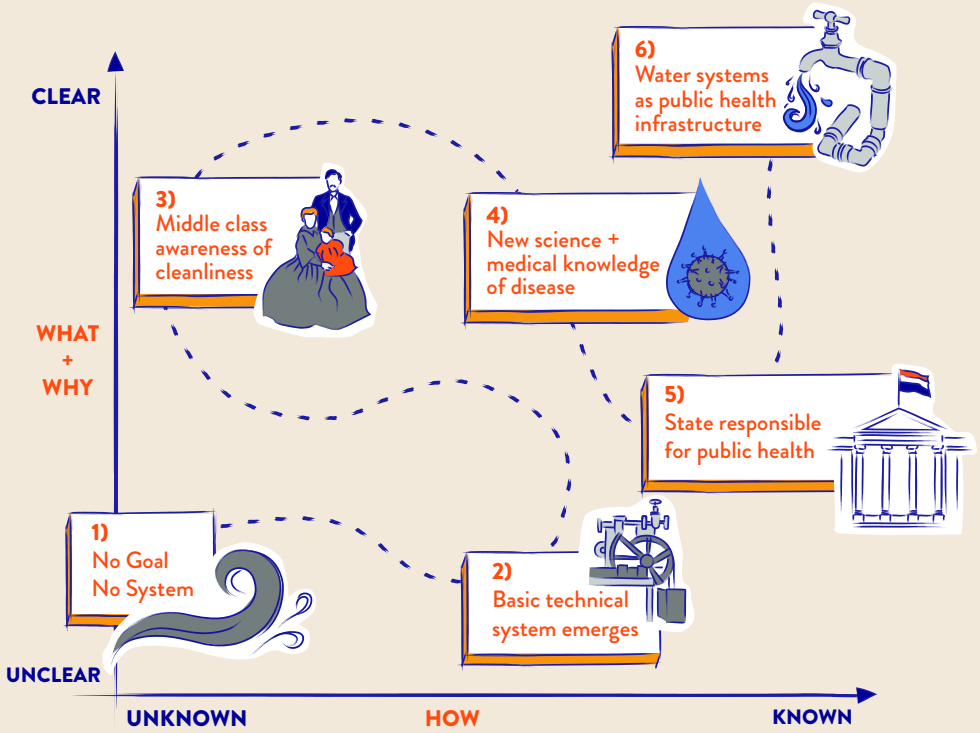
In the directive model of innovation shown below, the purpose (1) is very clear (send a man to the Moon) but the *how* is unknown. As the Apollo programme makes the means clear, so the innovation travels from the top left to the top right as the goal becomes achievable (2).



The emergent model is a lot messier.

In the case of how the Dutch got clean water, the system is initially in the bottom left hand corner (1), without either a clear purpose or a clear means. First, the technical system is developed in the bottom right hand corner (2). It becomes possible to pipe clean water but no one really knows what the system is for. The purpose starts to emerge at point (3) when the middle classes start to adopt cleanliness as a mark of social distinction. The purpose solidifies at point (4) when that middle class ethic combines with the new medical science of disease which makes clean water a priority. At point (5) the emerging power of the state to create public systems propels a new shared public purpose that was not possible before because the state was so limited. The ideology of public cleanliness (6) on public health grounds. The system eventually develops a clear, coherent purpose and the means to achieve it through a meandering interaction between means and ends.

The Emergent Model



The System Innovator's Dilemma

The differences between the directive and emergent approaches to innovation create the system innovator's dilemma.

Directive approaches will not work for emergent, complex, wicked social problems. Yet emergent solutions cannot be planned and directed; they take time to gain momentum. What if we do not have that long because the crises we face are urgent?

Urgency and focus are the great attractions of a directive approach. The Apollo programme landed a man on the moon in just seven years. How can we bring the urgency and focus of directive innovation to challenges and opportunities which demand an emergent and co-evolving approach to innovation?

The answer is to find ways to make the two approaches work together.

A period of emergent, purpose-seeking innovation can lead to more directive, goal-oriented development once the shared purpose has become clear. That is what happened with containerisation and electricity systems as they developed in the US. An initial period of emergent innovation eventually led to a stable technical system which could then be scaled. That opened up unforeseen new opportunities created by the system: a new process of emergent, purpose-seeking innovation started. For example, electricity was applied in households and factories in ways never originally envisaged.

Emergent approaches can work on the fringes of a more directive system. In hospitals providing elective surgery, the best approach to innovation might be directive, to drive the system to higher levels of performance. But at the fringes of the health system, where it is dealing with public health issues, lifestyle change and mental health, a much more emergent, community-based approach will be needed to develop new solutions.

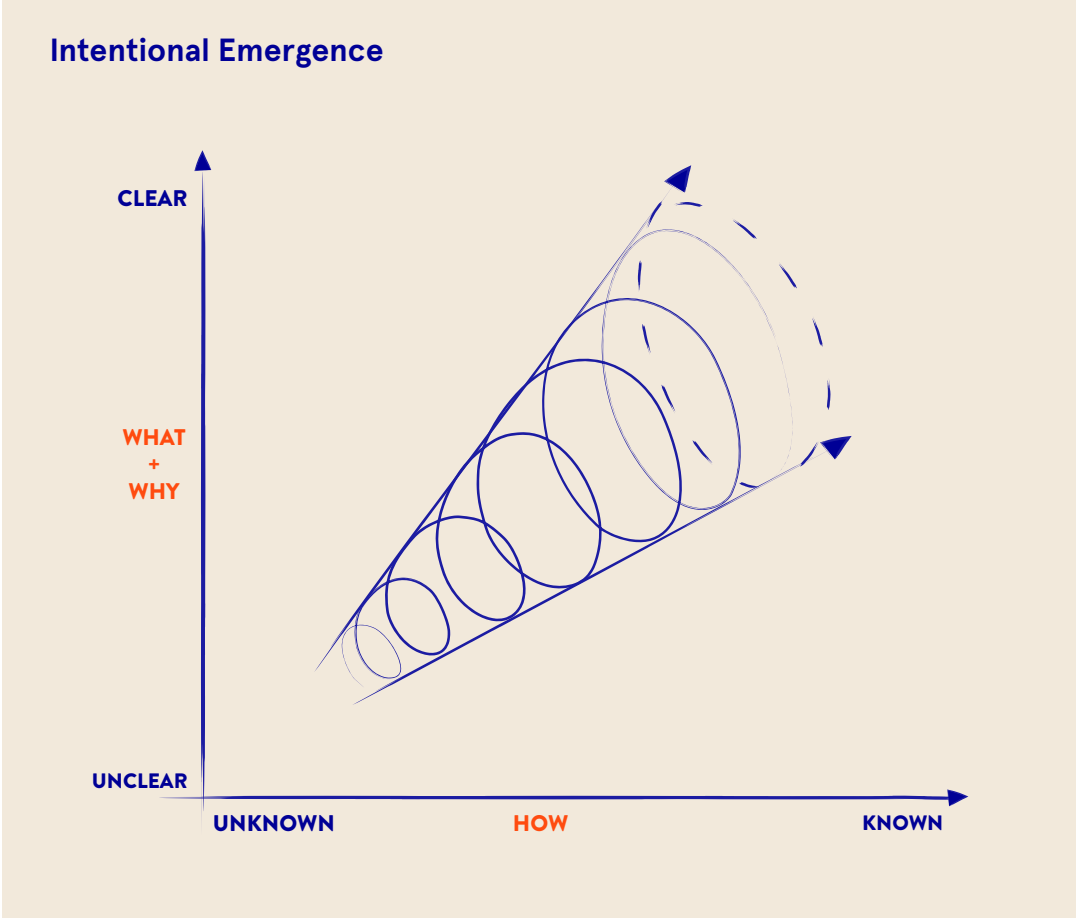
Directive innovation can make sense in a sub-system of a wider emergent system. Providing people with pensions is a quantified, transactional process which responds to directive innovation. But it is also part of an emergent set of responses to ageing which are co-evolving in society, including health, housing, work and exercise.

The most interesting approach combines directive and emergent innovation at the same time. We call that **intentional emergence**.

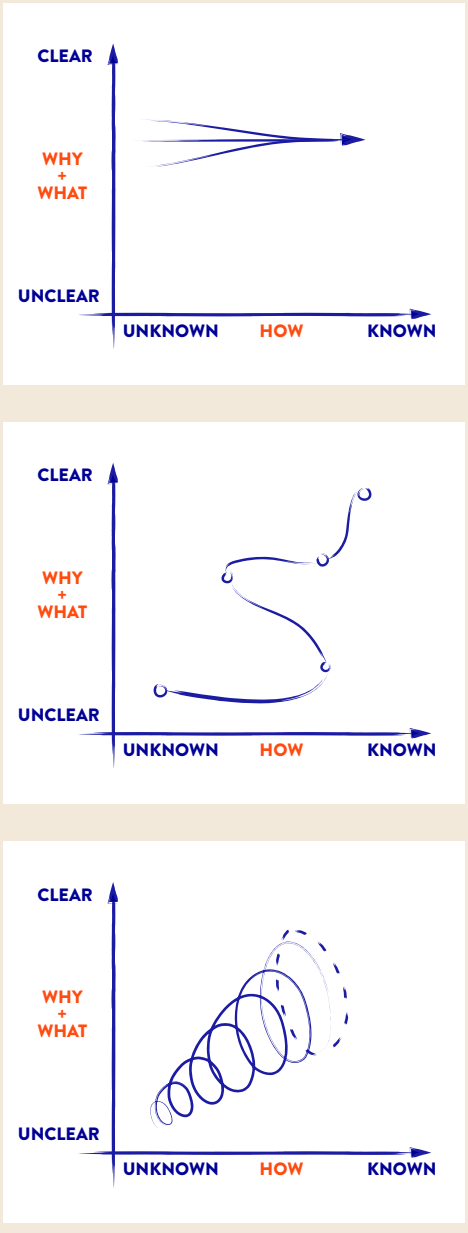
Intentional Emergence

Emergent systems are beyond direct, detailed control. Yet that does not mean they are completely unpredictable and chaotic. They are not beyond guidance from designers, policy-makers, investors, activists and consumers. Systems that are complex, adaptive and emergent can be shaped by the pull of a purpose which makes them easier to coordinate; creates commitment among the people involved; generates innovation; and builds resilience. That happens only when those shaping the system from the inside and the outside are skilled at framing a purpose which orchestrates the collective endeavour needed to meet a challenge and open up new possibilities.

Directive, mission-driven innovation moves reasonably quickly in a fairly straight line from the goal to the means. Emergent innovation can have a profound effect throughout society but it often takes a meandering course over several decades. Intentional emergence is a way to accelerate and synchronise emergent processes through more rapid, iterative cycles of development, which gain momentum as they draw in more contributors.



The diagram below compares the three approaches: the directive, the emergent and the intentionally emergent. The organisation for mission-driven, directive innovation is a pyramid, with a hierarchy of missions, goals, challenges and innovation teams. The model for emergent innovation is a meandering interaction between means and purpose: the innovation finds its route to scale in society like a river finding its course through a landscape. The model for intentional emergence is a vortex of rapid, synchronised collective learning, across technological development, business models, public policy, social activism and consumer culture.



Step Three: On the Path to Purpose

System change takes so long because the coordination of the different contributions needed for system change is too often left to chance and comes about in an asynchronous, meandering fashion with one step eventually leading to another. System innovators have to orchestrate and accelerate this emergent process without robbing it of the bottom-up, decentralised experimentation which makes it so creative and adaptive. That means engaging the players who need to be involved in the solution in a rapid, iterative process of collective learning and creativity.

Learn

System change inevitably involves many players, from across all levels of a system; from the leaders of major institutions through front-line workers to citizens and consumers making complementary commitments and changes to their behaviour. A system going through fundamental change needs reflective and deliberative spaces where the diverse people who are part of this change can come together, to share insights, ideas and proposals: an infrastructure for collective learning.

One solution is to create deliberative capacity within the system so diverse groups of people with a stake in the system can debate what direction change should go in. These forums can take many forms, and they can be hosted and convened by different players, including foundations, universities, cultural institutions and local governments. They generally play three roles:

- Help people make sense of the state of the system.
- Open up the framing of problems, opportunities and the path to possible solutions by drawing on a wide range of perspectives beyond the core stakeholders in the system.
- Create a way for everyone involved to commit or find a potential shared interest in a shared sense of direction for development.

If reframing the purpose of a system only involves those with a strong vested interest in the current system, that effort is unlikely to challenge the dominant paradigm. Those insider perspectives need to be complemented and challenged by other perspectives, from the margins, fringes and outside the system.

Reos Partners, specialists in advising on large-scale change processes, make a distinction between convening a "coalition of the willing", starting with people who are already committed to the need for and general direction of change, and convening for "radical diversity", to open up new perspectives on the possibilities of change. A coalition of the willing can mobilise around a clear purpose; a group convened for radical diversity can open up new perspectives and possibilities for change[29].

The Dutch systems designer Kees Dorst sets out a related approach in his book Frame Innovation.[30] Dorst recommends that innovators start unpacking a challenge by working with an inner circle of key stakeholders who feel they own the problem, know a lot about it and will be critical to implementing effective solutions. However, that inner core will often reach for solutions which reinforce existing routines and relationships. To avoid that, the search for a new frame has to draw in a much wider cast of characters.

Terry Irwin, professor of Transition Design[31] at Carnegie Mellon University, uses the example of a project about the future of water systems in California to show how creative deliberation can work:

"The perspective of why there was a water shortage was very different among the avocado farmers and the migrant, illegal workers. There was a rich white elite and the business people who relied on tourism. With something as fundamental as water you had completely divergent opinions about the system. Until you understand all those perspectives, it is hard to make progress. Even if you just pick a handful of power players in the system you're going to miss so much.

"Putting all these people together in the same room to collectively create a map of the system is probably the first time those people have been in the same room and the map becomes something that forces them to interact in a civil and creative way. Creating a collective systems map is just a by-product; the conversation and interactions that need to happen to produce the map are invaluable."

At the very least, these approaches allow for different groups in a system to understand each other and to find common ground, even if not common purpose.

David Stroh outlines a very similar approach in *Systems Thinking for Social Change* (2015). Stroh brings together diverse groups of people involved in a system to: understand the current state of the system; create a picture of a preferred system of the future; map out the gap between the current system and the future; create a plan to fill in the gap.

Innovations in deliberative democracy might allow such discussions to take place at the level of an entire system, city or nation. There are a growing array of experiments with deliberative citizen forums being used to think through the social impacts of new technologies.[32]

And there are now countless examples of this kind of deliberative, reflective, collective learning at a local level. The Transition Towns movement, started by Rob Hopkins in Totnes, and The Doughnut Economics Lab, have developed ways for towns and cities to create shared plans to promote environmental sustainability.

Creative deliberation and learning to decide the shared purpose for system change needs to be fed by three other sources: imagination, exploration and excavation.

Imagine

"It is possible to change the picture", Alvaro Salas Chaves says, reflecting on the world-beating health system he was responsible for developing in Costa Rica "It is possible to call upon a group of people, a group of Quixotes, who think and see twenty, thirty years ahead. It is possible to raise an idea and see it supported by a younger generation to become real."

Lacking hospitals, the money to build them and the doctors to staff them, under Salas' leadership, Costa Rica created a community-based health system, Ebais, where doctors work in and with local communities. Their relationships with the communities they serve are strong. They have intimate knowledge of individual patients and their families. But more important still is that they help to build up the community's capacity to look after itself, collectively. As that capacity has developed and deepened, so communities and doctors have been able to take on new and more ambitious goals.

The development of Ebais is a case study in intentional emergent innovation in which waves of social innovation were mobilised around a shared vision. Doctors worked closely with communities to provide services but also to develop sustaining relationships, allowing the system to find its own new purposes and goals. The results of this very different vision of health and care are impressive. Costa Rica has extended life spans and reduced early mortality and health inequalities faster than the US, while spending a fraction on health care. For Salas that would have been impossible had they not dared to dream of an alternative system to work towards. Intentional emergence needs to be fed by deliberate investments in collective imagination.

Al Etmanski, the Canadian social entrepreneur, activist and writer argues that system innovation requires us to "privilege" the imagination:

> "Designing social policy without an imaginative sense of your destination means your best efforts will land you toward the front of the status quo, but not ahead of it. Imagination helps you transcend the limits of what seems naturally possible and morally acceptable.
>
> "The imaginative question isn't "what needs to be changed about our existing social safety net," but: "what kind of caring society do we want?
>
> "A focus on the imagination helps you assemble possible futures and proven innovations into a cohesive whole. It encourages you to incorporate the diverse ideas of people who were previously treated as helpless clients and ensures that solutions start with those who are most at risk, most marginalized and who face multiple social barriers."[33]

To imagine new systems formed around new purposes, we need to separate ourselves from the world as it is and the systems we have grown used to, which condition the way we think.

Creating an imagination infrastructure (of the kind advocated by the prolific designer and activist Cassie Robinson[34]) to allow us to do that would mean systematically investing in some of the many techniques now available to imagine future opportunities. These techniques include: simulations and scenarios (originating with

Shell the oil company[35]); narrative foresight (of the kind practised by Milojevic and Inayatullah[36]), including science fiction (which Nesta[37], among others, has promoted); speculative, immersive design (of the kind the Danish Design Centre has developed[38]); forecasting and backcasting; collective visioning exercises using models, such as Bill Sharpe's Three Horizons[39] (practised by the International Futures Forum); social dreaming (which has been used by the think tank Demos Helsinki); and including the voices of future generations in decision making by working with younger generations throughout the process (for example, the Welsh government's minister for future generations is a person under the age of 30 whose role is to review legislation from the point of view of its impact on the future).

Utopian thinking plays a crucial role in this. Ruth Levitas, the social historian, in *Utopia as Method*[40] argues that a utopia should not be thought of as a place, an end point, but as a critical and creative vantage point on our current society. Utopia is often dismissed as an irrelevant and self-indulgent fantasy, or worse a blueprint for what becomes a collective nightmare. Andre Gorz, the Austrian-French sociologist, argues that Utopia disrupts the taken for granted nature of current reality and gives us a perspective from which we can see what is lacking in contemporary society and what we long for.[41] The philosopher Ernst Bloch in The Principle of Hope[42] and The Spirit of Utopia[43] said that a utopian longing for and anticipation of a better future, "the not yet", as he called it, is essential to music, art and fiction. For Bloch, utopian day-dreaming is an essential everyday activity to guide us to the ways we want to live.

Imagining a different future is not enough, it has to be made tangible to make it attractive and plausible.

Explore

The economic historian Carlota Perez argues that systems shift only when there are "visible attractors" to pull people towards a new approach. She explains:

"For society to veer strongly in the direction of a new set of technologies, a highly visible attractor needs to appear, symbolizing the whole new potential and capable of sparking the technological and business imagination of a cluster of pioneers."[44]

Arkwright's Cromford mill, which opened in 1771, was a visible attractor for the industrial revolution which it kickstarted. The rail line between Manchester and Liverpool on which Stephenson's Rocket locomotive ran was a visible attractor for what became the steam age. The Chicago World's Fair of 1893 showcased electrification as a working system. These attractors convey the potential for new technologies and organisational principles to be widely applied to modernise and rejuvenate the entire economy. We call these minimum viable systems.

" For society to veer strongly in the direction of a new set of technologies, a highly visible attractor needs to appear, symbolizing the whole new potential and capable of sparking the technological and business imagination of a cluster of pioneers."

Carlota Perez

Rather than waiting for these attractors to emerge, system innovators need to consciously search for them and create a portfolio of experiments which might create them. These visible attractors need to convey an alternative purpose, a new set of principles to live and work by, to shift people's behaviours and mindsets. They are not just technical solutions.

The philosopher John Danaher argues that "techno-moral revolutions" accompany the "techno-social revolutions" that Perez studies. Danaher says:

"New ways of doing business generate new power relations, new expectations and duties. This requires new moral paradigms."[45]

Danaher's argument is that we should be looking for moral pioneers as well as technological ones. Donald Watson was a moral pioneer of veganism. Margret Sanger was the moral pioneer of the contraceptive pill.[46] Greta Thunberg is a moral pioneer of sustainable living. Frances Westley, the leading social innovation theorist, argues that system-shifting social entrepreneurs are the bearers of new social philosophies about how to live a good life that trigger a cascade of further innovation.[47]

"New ways of doing business generate new power relations, new expectations and duties. This requires new moral paradigms."

John Danaher

We will only find these visible attractors through experimentation and exploration. That is the conclusion of Herminia Ibarra's research into how people find a new sense of purpose when they make big career shifts: when an accountant decides to become a music therapist or a management consultant becomes a baker. People who make these transitions do not look inside themselves for a hidden conviction. They open themselves out to the many possible versions of their future self that they could imagine: what they might do, the company they might keep, the stories they want to tell about themselves.[48]

The same is true for entire systems: what future systems do we want to explore? Where does that exploration take place? Who does it and how do people in the current system learn from the explorers? System innovation needs to be informed by a portfolio of experiments and explorations to create new visible attractors, which combine technologies with new ways to live.

A good, current example of this in action is what is happening to food systems, where many people are exploring different possible futures, ranging from the extension of industrial farming at scale to entirely plant-based food systems, urban food systems which provide local solutions, and regenerative organic systems which recuperate older methods of crop rotation. All are vying to be visible attractors for the food systems of the future.

Creative deliberation needs to be fed by systematic exploration and experimentation to find the visible attractors to pull us towards new systems: the new destinations for our journeys. The emergence of visible attractors makes it easier to unpick existing systems which have a huge claim upon us.

Excavate

A creative approach to the future demands an equally creative, critical and inquisitive approach to the past. We are much better placed to open up what our future could be if we are also prepared to open what our past has been. One of the biggest challenges in system transitions is fear of loss. People are not yet ready to give up their old identity (although they know they will have to eventually) and not ready to fully embrace a new one (though they know that day is coming). One way to make that shift easier to contemplate is to show that the current identity and purpose of the system is a contingent, historical creation. We call this excavating the system. Excavation involves several steps.

System innovators need to dig deep to uncover the underlying beliefs and assumptions that will continue to shape the evolution of systems unless they are challenged.

Al Etmanski in his work on disability, puts it this way:

"Lurking deep in our institutions, in our statutes, in our legislation and in the habits and behaviors of people in those structures, are beliefs about people with disabilities that are wrong, that are false. They were false at the beginning and they haven't gone away." Alex Fox calls these assumptions the "invisible asylum": the mindsets that lie behind the way the state deals with people in its care.

"Lurking deep in our institutions, in our statutes, in our legislation and in the habits and behaviors of people in those structures, are beliefs about people with disabilities that are wrong, that are false. They were false at the beginning and they haven't gone away."

Al Etmanski

None of our modern systems developed from a blank sheet. There were always antecedents, things that came before them. Some of those older ideas were incorporated into modern systems even as they were marginalised: the Danish welfare system carries traces of the influence of 19th century agricultural cooperatives. Perspectives with a long lineage are still active today, providing new insights into how we should approach the future.

An example is the growing recognition of the contemporary relevance of Indigenous approaches to systems, which emphasise interconnectedness.

Diane Roussin, founder of The Winnipeg Boldness Project and a leading Canadian First Nations innovator put it this way:

"Our systems were built on different kinds of values and principles than mainstream dominant systems are today. They served All My Relations really well which is about the trees and the animals and the water, and so humans are a part of that interconnected ecosystem. And so our values and principles recognize that, and therefore had practices that really honored that... central to that concept is connectedness. You can't live a good life without being connected and related. I think Indigenous ways of knowing, being, doing, and feeling are very untapped potential right now."[49]

Proponents of Indigenous perspectives on systems include Carol Ann Hilton, the author of *Indigenomics*[50]; Tyson Yunkaporta, from the Indigenous Knowledges Systems Lab at Deakin University, and author of *Sand Talk: How Indigenous Thinking Can Save The World*[51]; and Robin Wall Kimmerer in *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*.[52] Indigenous thinking provides rich alternatives to reliance on industrial era models. Indigenous innovators and radical traditionalists like the shepherd and English author James Rebanks[53] and the author and agrarian radical Wendell Berry[54] from Kentucky are visible attractors pointing us to possible new ways of life which can be recovered from the past.

Kees Dorst calls this uncovering the archaeology of the system, to understand the many paths it could have taken as well as the one it did:

"We investigate what happened but also what could have happened, what would have been different if they had chosen another path. If we didn't look at these alternative paths of action, we would run the risk of having our own perceptions caught in the same trap that led to the initial problem."[55]

"We investigate what happened but also what could have happened, what would have been different if they had chosen another path. If we didn't look at these alternative paths of action, we would run the risk of having our own perceptions caught in the same trap that led to the initial problem."

Kees Dorst

The histories of systems can be told from many vantage points, from the lived experience of people working in and using the system, as well as those managing it, and the official accounts written by formal historians. In some systems, such as those supporting people with disabilities, these alternative accounts of why the system is the way it is and what is wrong with it are vital to opening up a view of a better future.

One way to do this is through a set of questions set out by Ivana Milojevic and Sohail Inayatullah, who work with groups to create new stories of what systems could become. Their questions include:

- What things do I say over and over again about why the world is the way it is?
- What are the origins of this issue and the world views that it conveys?
- Is there a core metaphor which describes this world view?
- What new metaphor might provide us with a way forward?
- How can we act on that new story?[56]

Milojevic and Inayatullah's point is that we cannot really imagine alternative possible futures unless we unpick the world views of metaphors, narratives and assumptions we now depend on, often unthinkingly.

Conclusion

An emergent, distributed and bottom-up process of innovation can be orchestrated through a rapid cycle of learning and deliberation. This cycle, fed by exploration, excavation and imagination allows the players in a system to develop a shared sense of purpose.

Deliberation and learning brings people together from across and outside the system to share perspectives and agree on a sense of direction, constantly learning to reorient themselves as conditions change.

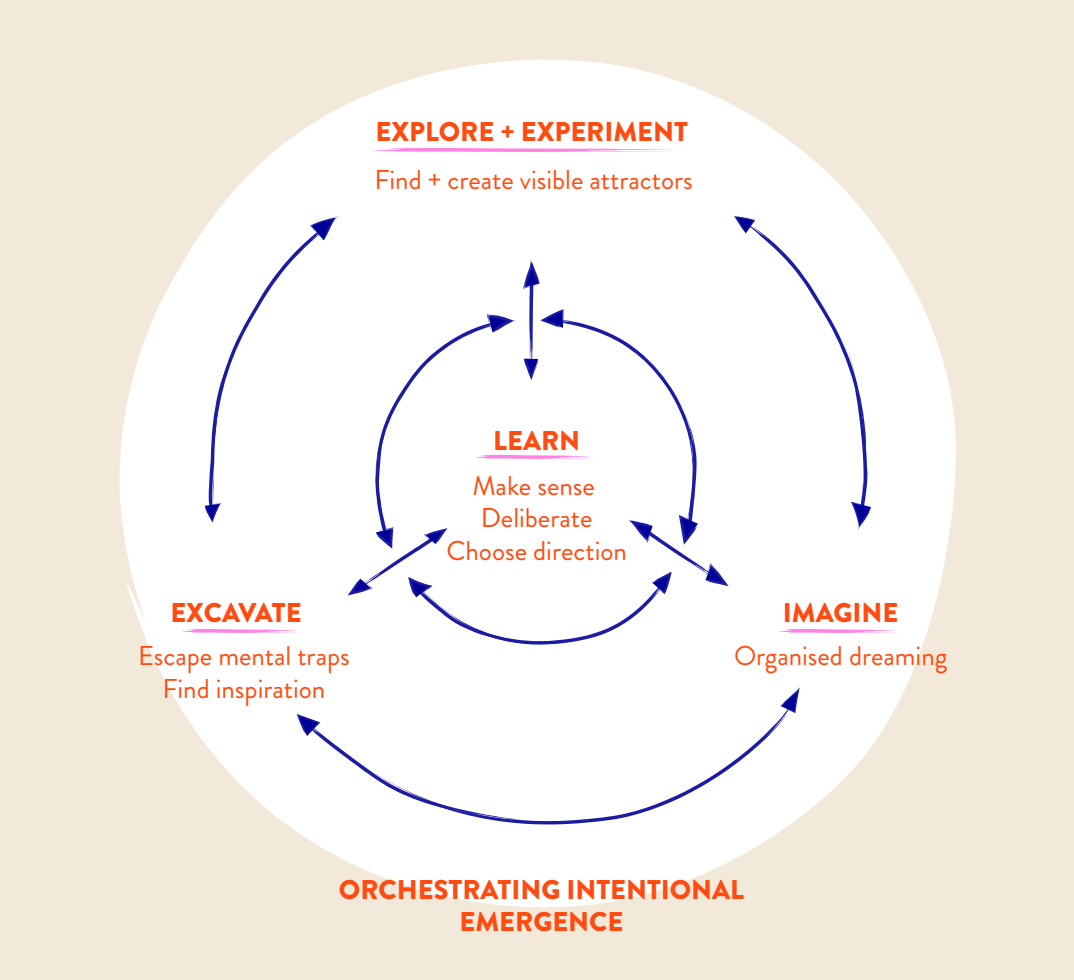
Imagination will be vital to do what Alvaro Salas and his colleagues did in Costa Rica, to create a vision of a very different health system. Without deliberate investment in imagination it is usually too hard to break free from the mental models of the current system.

Exploration is vital to find and create the visible attractors which will pull us towards different, better future systems. System innovators, whether entrepreneurs, investors, public service commissioners, visionaries or activists need to deliberately embark on laying out stepping stones on the path to a preferable future.

Excavation will reveal the foundations of the current system and uncover alternatives to it.

By investing in these four linked activities, with deliberation and learning at their heart, it's possible to gain some of the benefits of a directive approach - urgency and shared focus - while mobilising the strengths of the emergent approach - a mass of decentralised, self-organising social innovation.

We set out the model in the diagram on the following page.



Systems are organised around their purposes. But new purposes are rarely rationally chosen nor decided by figures of authority. More often they are found, discovered, uncovered and generated. Our model of intentional emergence shows how that process can be accelerated, synchronised and steered by all those involved.

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About the System Innovation Initiative
This initiative of the ROCKWOOL Foundation's Intervention Unit connects knowledge and practice on system innovation to leaders, innovators and entrepreneurs who want to have more systemic impact and meet big, shared societal challenges in new ways. The initiative works with system innovation experts and practitioners internationally and in Denmark to turn systems theory into system change in action.

About the authors
Charles Leadbeater is a leading author and international advisor to governments, industries and cities on innovation for social impact and system change. He is senior advisor to the ROCKWOOL Foundation, co-leading their System Innovation initiative with Jennie Winhall, who is a system innovation expert and the Foundation's Director of Social Innovation.

The ROCKWOOL Foundation
is an impartial, financially self-supporting institution. The Foundation's objective is to strengthen the sustainability of the welfare state through the creation of new, independent knowledge about the challenges faced by society and through the development of solutions to these challenges. The ROCKWOOL Foundation Interventions Unit designs, launches and scales social innovations to address social issues which affect equality of opportunity.