

How Public Engagement Improves Lives: Principles, Typology and Evidence



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Executive Summary



There is one central purpose for public engagement (PE) in universities, public and third-sector organisations: it is to ensure research and education leads to improvements in people's lives.

An engaged organisation plays an active role in helping to transform social and ecological systems, has a high national and international profile, and helps shape policies and societal values on education institutions. Many higher education establishments already have a wide variety of programmes and structures for public engagement, including centres and institutes, dedicated citizen- and patient-oriented research, and local to international partnerships. At the same time, there is much policy work to create cultures and economies in which public engagement can flourish.

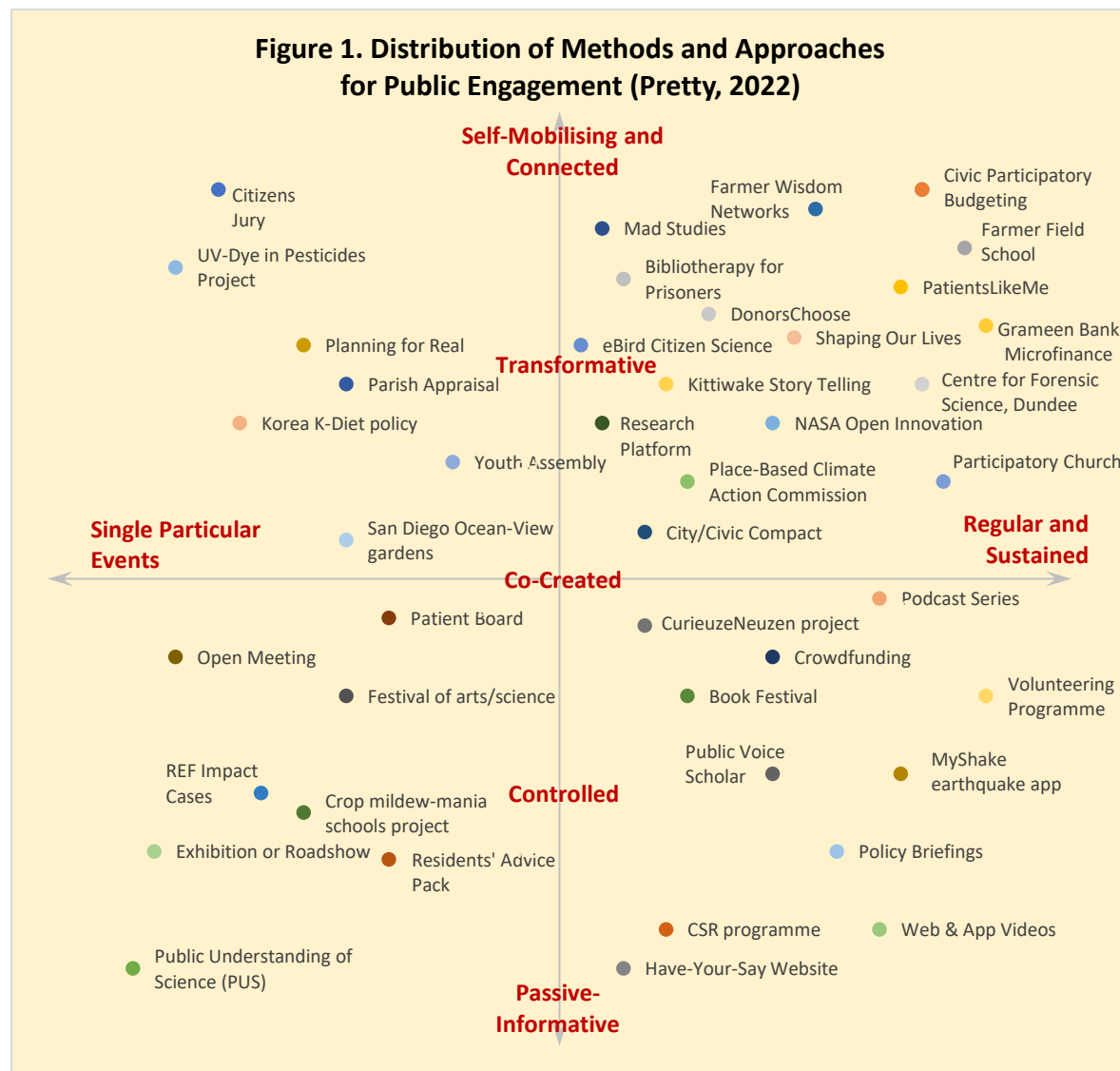
It has been well-established over the past thirty to forty years that there is a considerable participation premium. Public, private and third sector organisations who reach out to engage with their customers, consumers and members, with their staff and students, and with wider public groups, all find that people want to engage and have something interesting to contribute. They often enjoy being creative and contributing to a greater good.

But this is the thing. Public engagement is not easy. It means giving up some existing status and power, often acquired after many years of training and learning of knowledge and norms. It means recognising and abandoning a paradigm that defines a particular field of expertise as inhering in only certain individuals or groups. It means adopting a mode that values the knowledge and understandings of all people in a system. Yet at the same time, declines in social capital in many affluent countries have made PE harder. The problem is not that people are hard-to-reach; it is that experts and professionals tend not to question their own approaches. Public engagement, done well, requires effort and challenges us to think and act differently.

Here a new typology of PE is presented, indicating how approaches fall on a spectrum from passive PE (people are told what has been decided) to consultative modes (people are asked set questions), to collective and interactive (people work together in joint analysis), to transformative (where the worldviews and behaviours of all actors change), and then to self-mobilising and connected (citizens take action independently of external institutions).

More than 40 examples of contemporary methods and approaches are depicted on scales from passive to self-mobilising, and from single event to regular and sustained action (see Figure 1). PE

practice is discussed in Education and Research systems, and examples of novel institutional models built around new power are presented. The paper concludes with observations about how to build regenerative cultures around PE for more inclusive and sustainable futures, and sets out five key guidelines for practitioners.



This paper uses these 40 cases drawn from across the world and from different sectors to tell stories about both the challenges and successes in PE. These include:

- Social care enterprises (Buurtzorg in the Netherlands), new forms of social counselling (Social Prescribing for primary patient care in the UK), and new patient-led initiatives and movements (Shaping Our Lives in the UK, and Mad Studies in Canada and the UK);
- Open innovation programmes (NASA in the US) and engagements by business with the creativity of fans (the Lego toy company);

- Citizen-science projects involving large numbers of the public (MyShake worldwide; Science and Technology Backyard Platforms in China; eBird in the US; Pesticide UV-dye project in Ecuador; CurieuzeNeuzen in Belgium) and the groups of judicial professionals and the public (Leverhulme Research Centre for Forensic Science, Dundee);
- New forms of member-led world-building games (the Minecraft video game);
- Bibliotherapy programmes for prisoners (Changing Lives Through Literature in the US); patient- and community-led websites (PatientsLikeMe and GetUp! Australia) and crowd-funding for schools (DonorsChoose in the US);
- Social mixing programmes in schools and churches (public schools in Delhi; House of All Sinners and Saints church, Denver);
- The emergence of intentional forms of rural social capital (Rural Social Groups in emerging economies; Farmer Field Schools in 90 countries; Grameen Bank microfinance for women in Bangladesh and India; Collective Water Management in many countries; Landcare groups in Australia; Farmer Wisdom Networks in Thailand; Campesino-a-Campesino movement in Cuba);
- Civic engagement by universities (Penn State Civic Engagement in the US);
- Social learning in universities (Hawkesbury Agricultural College in Australia; an Undergraduate Happiness course at the University of Bristol), plays to bringing new perspectives on history (Breaking the Silence slavery play in the UK), and forms of story-telling to young children (Kittiwake Storytelling in the UK);
- Place-based commissions (Place-Based Climate Action Commissions in the UK), new participatory civic processes (Participatory Budgeting in civic municipalities in many countries), and national participatory policy making (Korean K-Diet policy; Irish Citizens' Assembly).

Old power can be defined by central control and ruthless competition, by creating winners and losers, and by experts who hoard and protect. New power is defined by participatory combinations of many knowledges and worldviews, a sense of collaborative agency, calls to action to improve the world, and inclusion of experts by both learnt and lived experience who share, facilitate and learn more themselves by doing so.

Five guidelines on PE are offered: choose methods carefully to seek many voices; think about how PE can transform existing systems towards greater sustainability and equity; be flexible as people will bring new ideas; ensure the principles of co-production are followed, even if power structures constrain; and tell compelling stories about impact and outcomes.

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1. Why Public Engagement

“There is only one true form of wealth, that of human contact,
When we work merely for material gain, we build our own prison.”

[Antoine de Saint-Exupery, *Wind, Sand and Stars*, 1939]

There is one central purpose for public engagement (PE) in universities, public and third-sector organisations: it is to ensure research and education lead to improvements in people’s lives. An engaged establishment plays an active role in helping to transform social and ecological systems, has a high national and international profile, and helps shape policies and societal values on higher education institutions. The National Coordinating Centre for Public Engagement defines Public Engagement as, “The myriad ways in which the activity and benefits of higher education and research can be shared with the public. Engagement is by definition a two-way process, involving interaction and listening” (Cream and Manners, 2020). Public engagement is thus intended to create mutual benefit.

These aims align with UK Research and Innovation’s Vision for Public Engagement (UKRI, 2019): “UKRI supports world leading research and innovation to create a more prosperous, healthy and sustainable society. Creating opportunities for people to discuss, create and participate in research and innovation is an important way to achieve this: it makes research and innovation more relevant, impactful and trusted”. This denotes something beyond old business-as-usual (Nurse, 2015). The Chief Executive of UKRI, Ottoline Leyser (Engage Festival, 2020), has added: “We need to shift the whole concept of what the research and innovation system is and how it should work.” PE is likely to play a key role in this shift.

Many higher education institutions already have a wide variety of programmes and structures for public engagement, including centres and institutes, dedicated citizen-oriented research, and local to international partnerships. UK universities submitting to the Research Excellence Framework (REF) must include “impact cases” to demonstrate how their research has had external influence, and all institutions must also demonstrate through the Knowledge Exchange Framework (KEF) how they have worked with and for business, community and society.

The Knowledge Exchange Framework (KEF) was launched by the UK government in 2018, the aim being to increase the efficiency and effectiveness of the use of public funding for knowledge exchange with partners and communities (NCCPE, 2012, 2022). The returns are self-reported and contain rich information on the proactive roles universities are taking to work to improve their communities and regions. The data is presented by UKRI on interactive dashboards that rank universities against each other over seven metrics: local growth and regeneration, public and community engagement, research partnerships, working with the public and third sector, IP and commercialisation, skills and enterprise, and working with business.

Disciplinary and sectoral PE approaches for research and education include citizen science, public and patient involvement, public sociology, new public social science, public value of humanities, open scholarship, schools outreach, lifelong learning, arts and science festivals, fairs and public talks,

museum curation, young people's universities and assemblies, corporate social responsibility (CSR), and appointed memberships of academics to commissions, boards and government policy advisory committees (Burawoy, 2005; Bate, 2011; Brewer, 2013; Nurse, 2015; Fransman, 2018; Beresford, 2019). The UKRI (2021) emphasises six themes for its work on PE: citizen science, innovation platforms, agents of change, social architecture, place-based approaches, and co-creation methods. In each, the aim is to seek to connect universities better with the public and with policy makers at all levels, providing platforms for co-creation of activities leading to outcomes with lasting social value. Laura Cream leads PE at UCL, and has observed, "PE is all about embedding both a culture and a set of values around how a university creates knowledge which improves lives, enabling brighter ideas through deeper connections with communities, including those whose voices are often not heard or ignored". The Co-Production Collective, embedded within UCL Engagement, is "Championing new approaches to working together in equal partnership and for equal benefit."

At the same time, a wide range of terminology has been deployed to demonstrate various levels of commitment to public engagement. This includes emphasis on service to society (King's College London) and social responsibility (Manchester), being open and publicly-engaged (UCL), having a focus on Transforming Lives (Sheffield Hallam University), playing the role of an anchor organisation (Rutgers University and many others), ensuring civic responsibility for all research and education (University of Chicago), having a commitment to public voice (Cornell University), being permeable (University of Lincoln), taking a place-based approach (Arts University Bournemouth, Birmingham City University), and playing a formal role in city and civic futures (Southampton; Nottingham and Nottingham Trent). The Universities of Maryland and Penn State Brandywine have created centres for civic engagement, creating opportunities for public service by students and staff, and Rutgers has spoken explicitly about their desire to overcome the competitive instincts promoted in higher education. The University of Bath has published a *Field Guide to Public Engagement* (2019) to emphasise its role in culture change. A growing number of universities have been explicit about patient and public involvement (PPI) in health and medical research.

At the University of Essex, we have stated in our strategy that we wish "to tackle with rigour the questions that matter for people and communities, put ideas into action to improve people's lives, and nurture and celebrate our shared commitment to social action." This means making a commitment i) to connect researchers with communities; ii) to harness the power of co-production to ensure research improving people's lives; and iii) to engage with the local communities and increase the opportunities to have impact in the world. The University of Manchester's approach to civic social responsibility seeks to be transactional, co-developed and mutual (Civil Society Futures, 2018, University of Manchester, 2021). It is highly place-based with the city region and seeks to ensure many voices come through. Working through a cascade of types of public engagement, they seek to share, inspire and then involve, and have set out these principles in the 2021 *Building Utopia* report.

In the UK, the NCCPE plays a national role in coordinating, showcasing and sharing methods and approaches for PE, yet has recently concluded that within universities, "Engagement is still relatively rarely integrated and essential" (Cream and Manners, 2020). Engagement can itself also vary with intent and values. Much still tends toward indirect and passive types; greater social and institutional benefit tends to come where engagement is interactive and transformational. If we were to be

harsh, we could say universities have seemed to become out of touch, connecting poorly with the public even though they have enormous stores of expertise, public support and guaranteed demand from future students.

At the same time, the stories on national platforms arising from the REF and KEF do not as yet seem designed for public or political consumption (NCCPE, 2022). A summary of the uses of PE in the 2020 KEF submissions is shown in Table 1. The most common tendency is towards outward flows of information, the least on seeking transformation. The NCCPE concluded that 80% of activities were intended to: “Inspire and inform the public”, though there was also a growing emphasis on “social purpose.”

Table 1. Activities emphasised by UK universities in submissions to the KEF 2020 (from NCCPE, 2022)

Number of UK universities (total of 117)	Activities and methods
More than 50 universities	Open days and events, outreach, arts and science festivals
Between 30 and 50 universities	Lifelong learning, arts and performance, public lectures, exhibitions, volunteering
Between 10 and 30 universities	Thought leadership, providing access to facilities, publications and toolkits, legal advice, media engagement
Less than 10 universities	Health clinics, campaigns, participatory action research, gaming methods, developing research skills, open access, living labs, oral histories, business clinics

It has been well-established over the past thirty to forty years that there is a considerable and positive participation premium (Chambers, 1989, 2008; Cernea, 1991; Gibson, 1996; Pretty and Ward, 2001; Beresford and Carr, 2019; Wilson, 2019; Pretty et al., 2020; Beresford, 2021). Public and private organisations who reach out to engage with their customers, consumers and members, with their staff and students, with wider public groups, all find that people want to engage and have something interesting to contribute in the form of time and money. They enjoy being creative and contributing to a greater good. They wish to help to make improvements to people’s lives and the wider state of nature. By contrast, they do not appreciate forms of “we-washing” (analogous to green-washing using sustainability claims) or manipulation of engagement for the sole aims of promoting the interests of professionals or experts.

Effective PE involves the giving up of some authority and control, and the accepting of the inherent value of multiple knowledges and viewpoints within particular systems and cultures. PE thus involves, at its best, thinking about new forms of power and relationships (Timms and Heimans, 2018; Grant, 2021), and building a creative knowledge and understanding distributed across social groups.

We shall see shortly how hard this is to think about and implement. We shall also see that many instructive forms of PE come from outside universities and higher education sectors.

Here are six successful examples where the public has been engaged in a very different mode to previous norms and ways of working. Each demonstrates a shift in emphasis from old power and processes (centralised and controlled) to new (more distributed and engaged).

i. MyShake platform for earthquake monitoring and early action

The MyShake project was developed by Richard Allen and colleagues at the Berkeley Seismology Lab (Allen et al., 2020). It is a citizen science project to provide earthquake early warning (EEW) in earthquake-prone regions. In three years, it has built to 330,000 users engaging via an app. Earthquakes are being detected and located, and the magnitude established, in 5 to 7 seconds after origin time, and alerts delivered to smartphones in another 1 to 5 seconds. MyShake creates personal alerts for protection (drop, cover and hold on), and rapid institutional action, such as automated slowing of trains, opening and closing of pipeline valves, and readying of emergency response personnel and equipment.

ii. Delhi Schools

When some Delhi schools created an experiment from 2007 to open up a fifth of places to poorer students, it was found that it made the richer students more prosocial and generous, less discriminatory and more willing to socialize. Gautam Rao of Harvard University concluded, "Increased interactions across social groups, perhaps especially in childhood, can improve intergroup behaviours" (Rao, 2019). PE is thus not just about more engagement, it is about engaging with under-represented groups who previously had little voice, and to reverse embedded inequalities.

iii. Mad Studies

Mad studies began in Canada, and have spread to the UK and elsewhere. The aims centre on resistance and understanding, and seek to create alternatives to simple medical models of mental ill-health (Le Francois et al., 2011; Beresford and Russo, 2022). The value and emphasis is on first-person knowledge, building alliances, and creating platforms for radical change. Peter Beresford and Jasna Russo state Mad Studies offer, "Insights for advancing understanding of experiences of madness and distress from the perspectives of those who have had those experiences, and also explores ways of supporting people oppressed by conventional systems."

iv. Minecraft

Minecraft is a sandbox video game launched in 2009, and has grown to be the best-selling video game of all time. By 2021, it had 140 million monthly active users. Players generate their own 3D-worlds with virtually unlimited choices of terrain, and can cooperate or compete with others. Players can modify the fundamentals of their game and can create new mechanisms and assets. It has become a highly creative form of engaging large numbers of people online.

v. The House for All Sinners and Saints

The House for All Sinners and Saints is a new entrant to the religion sector in the western USA. The church was established in Denver in 2008, and quickly became popular, especially with younger millennials. It is explicitly pro-participation with a socially-positive agenda. Anyone can speak during the open mike sermons: the liturgy is created by members. The leaders have given up some control, and the 500 members value the egalitarian community, the participation, the creativity and the togetherness. The church describes itself as "a group of folks figuring out how to be a liturgical,

Christo-centric, social justice-oriented, queer-inclusive, incarnational, contemplative, irreverent, ancient-future church with a progressive but deeply rooted theological imagination.”

vi. Lego

The toy company, *Lego*, was saved by PE. The Danish company had a distinguished 70-year history but by 2003 was posting its largest ever losses. Many suspected modern children no longer wanted to build structures with plastic bricks. The new Chief Executive began attending fan-organised events, started listening, and the company discovered an audience who had hitherto been ignored: the AFOLs (Adult Fans of Lego). They were committed but embarrassed, felt discomfort not pride, and so told no one of their hobby. They represented 5% of the market, but each spent twenty times more than the average family with children. The company pivoted, took the crowd seriously, launched MOC Pages (My Own Creation), which now has 500,000 fan-made designs, and committed to manufacturing winning fan-designs. Those MOC selected-designs receive 1% of the sales revenue from their creation.

If you want to be taken seriously by a crowd or community, say Timms and Heimans (2018), taking them seriously is a good place to start. By 2021, Lego was the largest toy company in the world.

These kinds of outside-in approaches ensure that all are focusing on what their members, users or customers care about. The best PE operations do not mind not being in control, they try to ensure their consumers or members are (Morgan, 2009; Howe, 2017). They build on the advocacy of the public to become a lighthouse around which others steer. Such movements move themselves.

2. Public Engagement is Not That Easy

“Except for the point, the still point,
There would be no dance, and there is only the dance.”
[TS Eliot, *The Four Quartets*, 1943]

This is the thing. Public engagement is not easy.

It means giving up some existing status and power, often acquired after years of training and learning knowledge and norms. It means recognising and then abandoning a paradigm that defines expertise in a particular field as inhering only in certain individuals or groups. It means adopting a mode that values the knowledge and understandings of all people in a system. Public engagement, done well, requires effort and challenges us to think and act differently.

This is especially hard when years of training have emphasised a mode of knowledge and technology transfer from those who know to those who do not. This has been called a “deficit-model”: valuable knowledge is transferred to fill a gap for recipients who are assumed not to know something, and thus this should be welcomed by them (Irwin, 1995; Haggard-Johnson et al., 2013; Wynne, 2014). Over time, knowledge sits with power and becomes self-referential, often missing how the world and the public have already changed.

Yet paradigms do shift, often slowly, sometimes suddenly. Thomas Kuhn in *The Structure of Scientific Revolutions* (1965) defined a paradigm as a coherent set of bounded beliefs and theories about how a segment or sub-system of the world works. Most investigation and exploration from the sciences, social sciences and humanities sets out to fill the gaps within an existing and accepted paradigm. Then, out of the blue for many actors, something shifts. Someone thinks something new, develops a method, theory or technology, and boom. The paradigm flips. Some feel threatened and left behind, their careers and habits too tied to a particular set of explanations and evidence to change.

Some opponents become blockers, seeking to prevent change or discredit the new. Thomas Kuhn noted that a common outcome of a paradigm shift is, “Fierce controversy, international name-calling and dissolution of old friendships.” The physicist Max Planck (1950) had earlier stated this: “A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die and a new generation grows up that is familiar with it.”

This Planck’s Principle is often true, but change can be faster. Old power institutions or individuals can be overturned very quickly, perhaps more so today with fast and broad communications platforms and networks.

Here are four contemporary examples of the disruptive and potentially-positive effects of public engagement on institutions and their staff and representatives, from the space agency *NASA*, the UK research council *NERC*, the political-voice website *GetUp! Australia*, and the US public schools crowd funder *DonorsChoose*.

i. National Aeronautic and Space Administration (NASA)

NASA's Johnson Space Center in Houston launched its Open Innovation programme in 2010 in response to feedback from the US Congress that they were not being sufficiently innovative (a code for "being noticed"). NASA picked fourteen strategic and developmental challenges, and laid them out on an open innovation platform: 3000 people in 80 countries responded (Lifshitz-Assaf et al., 2018; NASA, 2022). NASA found that the crowd solved problems in 3-6 months instead of NASA's norm of 3-5 years. They found these analyses were impressively accurate, and breakthroughs led to renewed internal enthusiasm. But another internal faction quickly emerged. This group viewed citizen science as "a waste of time, a nuisance and a threat" (Timms and Heimans, 2018). Some turned saboteur, others ignored crowd ideas when presented. Professional privileges and knowledge had been hard-won, and many did not want to give them up. Their instinct was to hoard information, not expose it to the scrutiny of an unqualified crowd, as they saw it. But Open Innovation continues to grow (NASA, 2022): the supportive group founded a *space apps hackathon*, bringing together 25,000 people from 69 countries. Similar open innovation platforms have been developed in some large private companies, and these too have resulted in internal divisions, such as at consumer goods giant Procter and Gamble (Ozkan, 2015).

ii. Natural Environment Research Council (NERC)

The UK's NERC sought names in 2016 from the public for a new £200 million polar research vessel, and provided an online voting mechanism. The public overwhelmingly voted for a suggestion from journalist James Hand, and Boaty McBoatface won over trailed worthy names. The campaign reached millions online, and the research council was in a fix. It had only a limited plan for engagement, did not predict this public response, did not have a trusted community to provide balance, and in the end went against public voice to select the name of the trusted presenter, Sir David Attenborough. One on-board undersea vehicle was named Boaty McBoatface. Henry Timms and Jeremy Heimans wondered, had they gone with the winner, the research council might have built a community to last: they could have marketed t-shirts, mugs, games, cartoons, and children might have followed the vessel online for years. But perhaps this was never possible: a polar research colleague remarked that the captain and officers had been clear: they would not sail under such a comic name.

iii. GetUp! Australia

In 2015, Jeremy Heimans created *GetUp! Australia*, an online platform to make it easy for individual citizens to email their legislative bodies. Tens of thousands of individuals responded, writing for the first time to their elected representatives. They raised issues they cared about. One government politician appeared on national TV to condemn the campaign, saying, "There are hundreds of emails arriving in Senators' offices. They are beside themselves... This is highly irresponsible, this is spam." *GetUp!* remains issue-based and not supportive of any particular political party. It has one million members, more than all national political parties put together. "Our work is driven by values," they write, "not party politics" (*GetUp!*, 2022).

iv. DonorsChoose

DonorsChoose is a crowdfunding web platform connecting the public to public schools (in the USA, a public school is publicly-funded, in the UK it is a private operation). *DonorsChoose* was started by a history teacher, Charles Best, in a Bronx school. It is a crowdfunding platform with explicit values,

and aims to reach those students and schools missed by existing institutions of support. It has allowed teachers to raise funds for what they felt their students needed. They have since funded 1.7 million classroom projects with donations from 5.2 million citizens, giving US\$1.2 billion of support to 86,000 schools and benefitting 18 million students (DonorsChoose, 2022). This has been meeting needs missed by existing structures. But the response has not been entirely supportive. One professor of political science at Columbia University was dismissive: “We have vested school boards, mayor and superintendent offices with the authority to make decisions about schooling,” because, he said, “Only we understand.” Put another way, he was saying he did not trust the interference of teachers or the public in these matters. Some school boards have since banned crowdfunding, as it draws attention to the failing of their own structures and responsibilities (Del Valle, 2019).

In *A Paradise Built in Hell* (2009), Rebecca Solnit has called this aversion to public engagement, “elite panic,” and considers it to be a relatively recent phenomenon. Those who have advanced their personal interest during the period of neoliberal economics cannot believe other people will not also behave selfishly. They do not understand why people should be involved or engaged, nor do they understand why being kind is a way to build mutually-beneficial relationships.

This elite panic, this fear that civilisation is only skin-deep, fosters a sense that people cannot be trusted. Frans de Waal called this a veneer theory. Rutger Bregman in *Human Kind* (2020) recounts the famed Ata Island episode, when six Tongan boys in 1965 were stranded on an island far from home. It was a decade after William Golding’s dystopic tale, *The Lord of the Flies*, had been published. Put the people in charge, and things will fall apart. The Tongan boys, by contrast, divided tasks, set up their own government, grew food, built rainwater harvesting structures, made a gym, and survived until their rescue a year later. Golding, it is now known, had experimented on his pupils, dividing them into competitive groups where losers were heavily punished.

It is important also to note that public engagement does not require the organisation by or sanction of agencies with authority. The rich texture of community participation and volunteering in all countries demonstrates the strength of existing forms of social capital. In the UK, government austerity and cuts to welfare payments during the 2010s led to the formation of 2400 food banks supported by 40,000 volunteers. In 2021, there were 2.5 million users, up from 130,000 in 2011. Each food bank relies on teams of volunteers, and these are now supported by two umbrella charities, the Trussell Trust and the Independent Food Aid Network.

Elsewhere, some 35,000 volunteers help to run the RNLI lifeboat and rescue service, one of the country’s emergency rescue services but entirely supported by public donations. In the UK wildlife sector, the Wildlife Trusts, RSPB and Conservation Volunteers rely on 55,000 volunteers each to maintain reserves and habitats. It is estimated that unpaid health and social carers in the UK provided £500 million worth of support each year (Francis, 2021). Essex Wildlife Trust (2022) with its 35,000 members has a public engagement strategy that emphasises increasing access to natural places, providing experiences, deepening connections to nature, and inspiring action.

The dilemma for political, social and corporate authorities is they both need and fear people’s participation. They need public agreement and support, but they fear that wider and open-ended

involvement is less controllable. But if this anxiety permits only stage-managed forms of participation, then distrust and greater alienation are still the most likely outcomes.

Participation often can mean finding something out and proceeding as originally planned. The problem is not that people are hard-to-reach; it is that professionals tend not to question their own approaches. When they do, PE can mean developing processes of social learning that change the way that people think and act in the world (Bawden, 1991, 2006; Pretty, 1995; Wilson, 2019).

When little effort is made to build local interests and capacity, then people have no stake in maintaining structures or practices once the flow of incentives stop or policies change. If people do not cross a cognitive frontier, then there is unlikely to be sustained change that might be counted as improvement.

3. A Typology of Public Engagement

“How should I follow a rugged road?
Go straight, he said.”

[Korean Zen Master Taiwön, 1936 -]

Public engagement is a multi-dimensional concept that can incorporate communication, co-creation, dialogue and the creation of social capital. Its deployment and methods and approaches have differed widely, representing variations in values and principles.

The first typology to express these variations was developed as a “ladder of participation” by Sherry Arnstein (1969) to indicate how improvements to civic planning could occur. Since then, a number of spectrums, ladders and typologies have been developed and refined (Pretty, 1995; Haklay, 2013; Beresford and Carr, 2018; Nielson, 2018; Junger and Fähnrick, 2020; Johnston and Lane, 2021; Slotterbach and Lauria, 2021).

All have sought to indicate a spectrum from passive PE (people are told what has been decided) to consultative modes (people are asked set questions), to collective and interactive (people work together in joint analysis), to transformative (where the worldviews and behaviours of all actors change), and finally to self-mobilising and connected (citizens take action independently of external institutions). A new typology of PE is depicted in Table 2.

Passive-Informative is the easy default; Self-Mobilisation is hard. The former is old power, the latter new. An early characterisation of PE was the fashion for what was called public understanding of science (PUS) (Royal Society, 1985), in which there is an assumed gap between science and society (Miller, 2001; Entradas, 2015). The Royal Society called for better understanding of science in business, government and schools, and concluded that “scientists must learn to communicate.” This was a partial deficit method, assuming that groups of the public lacked something (knowledge, understanding, technology) and they just needed to be told about it by experts for their lives to improve. Good communication can do this, but it is not guaranteed to cause positive change.

This model was based on professionals transmitting to passive, silent publics (Irwin, 1995). Ian Devonshire and Gareth Hathway (2014) later observed: “The concept of public engagement in science has evolved steadily over the last 30 years. Early PE activities were often delivered didactically in a one-way flow of information ... Over time, PE has become more interactive.”

Mickey Lauria and Carissa Slotterbach (2021) observe that there is much still to learn from Sherry Arnstein’s famed ladder of participation. Public engagement is power redistribution, it is not just one-way communication, consultation and some collaboration. Nielson (2018) sets these shifts on a spectrum from mode 1 engagement (older, investigator-led, discipline-based, using inherited questions and seeking precise answers) to mode 2 engagement (new, context-diverse, problem-focused, evolving partners, focusing on contemporary issues). This typology is designed to provoke reflection on methods and outcomes, suggesting we should not be satisfied with supply-led pushing out of information.

Table 2. Typology of Public Engagement

Types of Public Engagement	Characteristics of Each Type of Public Engagement
Passive-Informative	PE is unidirectional, with information being pushed outwards. Information belongs only to professionals and experts, and thus external systems are unlikely to change. This type can be positive where the information is useful and interesting, but it can also be manipulative.
Consultative	PE centres on asking question to gather information about the world. Organisations and professionals are in listening mode, and professionals are under no obligation to take on board people’s views. Feedback is not guaranteed, and this PE may include bought forms of participation (for food, income or other material incentives).
Co-Created	Organisations and professionals work together with people in co-created platforms for joint analysis, development of action plans and formation or strengthening of local groups or institutions. Learning methodologies used to seek multiple perspectives, and groups determine how available resources are used. This increases total knowledge, data and perspectives, though often neither are changed by the experience. Public knowledge can feel like a threat to the status of professionals and experts.
Transformative	PE changes worldviews and values, causing permanent shifts in choices and behaviours of individuals and groups. Organisations and professionals change, and bonding and bridging social capital founded on trust, reciprocity and institutions is built.
Self-Mobilising and Connected	Citizens and the public take action independently of organisations to change systems. This might emerge as deliberate resistance to existing structures; it might lead to the development of contacts with external institutions for resources and technical advice they need, but retain control over how resources are used. This can mobilise large numbers of people, and can lead to systemic changes in power and outcomes.

Adapted from Arnstein (1969); Bhatnagar and Williams (1992); Pretty (1995); Haklay (2013); Beresford and Carr (2018); Nielson (2018); Junger and Fähnrick (2020); Johnston and Lane (2021); Slotterbach and Lauria (2021).

Some of the greatest advances in recent years on public engagement have occurred in health and social care systems. They illustrate what is possible, and also the range of responses. Formal institutions have adopted “patient and public involvement” as a named thing (PPI); elsewhere patients themselves have established platforms or user-led organisations (ULOs) to share their experiences of diseases (PatientsLikeMe) or to mobilise for greater resistance and voice, such as for disabled people (Sharing Our Voice) or those suffering from mental ill-health (Mad Studies).

In the UK, the National Institute for Health Research (NIHR, 2021) has sought to define involvement, engagement and participation in a form of typology:

- Patient involvement in research is with or by members of public rather than to, about or for them;
- Patient engagement is information and knowledge about research is provided and disseminated;
- Patient participation is where people take part in research by being recruited to trials or research studies.

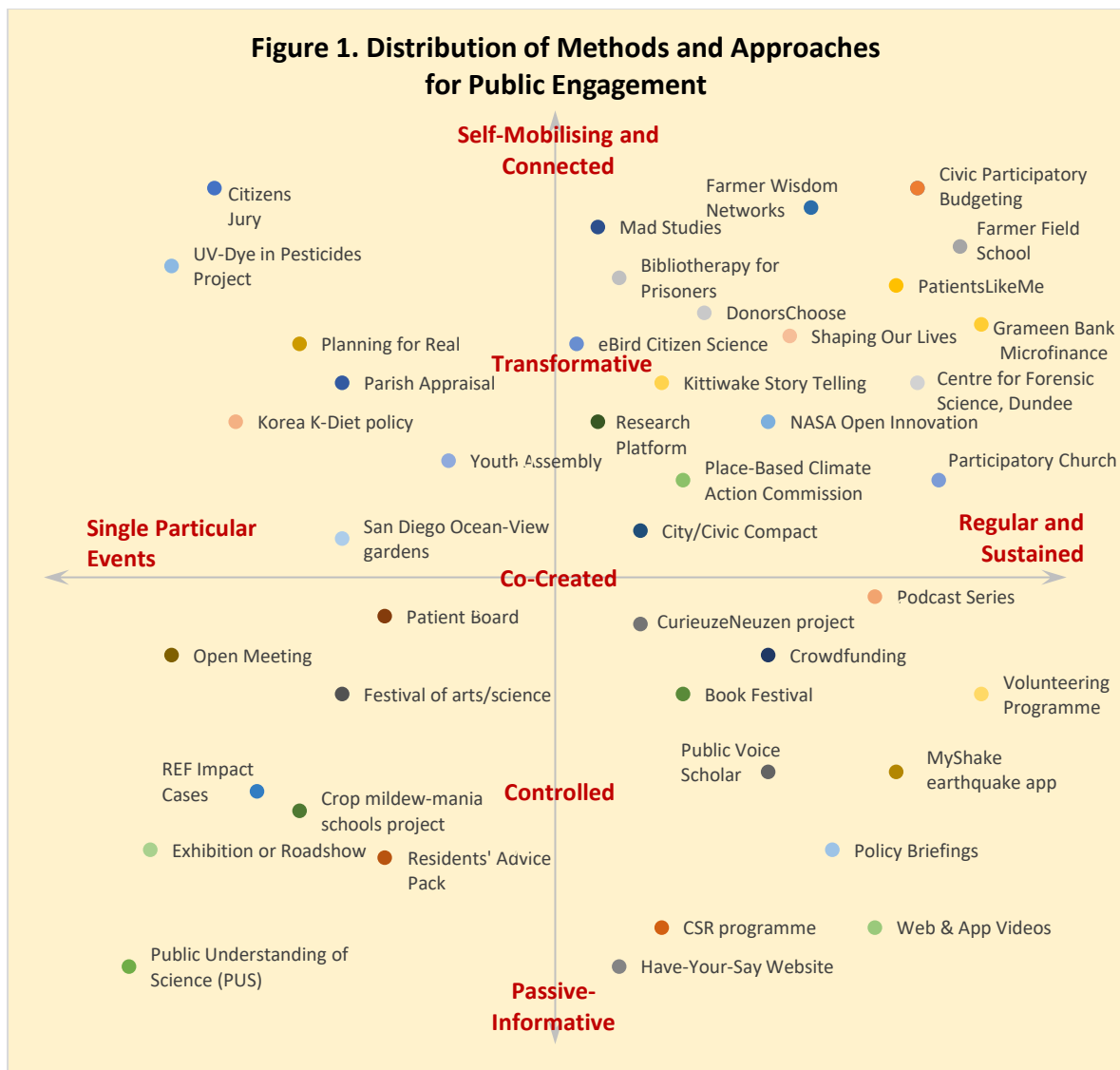
On the one hand, NIHR recognises that these terms are often used interchangeably. On the other, it is clear that involvement is expected to be more transformative, engagement more about one-way communication, and participation more about consultative or instrumental approaches. Whatever term is used, it is co-production of knowledge that is the key requirement. As Peter Beresford (2019) further notes, “A trouble with these unidirectional approaches and typologies is they struggle to recognise power differences and the political nature of engagement.”

Peter Beresford (2019) has also noted that public participation in health and social care “Is not independent of concerns for representation, democracy, social rights, community development, provisions for unrepresented or ignored groups, and then state reactions as conflicts and competing agendas develop.”

For universities, public engagement suggests the need for new thinking about appropriate forms of civic and public compact. This is how we work, this is how we make things better, this is how we develop and teach students, this is how we will engage with you to make changes you will consider as improvements. Nonetheless, PE remains at times uncertain and contradictory. The growth in PE has been accompanied by a significant effort to define terminology and concepts, and much less on evaluating approaches for their impacts (Weingart et al., 2020).

Care should thus be taken over both using and interpreting the term PE. It should be qualified by reference to the type of PE, and clarity over what is considered improvement in a system. PE should have positive impacts of some sort, but there can also be those who see any change as a loss.

Figure 1 maps the locations of 42 applications of public engagement along two scales: from single event to regular and sustained action; and from Passive-Informative to Self-Mobilising and Connected. Many of the examples are featured and explained in greater detail in this paper. The coloured dots just represent different examples. The dot marking each example is placed on the horizontal and vertical axes by judgement, not by quantitative measure or score. This is a model intended to help explain, not to record all the diversity of processes and outcomes from each of these examples.



One way to look at this PE typology is not that these types are mutually-incompatible, nor that one is inherently best (or worst). One type may lead to another. It may be that engagement starts with communication, leads to development of an audience, which then leads to more transformative engagement. This escalator approach can allow for the building of confidence of actors. It can allow the time for individuals to relax into a participatory mode. PE can then become a journey.

There are also many things experts and professionals will know that local people do not. PE can thus be a way to co-create and share knowledge, and change behaviours that lead to improvements. Knowledge is dynamic, developing and changing over time. In local circumstances, there are things we might know well: the changing of seasons, the timings of plants and the behaviours of animals, the quality of local leadership, the potholes in roads and drainage patterns from the hills in storms.

No one in a system can know everything: only engagement leads to sharing and mutual understanding.

Equally, there are things some people know that they cannot reveal for fear of reprisal. The *None in Three* project led by the University of Huddersfield works in Caribbean countries where in some communities one-in-three women suffer from domestic abuse (Smith et al., 2017). Here engagement is with local NGOs and support groups, in a context where direct engagement with women could be counter-productive until the worldviews of some men change. The aim of the programme is to change public narratives and understandings of domestic violence, and thus improve lives. In this way, knowledge can change within communities (Pilgrim et al., 2011).

4. Declining Social Capital Makes Public Engagement Harder

“There is sweet music in that pine tree’s whisper,
There by the spring.”

[Theocritus of Syracuse, *Idyll I*, 308-260BCE]

The term social capital is now commonly used to describe the importance of social bonds, trust and collective action. Its value was identified by Ferdinand Tönnies and Petr Kropotkin in the late 1800s, shaped by Norbert Elias (around civilising processes), then by Jane Jacobs and Pierre Bourdieu in the mid- to late 1900s, and given novel frameworks by sociologist James Coleman and political scientist Robert Putnam in the 1980s and 1990s. Coleman (1990) described social capital as, “The structure of relations between actors and among actors” that encourages productive activities. These aspects of social structure and organisation act as resources for individuals to use to realise their personal and community interests. It is good, in short, to cooperate (Pretty, 2003; Curry et al., 2019; Standing, 2019).

As social capital lowers the costs of working together, it also facilitates co-operation. People have the confidence to invest in collective activities, knowing that others will do so too. They are also less likely to engage in unfettered private actions that result in resource degradation and growing inequality.

There are four central features of social capital: relations of trust, reciprocity and exchange, common rules, norms and sanctions, and connectedness, networks and groups (Ostrom, 1990; Putnam, 1995; Pretty and Ward, 2001; Pretty et al., 2020). Kindness and generosity are a central part of human cultures, almost certainly contributing to evolutionary and cultural success (Zaki, 2019; Bregman, 2020; Hare and Woods, 2020). We know that social capital takes time to build, but can fall rapidly. In recent decades, it seems to have declined in many settings as a result of the spread of economic norms emphasising the assumed primacy of the individual and selfishness (Klein, 2015; Raworth, 2017; McKibben, 2019; Andersen, 2020; Dorling, 2020; Jackson, 2021). At the same time, there have been quietly successful efforts to increase social capital by a variety of forms of public engagement.

But first, an acknowledgement of danger: not all forms of social capital are good for everyone.

It can be easy to appear too optimistic about local groups and communities and their capacity to deliver economic and environmental benefits for all. This was called by Coleman (1990), “the dark side of social capital”, though such terminology would be inappropriate today. There are always divisions within and between groups and communities, and conflicts can emerge. Not all forms of social relations are necessarily good for everyone in a community. A society may be well-organised, have strong institutions with embedded reciprocal mechanisms, but be based not on trust but on fear and power, such as in feudal, hierarchical, racist and unjust societies (Knight, 1992). Formal rules and norms can also trap people within harmful social or family arrangements. Some associations can also act as obstacles to the emergence of innovation, encouraging conformity and perpetuating inequality (Olson, 1965; Taylor, 1982). At the same time, private organisations may operate cynically to serve their own interests by preventing actions that could improve community well-being, such as

the merchants of doubt in the tobacco and anti-climate industries (Orestes and Conway, 2010; Andersen, 2021).

In my recent research on *The Good Life* (Pretty, 2021, 2023), I found that the value of “togetherness” was reported by every respondent in a survey of 27 countries. Seven themes were most commonly reported in the 2000 responses: togetherness, healthy food, natural places, physical activity, creative pursuits for personal growth, spiritual or ethical framework, and sustainable consumption. The most frequent was togetherness, recounted as a rich tapestry of values and relations, of celebration and ceremony, of giving and gratefulness. People talked about the importance of their web of friends, their circle where trust was high and you can rely on others. Such faith implies reciprocity and obligation, where if you give you expect to receive. Social capital helps to stick people together. Togetherness was also caring for old and young, being cared for. It was good conversation and storytelling, it was singing and dancing with friends. It was making our way in the world with others we care for.

Across nearly forty countries, the International Labour Organisation has calculated that one in eight of the adult population are volunteers, producing the equivalent to their economies of twenty million additional full-time workers. It could be said, these numbers are surprisingly high, especially in the face of modern affluence that seems to accord such low value to these actions. Or we could say, people already know that giving is good, for themselves and others. The ILO (2011) has found that volunteers bring US\$400 billion of benefit to world economies each year, a total of US\$19 billion alone to the USA. These are likely to be underestimates. People are not just providing unpaid labour, they are preventing health and social costs. They are spending effort and time, and they receive back meaning, self-worth and pleasure.

This kind of social capital is known to have positive effects on well-being and on life satisfaction and longevity (Gratton and Scott, 2016; Layard, 2020), and countries with higher levels of trust in other people are happier (WHR, 2019, 2020). Volunteers who contribute to the well-being of others and to the quality of lived environments tend to have healthier lifestyles, lower incidence of mental ill-health, and live longer (Borgonovi et al., 2008, 2010; Anderson et al., 2014; Layard, 2020). Strong social support keeps elderly people alive: a meta-analysis by Julianne Holt-Lunstad and colleagues (2017) at Brigham Young University analysed 150 studies in Denmark, Sweden, Japan and the USA, and found a 50% increased likelihood of survival over seven years for those people with strong social relationships and networks. In the Harvard longitudinal cohort studies led by George Vaillant (2002), the presence of friendships and life-long relationships produced ten extra years of healthy life. On the other hand, net well-being across populations is reduced by growth in inequality (Wilkinson and Pickett, 2016), breakdown of social structures and support (Picketty and Saez, 2014), and lack of access to natural and green space (Mitchell and Popham, 2008; Mitchell et al., 2015).

And now we know, social capital has been in decline in the affluent and industrialised countries. One of the most noted examples was researched by Robert Putnam and reported in *Bowling Alone* (1995). The tradition of ten-pin bowling in and around Boston, and elsewhere across the USA, had produced dense networks of local leagues, with teams playing home and away. Matches meant social mixing: one team travelled to another part of the city, the other acted with the kindness of hosts, even though it was the competition that brought them together. People from different

economic and social backgrounds were agreeing to play by common rules. The bowling hall was the fire circle. But civic disengagement grew (Milne, 2018), and leagues began to fall apart. Putnam found that just as many people still were bowling, they were just bowling alone. Understanding and friendship across communities had now begun to fall.

These changes in civic and social infrastructure are echoed in the loss of urban roller skating rinks across the USA. Hugely popular amongst black communities, each rink gave rise to a distinctive style of performance, costume and accompanying music. Rink rats travelled to showcase routines and expertise, and national gatherings of skate jams and roller-derbys created intergenerational ties and cross-community social capital. Roller skating came to occupy a central position in many people's lives, producing pride in local identity. But in recent years, 10,000 rinks have been closed, leaving some 3000 remaining nationwide. Rinks have large footprints attractive to planners and developers, and costs for maintenance are high. Many city authorities have rezoned, imposed specific taxes and resorted to over-policing. Some say this is a deliberate response to elite panic, analogous to the responses to the indigenous ghost dances of the late 19th century (Jackson, 2016). In the film, *United Skates* (2019), one skater says, "Skating was our hope." Now it is harder to express civic pride and identity in physically-active settings that one had brought well-being and connection (Basu, 2014; United Skates, 2019).

But the sun has been going down not just on community activities and sports. Selfishness has been on the rise, encoded into a neoliberal economic paradigm emerging from the 1960s and 1970s (with strong historical antecedents). In the beginning, the underlying ideology seemed convincing. Individualism was good, and when freed from the constraints of government, each person could be so creative and effective that they soon would become wealthy. Growth was possible everywhere. Environmental and social externalities, the pollution and inequality, well, these were at worst just temporary phases. Once economies grew past a certain point, then the wealthy would invest back to solve these passing problems. Free trade was good within countries and across borders. Some places are suited to certain economic advantage, so could trade freely with other places with their different specialisms. On the way, there might appear to be losers, it was survival of the fittest after all. But the global economic machine spins smoothly, and wealth itself would come to trickle down.

Key actors and influencers included author, Ayn Rand, Nobel Prize winning economists Friedrich von Hayek and Milton Friedman, and many policy-makers. In the past decade, four million copies of Rand's two novels written in the late 1950s were sent to every school in the USA. In the year 2020, members of the White House cabinet and British ministers publicly said they were readers, as did billionaire leaders of some silicon corporates. Some have said, proudly, that they have them by their bedsides. In 1974, Alan Greenspan was appointed by President Gerald Ford as chair of the US Council of Economic Advisers, and was sworn in with a copy of an Ayn Rand book in his right hand. To be kind, many were attracted by a worldview that said public government was bad, selfishness could lead to good outcomes, and solidarity thus a trap. Yet Ayn Rand also called altruism, "The poison of death in the blood of Western civilisation."

Selfishness was seen as a thing of merit, and by the 1980s was being supported by new forms of social capital, including the Atlas Society, John Birch Society, Freedom Movement, Mont Pelerin Movement, Cooler Heads Coalition, Global Climate Coalition, all built on the shoulders of the

Chicago School of Economics led by Frank Knight. In *Evil Geniuses*, Kurt Andersen concluded, “This was a quite deliberate reorganizing of our economy and society by a highly rational confederacy of the rich, the right and big business.”

Yet they slept without troubling dreams. Two administrations of the 1980s then did much to seal the rise of selfishness. Margaret Thatcher and Ronald Reagan influenced domestic and world stages. Many came to disparage natural and social assets, prioritising national economic growth and creating long shadows. In *The War for Kindness* (2019), Jamil Zaki of Stanford University has recently commented: “We should see selfishness as a sickness.”

Yet over the same period, public engagement, community pedagogy and participatory approaches in what were once called developing countries were finding new ways to build social capital. They too had suffered from deliberate efforts to eliminate domestic public institutions and promote growth through the transfer of knowledge from richer countries to poorer. These centred on the conditional policies of structural adjustment adopted by international finance institutions from the 1970s and 1980s resulting in the destruction of public institutions (Crisp and Kelly, 1999; Forster et al., 2019), and by the adoption of the Training and Visit (T&V) system of agricultural extension (Benor et al., 1984). The T&V system was built on a linear diffusion model (also known as transfer-of-technology), first implemented on recommendation of the World Bank in 1967, and resulting in disbursement of US\$3 billion to 512 projects over the period 1977-1992. Structural adjustment brought free-market policies to 135 countries between 1980 and 2014 (Forster et al., 2019).

Out of this policy wasteland, though, emerged something new: the most important story about contemporary social capital and the subsequent rise of social groups. It happened like this. Michael Cernea (1991) at the World Bank already had concerns in the late 1980s over the cost of ignoring local institutions. He found that the creation of farmer and rural institutions led both to sustained performance after project completion and to more efficient and fair use of natural resources. New forms of participatory inquiry and systems of collective learning and action were field-tested by development agencies and charities, putting farmer knowledge and capacity to experiment at the centre of practices for improvement.

Now the diffusion of knowledge model could be seen as ineffective: non-adopters had been termed laggards, government extension staff had lost motivation, and research systems had been prevented from becoming learning systems.

Participatory approaches with farmers and rural groups began to be deployed in the 1980s, and expanded through the 1990s. If you listen to local people, you can build on their knowledge. If you hear their priorities and reasons for living, you can find a common platform to suggest improvements. If people experiment and evaluate, they themselves may become convinced of the outcomes. It all works much better than walking in and telling people what to do. Whilst at the International Institute for Environment and Development, and working with Robert Chambers and colleagues at the Institute for Development Studies, I ran public engagement and participation training courses for scientists, extension workers and policy makers in more than forty countries (Pretty et al., 1995).

At every single course, at least one participant with crossed arms would frown and say: well, that might have worked over there, with those people, but it won't work here. We were asking, after all, for trained professionals to set aside their pre-existing paradigms, and think about how to change social and ecological systems in new ways.

A generation later, this kind of work, replicated by many thousands of people, has led to the establishment of some eight million place-based local groups worldwide. In 2020, a group of twenty-nine authors undertook a global assessment of this emergence of social capital and togetherness. We found that more than eight million groups with a membership of some 250 million people had been formed to focus on integrated pest management, forests and soil management, irrigation and drinking water, pastures and ranges, support and finance services, innovation platforms, and small-scale systems. Across 122 initiatives in fifty-five countries the number of groups had grown from 0.5 million in the year 2000 to 8.54 million by 2020 (Pretty et al., 2020).

But there still are shadowy places in the deep woods. There seemed a logic for the rise of selfishness, if you want to be generous. Give us the chance to be in control, give us this freedom, and we will struggle harder in competition and eventually do better. We will create more, become wealthier, and then these benefits will trickle to others who had been less successful. Through selfishness, we would make more for all.

It has been argued that public engagement has become harder precisely because of breakdowns in social capital, civic disengagement, the loss of volunteering and hyper-local institutions, and the fracturing of social networks (Lesen, 2018; Milne, 2018). Poverty, hunger, and the need to hold multiple jobs in the gig economy all set the scene for many people, both in affluent and poorer countries.

No one, it could be said, is against meaningful praxis and transformation, but the time for engagement may simply be unavailable when people are seeking to retain one or more jobs (Hirst, 2021).

We now turn to PE innovations in education and research systems.

5. Public Engagement and Learning for Education Systems

“At a certain point, you may say to the woods,
To the mountains, the world,
Now I am ready,
Now I will stop and be wholly attentive.”

Annie Dillard (*Pilgrim at Tinker Creek*, 1990)

Public engagement is about individual and collective learning. We learn something from someone who knows, we come to learn together with others. And the process can be transformative. New options in life appear, new behaviours and actions may follow.

Many formal educational institutions, though, still operate on a transfer model. Knowledge in the form of information, data and ideas is designed to flow from those who know to those who do not. In a world of complexity, connectivity and global uncertainty, it may be that this form of learning needs to change.

We know this: the number and proportion of people worldwide with a tertiary university education continues to grow: up from 12% of world population in 1980 to 19% by 2000, and then to more than 30% by 2020. This growth is expected to continue: from 250 million enrolments in 2020 to 377 million in 2030 and then to 594 million by 2040 (Grant, 2021). This close-to-guaranteed growth in students will bring more income, increased size and a larger number of universities (currently at about 25,000 worldwide).

This should also mean an increase in research-active staff, who will undertake more research, and should further result in more impacts and ensuing social and ecological improvements. One future might centre on greater collaboration and attention to social responsibility and transformative impact. Another might bring more casualization of staff, less engagement locally and internationally, more competition between universities, less attention to public and policy audiences, and less effort to make the world a better place.

We also know this: students born after the year 2000 will want something new from university educators. They are already digital natives. To them, information and knowledge is already massively available. They will value expertise in curation and choice, in methods to understand and improve the world, and in experiences on forms of social engagement that create a sense of belonging and agency.

We might ask: how, then, can tertiary education become more participatory to encourage better forms of engagement to set the scene for a life of learning?

In the early 1970s, E F Schumacher (1974) asked in *Small is Beautiful*: “If education is to save us, it would have to be education of a different kind; an education that takes into the depth of things.” Chris Argyris and Donald Schön (1974) observed that addressing sustainability and social justice needed new systems of learning, especially on “how to learn how to learn.”

We can distinguish three levels of learning, in which there is a transition from learning information to meta-learning, and then to epistemic learning (Bateson, 1972; Argyris and Schön, 1974; Bawden 1991; Bawden et al., 2007; Ison and Russell, 2007; Beresford and Carr, 2019):

- i. First order: we learn about things within a particular boundary without challenging assumptions or values (work within a paradigm);
- ii. Second order: we as learners critically examine beliefs, values and assumptions, leading to a shift in the way we see ourselves and things in the world;
- iii. Third order: epistemic learning, in which a shift occurs in the operative ways of knowing and thinking that frame our perceptions of the world, involving thinking about the foundations of thought itself.

These are nothing more, it should be said, than the approaches to conscientisation and emancipatory education set out vividly by Rolf Lynton and Paolo Freire in the 1960s and 1970s in India and Brazil, and then by Richard Bawden and colleagues at Hawkesbury Agricultural College in New South Wales in the 1980s. At the centre of these participatory and social learning approaches was the aim to form social capital, particularly for the collective planning and management of irrigation water, forests, seeds systems, community finance, and renewal of whole urban communities and neighbourhoods.

At the core are new forms of inquiry and learner-centred approaches about the world. Action and reflection result in transformation (Wilson, 2019), meaning-making and double hermeneutics help learners how to learn (Röling, 1996), and a Soft Systems Methodology (Checkland, 1989) sets out the system as the method of inquiry. Engaged learning (Fear et al., 2002) means being explicit about values: you do, and you learn from doing. This is also called transformative learning (Orr 2004; Sterling, 2011) in which understanding seeks to be more inclusive and dependable. The aim for all is to situate the academy in wider communities using systemic approaches with pedagogical focus, bringing social learning outcomes (Bawden et al., 1991; 2007; Fear et al., 2006; Sandlin et al., 2011).

The best example of the institutionalisation of these approaches to learning comes from Hawkesbury Agricultural College, now part of the University of Western Sydney. This 20-year experiment on methodological pluralism was launched by Richard Bawden and colleagues, who were seeking to transcend the limitations of positivism and reductionism. Said Richard Bawden: "Together we could learn how to see the world differently and in the process discover just how difficult a transformation this is." The Centre for Systems Integration and Sustainability at Michigan State University then emerged under the leadership of Frank Fear and Richard Bawden: their aim was also to shift to effective "ways of inquiring about the world" (Bawden, 2006, 2011).

This participatory worldview was in itself a way of "being in the world," emphasising the importance of the human condition (Fear et al., 2006). The central question in these initiatives was this: "What constitutes improvement?"

Here are six examples of programmes using these forms social learning to achieve transformational changes in educational systems and contexts.

i. Bibliotherapy: Changing Lives Through Literature

A good example of a successful educational PE programme is bibliotherapy in prisons, established by Robert Waxler of the University of Massachusetts, Dartmouth (Jarjoura and Krumhat, 1998; Waxler, 2008; Schutt et al., 2013). The *Changing Lives Through Literature* programme sought to engage prisoners with many convictions and a high likelihood of reoffending on release. The aim was to use stories and reading. These were men, to begin with, who had little voice in their communities, and no obvious means to imagine or create new lifeways. With the support of the judiciary and probation service, the programme engaged them in reading and group discussions. The rate of reoffending fell by a half, and CLTL subsequently spread to eight other states in the USA, with programmes for men, women, adults and juveniles.

Individuals found renewed interest in family ties and education, enhanced self-esteem, and created different possibilities for their futures. Characters in stories became both inspiration and teacher. Robert Waxler observed, "All stories, at their best, have an ethical standing." Such activity is extremely dangerous, he added, "It can change lives, both inside and out."

One prisoner wrote, "There were books I could not put down. They kept me interested in the positive aspects of it all." It is of course simplistic to use reoffending as the only measure of success. It had changed lives, but perhaps not the society in which the prisoners lived and would return to. Yet several thousand prisoners have completed the 8-12 week CLTL programme. Imprisonment and probation are costly; public engagement is much cheaper.

A variant on this bibliotherapy is the University of Leeds *Writing Back* programme that is tackling loneliness through intergenerational age groups (University of Leeds, 2022). Students are paired with older residents in Yorkshire, having been identified by public libraries. The project was established by Georgina Binnie, who had exchanged letters with her grandmother during her time at university. This method is used to link 200 students a year to the elderly and lonely. Letters are exchanged every two weeks, and participants are encouraged to write about hobbies, travel, poetry and music, also to share photographs. Evaluations show that 95% of both students and older participants said the project had improved their well-being. Many long-term friendships have been formed.

ii. Story Telling about Kittiwakes

Malcolm Green is a story teller and environmental educator, and has used PE with primary school children in a deprived part of Newcastle to awaken curiosity about nature (Gersie et al., 2014). The problem situation was this: the nesting kittiwake colony on the nearby Tyne Bridge had led to local calls for their enforced removal. Some people were delighted by their presence; louder voices insisted they were a nuisance. As part of the voices of the River's Edge project, Green spent a term working with children who had hardly ever went outdoors, and certainly did not visit the countryside. The project centred on observational story telling. The children were taken to watch the birds, and then were asked, "What kinds of questions would you like to ask the birds?" They were asked to wonder what was home like for the birds; where did they fly to; what would it be like for young birds in the middle of the ocean; how do teenage birds spend time together?

The children made maps, wrote their own stories and poetry, imagined they were birds, and then performed a story at a public festival in Gateshead. They had inhabited the emotional world of the birds. It came to pass that the Council dropped plans to eradicate the kittiwake colony. On an outdoor trip later that year, the children noticed gulls on a pond. A new child in the class said they must be kittiwakes. Another replied, “Don’t be silly, they won’t have come back from the sea yet.” Story-telling was a way to understand and act (Pretty, 2022).

iii. Undergraduate Course on Happiness

Bruce Hood of the University of Bristol’s School of Psychological Science launched a first-year undergraduate course on the Science of Happiness. Its aim was to educate and involve students in what is proven to make us happier. The course was built on a similar exercise at Yale University, and similarly was open to students of all disciplines. Students obtain credit towards their degrees but do not complete exams or coursework. Instead, they engage in well-being assessments, join happiness hubs and complete a group report. They also have to carry out practical tasks such as performing an act of kindness, chatting to a stranger, taking time to savour an experience, exercising, sleeping well, and writing a thank you letter. Evaluations of the course subsequently found that a significant proportion of the one thousand students taking the course had ended up themselves feeling happier. One first year student observed, “It’s made me feel more conscious of my happiness. I’ve thought a lot about success and happiness. Lots of people think they will be happy if they are successful. We can turn it around: if we are happy we are more likely to be successful.”

iv. Campesino-a-Campesino movement, Cuba

In Cuba, the Campesino-a-Campesino movement has developed out of radical approach to agroecological integration that is redesigning rural systems (Rosset et al., 2010). It is centred on a Freirean social communication method using adult educational principles (Freire, 1970). Farmers spread knowledge and technologies to each other through field exchanges, teaching and establishment of cooperatives. There are 100,000 farmers of Campesino-a-Campesino in Cuba: the productivity of this sector has increased by 150% over ten years, and pesticide use is down to 15% of former levels. They are more self-reliant as a result.

v. Penn State Brandywine Civic Engagement, US

As a Land Grant university, Penn State was defined at foundation by public purpose. Its 80,000 undergraduates study at 24 campuses, 23 of which are dispersed and tied to local communities, where the aim is to provide students with high-quality and equitable access. The Center for Ethics and Civic Engagement was established at Penn State Brandywine, and links students back into their own communities through curricular programmes. In order to graduate, students are expected to complete between 300-480 hours in community transformation. Students gain experience and relationships over four years, and become socially-responsible citizens and leaders. The Center runs workshops for academic staff on engaged scholarship, links to umbrella groups of community health, social and faith-based organisations, and runs outreach and citizen science projects. Examples of projects include voter registration campaigns, Martin Luther King Day of Service celebrations to bring together community and students, mock conventions, and a campus garden and food pantry. Director of the Center, Vippy Lee, says “We work alongside community partners, and so students are helping to create positive change.” She also notes, this public engagement remains undervalued in the tenure system for academic permanency and promotion.

vi. *San Diego Ocean View Growing Gardens*

At the Ocean View Growing Gardens, UC San Diego has created opportunities for 350 students to work and live closely with residents of poor neighbourhoods. Community gardening has promoted bidirectional learning, and created a third space for local people to grow food and make new social attachments. Students say they benefit from being outdoors, and there have been measurable improvements to mental health. The growing gardens initiative has now expanded into a Bioregional Center for Sustainability Science (Lauria and Slotterback, 2021).

In all these examples, we need to remind ourselves again to ask: what constitutes improvement, and exactly which system is being improved?

To do this we need to investigate how we might explore such questions regarding improvement. Clear principles for methods of participatory inquiry for public engagement are important (Table 3).

Table 3. Principles for participatory inquiry for public engagement

Six Principles	Description
A Defined Methodology and Systemic Learning Process	The focus is on cumulative learning by all participants and, given the nature of these approaches as systems of inquiry and interaction, their use has to be participative.
Multiple Perspectives and Voices	A central objective is to seek diversity and understand complexity. The assumption is that different individuals and groups make different evaluations of situations, which lead to different actions. All views of activity or purpose are heavy with interpretation, bias and history, implying there are multiple possible descriptions of any real-world activity.
Group Learning Process	All involve the recognition that the complexity of the world can only be revealed through group inquiry and interaction. This implies a variety of mixes for investigators, from different disciplines, from different sectors, and from outsiders (professionals) and insiders (local people).
Context Specific	The approaches are flexible enough to be adapted to suit each new set of conditions and actors, and so there are multiple variants and terminologies.
Facilitating Experts and Stakeholders	The methodology is concerned with the transformation of existing activities to try to bring about changes which people in the situation regard as improvements. The role of the expert is best thought of as helping people in their situation carry out their own study and so achieve something. These facilitating experts may be stakeholders themselves.
Leading to Sustained Action	The learning process leads to debate about change, and this alters the perceptions of actors and their readiness to contemplate action. Action is agreed, and changes will be an accommodation between conflicting views. Both debate and analysis define changes which would bring about improvement and seek to motivate people to take action to implement the defined changes. This includes local institution building or strengthening, so increasing the capacity of people to initiate action on their own.

These PE systems of inquiry imply a process of learning that leads to action. A more sustainable and equitable world, with all its uncertainties and complexities, cannot be envisaged without many actors being involved in processes of learning. It is a fault line in much literature on sustainability, to imply that we will one day solve all problems and all will be well. But we know ecological, climate, economic and political conditions change, and then technologies and practice also have to adapt (Jackson, 2009). Sustainability as a concept does not imply simple models or packages to be imposed. Rather it should be seen as a process of social learning. This centres on building the capacity of people and their communities to learn about the complex ecological and biophysical complexity in their real world systems, and then to act on this information.

Also at the University of Western Sydney, Stuart Hill described a framework of change called Efficiency-Substitution-Redesign. At the beginning of transitions, we seek to increase efficiency by reducing waste and harm. We may then substitute new ideas and technologies into existing systems and paradigms, seeking further improvements. At some point, it becomes clear that redesign is required, so as to produce new systems, structures and values. Thus social learning seeks to foster innovation and adaptation, combined with reflection, leading to wholesale redesign (Wright et al., 2011; Pretty et al., 2018).

The process of learning, if it is socially-embedded and jointly engaged, provokes changes in behaviour and can bring forth a new world. This, we might well add, appears to be what is needed in formal education systems.

6. Public Engagement and Citizen Science for Research Systems

“In the continuance of the stories and song,
The Earth shall continue.”

[Simon Ortiz, Taos Pueblo poet, in Joan Halifax, *The Fruitful Darkness*]

Research systems have long had great power to change the world. With methods and approaches of public engagement, this capability increases.

By definition, public engagement in research systems implies there must be more than one person involved, suggesting the value of cooperation between academic researchers and educators and the institutions of public, policy and business. Public engagement can also be more creative: people in their own circumstances know best about what works and what does not. But they may lack knowledge of what works elsewhere or has been recently discovered. A key skill, therefore, in building platforms of cooperation is that of creating research social capital. These roots once again lie in Freirean pedagogy and adult learning methods (Lynton, 1960; Freire, 1970), and lately in public pedagogy (Sandlin et al., 2011) and research engagement studies (Fransman, 2018)

There has been immense innovation in recent decades in approaches to co-production, in creating common platforms, and in methods for citizen science, including in the social sciences and humanities (Tauginienè et al., 2020). Many have been transformative, producing improvements to health, natural environments, and economic productivity.

But as indicated earlier, PE is not always easy. It can seem to extend or break the norms of existing research paradigms. Projects can take more time to organise, and require different values for implementation. It can be more difficult to make the case for funding, especially when co-creation is articulated as part of the research process. But when they work, they illustrate how impacts can be achieved where people in the system of interest are engaged in a variety of ways. At best, they themselves can then experience changes that constitute improvements to them.

In the UK, research evaluation is led by the Research Excellence Framework (REF), formerly the RAE, in which the quality of research is assessed through a combination of papers, books, plays and other written or created outputs, and research-impact cases. In the 2014 REF, UK universities submitted 6700 impact cases, comprising a formulaic self-assessment of research outcomes. Jonathan Grant (2021) has shown that 90% of these cases involved more than one academic discipline. These individually and collectively form a rich picture of engagement by thousands of researchers with public and policy institutions, resulting in positive impacts on lives, societies and environments.

In our own university, for the most recent REF2022 exercise in which 700 research staff were submitted, the REF impact cases in the Arts and Humanities included theatre and film for ethnic trauma testimony, standards for human rights in armed conflict, helping victims of sexual violence obtain reparation, using drama to understand the slave trade, powerlessness in healthcare, autonomy for mental health and tattoo art impact. In Science and Health, impact cases included guidelines for psychological treatment of depression, saving lives through bowel cancer screening,

traffic collision reporting, shaping UN policies on sustainable food, restoring oyster beds, civilian-led reporting of human rights violations, and green exercise for vulnerable groups. In the Social Sciences, impact cases included prison reform, impact of childcare subsidies, reducing gender biases in teaching, youth-led social enterprises, financial inclusion for low-income households, risk in financial systems, policing the mafia, improving the oversight of digital surveillance, and conflict research to improve women's livelihoods.

Every submitting university will be able to demonstrate this kind of diversity of impacts. The overall picture is strong. Yet we still might ask: to what extent do political leaders come to know the details of these thousands of studies of positive impact? Do they have a handful of stories at their fingertips? Has a minister proudly referred to this rich picture of story, social responsibility and research impact? We might ask the same of the wider public.

Part of the problem is the preference for instrumental interpretations of impact, often by quantitative and economic measures. Good engagement has the potential to improve the quality of research, changing ways of knowing as well as ways of being (Bawden, 1991; Hall and Tandon, 2017). Jude Fransman (2018) has observed that there is a "broad consensus that better engagement leads to better impact, as well as significant learning about understanding engagement and improving practices." Yet research into impact remains highly dispersed, somewhat opportunistic, and conceptually diverse (Pain et al., 2011; Davies et al., 2015; Shucksmith, 2016; Shaw and Lunt, 2017).

Let's have a look at seven examples of the impacts of PE applied in research systems, concluding with examples from the richness of citizen science.

i. Centre for Forensic Science, University of Dundee

The Leverhulme Research Centre for Forensic Science was set up to disrupt conventional thinking. Since 2016, it has been a catalyst for change in the wider judicial system. It has clear social fairness values: it wishes to address miscarriages of justice and right wrongs. It uses a range of methods to bring different professionals and the public together to solve common problem. It seeks this co-production with forensic scientists, lawyers and judges, juries, and the press and public. The Centre has created a step-change in understanding and use of forensic science by holding guided off-grid conversations (based on Medici intersections: Johansson, 2004) that create trust, by having a standing citizen jury, by the use of participatory theatre (by the company Fast Familiar), by working with Judiciary and National Academies in creating judicial primers for judges, by working with schoolchildren, and by engaging with the forensic science community worldwide to create a new road-map of research priorities for the field (Hackman and NicDaéid, 2020; Doran et al., 2021). Director Niamh Nic Daéid says, "We have created a step change in engagement, barriers have fallen, and priorities have converged."

ii. Pesticide Impact Monitoring, Ecuador

An innovative agricultural programme in northern Ecuador led by Steve Sherwood and Myriam Paredes and involving international research organisations, the universities of Montana State, McMaster and Wageningen, and the United Nations Food and Agriculture Organisation, was focused on knowledge-based and socially-oriented interventions for pest management in potato cultivation (Sherwood et al., 2005). Farmers were known to use more than 50 fungicide and insecticide

compounds, 85% of which were classified as highly toxic by the UN World Health Organisation. Farmers did not use personal protective equipment for cost and availability reasons, and by observation it was clear that farmer exposure through the skin was high. National data put recorded pesticide poisonings at some of the highest rates in the world. A non-toxic fluorescent powder that glowed under UV light was added to back-pack sprayers, and the team returned at night with UV lights and video cameras to identify exposure pathways.

They found pesticides on young children, on clothing, throughout each house, in beds and kitchens. Says Sherwood, “More than any other activity, the participatory tracers inspired farmers to take action themselves.” Farmer field schools were then used to create low to zero-pesticide approaches for farmers through participatory action learning (see Table 3).



iii. Slavery Drama on Location, East 15 at the University of Essex

Playwright and academic from East 15 Acting School, Holly Maples, created the play *Breaking The Silence* to raise awareness of the 18th century slave trade and the role of British Black Abolitionists. The play is deliberately immersive, and was performed in churches, schools and communities across the UK during 2021. It aims to shift the narrative of British abolition from male parliamentarians to the grassroots female and black activists. Some performance were given in churchyards by the gravesides of the first abolitionists. One Black British woman said, “I’ve lived in Hillingdon all my life, this is the first time I’ve felt I belonged.” Holly Maples observed, “This kind of heritage performance can bring history to life, and change the way people see themselves. This work is about decolonising the museum and heritage industry, emphasising the voices of lesser-known activists.” Several thousand people have attended these performances.

iv. Science and Technology Backyard Platforms, China Agricultural University

Science and Technology Backyard Platforms (STBs) were established in Quzhou County to increase the sharing of knowledge and skills between scientists and farmers (Zhang et al., 2016). STBs bring agricultural scientists to live in villages, and use field demonstrations, farming schools, and yield contests to engage farmers in externally- and locally-developed innovations. Over six years, STBs resulted in yield increases of crops and reductions in input costs. Now 71 STBs operate in 21 provinces, covering a wide range of crops: wheat, maize, rice, soybean, potato, mango, lychee, vegetables. Some 50,000 small farmers have been engaged and benefitted. Evaluations of STBs show the value of in-person communication, the emergent socio-cultural bonding, and the increased trust developed amongst farmer groups and scientists.

v. Famer Wisdom Networks, Khon Kaen University, Thailand

Sawaeng Ruaysoongnern helped to establish wisdom networks for farmers in north-east Thailand. This followed the widespread failure of modern agricultural systems. He observed, “This extreme failure caused people to think differently”. Farmers recreated polycultures, diversifying vegetable, herb, animal, fruit and multipurpose tree mixes. They organised into groups, and these connected into networks across the region. Each member seeks to recruit two more farmers each year, and each group of ten farmers seeks to establish another group. Farmers have become more self-

sufficient, growing more of their own food, but also earning more from better links to local consumers. These networks use smartphones to share knowledge, ideas and innovations. They create video profiles of individual farmers to distribute across the region. These also tell a story to consumers and policy makers. Even though these farmers' networks are beginning to influence local and national policies, many farmers themselves say happiness is the most important thing for them. This model for redesign is instructive, and founded on the formation of effective social capital.

vi. Farmer Field Schools

This PE in research case produced a remarkable social innovation emerging from the work of scientists from universities and the United Nations FAO. *Farmer field schools* were launched in the 1980s when Peter Kenmore, Kevin Gallagher, Russ Dilts, and Dada Morula Abubakr and others incorporated adult education methods with agroecology, drawing on Freire, the civil rights movement, the approaches developed by Danish Folk High Schools. Research had recently shown that in irrigated rice systems the more pesticide used, the greater the pest damage. They realised that insecticides were killing beneficial insects and arthropods, which has been exerting pest control for free. They also knew most farmers would not know this: detailed entomological knowledge is rarely a feature of local knowledge systems (Pilgrim et al., 2011; Pretty, 2014). They asked: could rice farming be amended to reduce insecticide use, could the beneficial insects do enough, and could a system of learning be created to allow farmers to demonstrate to themselves that they would not lose their crops (Table 4). The first farmer field schools were established in south-east Asia, and over a 30-year period have spread to 90 countries and nearly 20 million farmers.

Table 4. The seven elements of farmer field schools (FFS)

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- i. Each FFS consists of a group of 25-30 farmers, working in small sub-groups farmers. The training is field-based and season-long, usually meeting once per week.
 - ii. Each FFS has a training field, divided into two parts; one under integrated pest management (decisions made by the group, not a fixed formula), the other with a conventional pesticide treatment regime.
 - iii. In the mornings, the trainees go into the field to make careful observations on growing stage and condition of crop plants, weather, pests and beneficial insects, diseases, soil and water conditions. Specimens are collected, put into plastic bags and brought back for identification and observation.
 - iv. On returning from the field to the meeting site (near the field, under a tree or other shelter), drawings are made of crop plants to depict conditions, pests and natural enemies, weeds and water. Conclusions about crop status and possible interventions are drawn by each group and written on the drawing: this is called agro-ecosystem analysis.
 - v. Each subgroup presents its results and conclusions to the entire group. The trainers remain in the background, avoid lecturing, and seek to stimulate farmers to think for themselves.
 - vi. Special subjects are introduced in the training, including maintenance of 'insect zoos' where observations are made on pests, beneficial insects, and their interactions. Other subjects include leaf removal experiments to assess how plants compensate, and studies of the life cycles of pests.
 - vii. Social exercises are included to strengthen group bonding and aid farmer-to-farmer spread of ideas.
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More than 1.1 million farmer field schools have been run, and the resulting groups cover 25 million hectares of farmland (FAO, 2016, 2019; van den Berg et al., 2020). Notable country leads include Indonesia, Burkina Faso, China, Kenya, Philippines, Sri Lanka and Vietnam. Farmer-field schools are called “schools without walls”, and centre on groups of up to 25 farmers meeting weekly during the entire 100-120 day crop season to engage in experiential learning. The aim is to develop human capital in the form of field observation, analytical skills, and understanding of agro-ecological principles. Farmer cooperation also increases. Over the years, FFS have evolved to include other crops, livestock, agroforestry and fisheries (Settle and Hama Garba, 2011; Waddington et al., 2014; Pretty and Bharucha, 2015; Pretty et al., 2020; van den Berg et al., 2020).

vii. Citizen Science

Recent years have seen a flowering of methods, approaches and projects involving citizens as scientists. These projects and programmes are helping to engage large numbers of people in gathering unprecedented quantities of good quality data (Haklay, 2013; Heigl et al., 2019; Sauermann et al., 2020; Strasser et al., 2019; Joxhorst et al., 2021). Sauermann et al. (2020) have observed that the best forms of citizen science represent socio-technical co-evolution and innovation, bringing changes in values, norms and behaviours, resulting in increased awareness, learning and trust, and then adoption of new solutions by the public. Citizen science has the power to change behaviours (Ryan et al., 2018), shape progress towards achieving the UN’s Sustainable Development Goals (Fritz et al., 2019), and shift university norms (Lesen, 2018).

The growth in Citizen Science has emerged from demands to make research socially-relevant, the new approaches to developing large-scale datasets, the increased public awareness of environmental issues, the enabling technology (particularly low-cost sensors and smartphones), and the willingness of the public to volunteer as citizen scientists. The purpose is still largely defined as for supporting science, not necessarily for transforming wider systems and structures. It is often framed as being for research design, data collection, data analysis and then to conclude with science dissemination (Lee et al., 2020).

The UKRI (2019) defines Citizen Science as a mix of activities from public talks to in-depth dialogue, involvement of the public as contributors or collaborators, co-creating exhibition content, co-designing research, sharing knowledge and experiences, and connecting diverse communities. Tom Saunders, the Head of PE, states, “UKRI is committed to breaking down the barriers between research and society, and involving the public in research is one way to do this.”

The European Citizen Science Association (ECSA, 2020) has published Ten Principles for Citizen Science to summarise best practice (Robinson et al., 2018). It recognises variations in degree of engagement, from minimal to interactive, from small to large scale, and from single event to continuing engagement over time. But it still defines citizen Science as where “citizens are actively involved in research, in partnerships or collaboration with scientists or professionals,” and where “there is a genuine outcome, such as new scientific knowledge, conservation action or policy change.” The US Citizen Science Association (CSA, 2022) goes a little further, and states, “We value all Citizen Science projects, from scientist-driven to community-driven, from contributory to co-created.”

Both the ECSA and CSA state PE in Citizen Science should actively include citizens, projects should have generic science outcomes, and both professional scientists and citizen scientists should benefit from co-learning, personal engagement, social interactions, and satisfaction at the potential to influence policy.

Most forms of Citizen Science do not explicitly state they are intended to be transformative or self-mobilising. Muki Haklay (2013) defined four levels of Citizen Science: L1 Crowdsourcing, in which citizens are sensors and volunteer computers; L2 Distributed Intelligence, in which citizens are basic interpreters and volunteer thinking; L3 Participatory Science, in which people participate in problem definition and data collection; and L4 Extreme Citizen Science, which is collective, involving problem definition, data collection and analysis. These largely map onto Types 1-3 in the earlier Typology of PE (Table 1).

Citizen Science has been deployed in many ways. Community volunteers have been collecting data on poverty, nutrition and health in the Philippines, monitoring water in Peru, implementing climate smart agriculture in Brazil, and using low-cost rain gauges in Sub-Saharan Africa. In the UK, it has become common for large numbers of the public to report sightings and first seasonal arrivals of rare or migratory insects, birds and mammals, such as stag beetles, bats and swifts. The voluntary British Trust for Ornithology in the UK uses five initiatives to increase PE on data gathering for birds and their habitats: Bird Atlas, Bird Track, Breeding Bird Survey, Garden Bird Watch, and Garden Nesting Survey. The public engaged in these projects have produced more than 30 million bird records.

The ECSA has established distributed networks for Doing-It-Together Science (DITOS), WeObserve Citizens' Observatories, and D-NOSES (for odour pollution monitoring). A wide variety of further platforms are led by non-professionals, including PatientsLikeMe, ScienceAtHome.org, Zooniverse, Gateway Zoo, Old Weather, and Planet Hunters. In the UK, some efforts have been focused on creating novel locations for public engagement regarding specific health problems, such as YourRheum, BreathTaking Lungs, Design for MSK, and the Health and Lung Shops run by Imperial College and UCL (Holmes et al., 2019).

In Florida, Maine and Scotland, local people have engaged in data gathering, surveying and assessing heritage structures and sites at several thousand locations (Dawson et al., 2020). The active agents are Florida Public Archaeology Network, Heritage Monitoring Scotland with 640 volunteers as monitoring scouts, and Maine Midden Minders for protecting 2000 ancient middens on the coast. The programme found volunteers "felt they were making a difference", and there was evidence of increased social capital and health benefits.

Further recent examples of Citizen Science at scale include:

- i. The Belgian CurieuzeNeuzen project (curious nose, but meaning in local dialect "nosing around") began in 2016 and has engaged 5000 residents of Antwerp directly in air pollution monitoring, with a further 35,000 deliberating on the results, causes and potential solutions (de Craemer et al., 2019; van Brussel and Huyse, 2019); the project has gone on to engage

the public in eutrophication monitoring and the impacts of urban heat and drought on gardens.

- ii. The *eBird* citizen science initiative from the Cornell Lab of Ornithology and National Audubon Society was launched in 2002, and by May 2021 had grown to one billion bird observations, with 400,000 public participants now logging 100 million bird observations annually. This has resulted in the production of 150 peer-reviewed papers (La Sorte and Somville, 2019; Sauermann et al, 2020). Additional PE projects from the Cornell Lab include Urban Birds, Nestwatch, Feederwatch, and a Great Backyard Bird Count.
- iii. Drain detectives in Victoria, Australia, who monitor water flows and pollution to beaches, the 50 citizen scientists over two years using photographs, observations, water sampling and smartphone data platforms (Cottam et al., 2021).
- iv. Monitoring of population trends and behaviours of horseshoe crabs on the coast of Florida, now with a total of 18 years of sightings and intense data gathering; the Horseshoe Crab Watch has created more than 5000 smartphone records on 45,000 crabs in all 35 coastal counties of Florida (Heres et al., 2021).
- v. Monitoring of freshwater snails by 25 trained citizens at Lake Albert, Uganda, to detail distribution and abundance for a schistosomiasis control programme; the citizens recorded locations, measured water chemistry, and photographed snails, producing 570 reports over five months in 2020 (Brees et al., 2021).
- vi. A study of 28 nature-based citizen science butterfly projects in the USA found citizens involved in the projects has greater knowledge of threats and used their knowledge and commitment to persuade friends, family and co-workers of the value of butterfly and habitat conservation (Lewandowski and Oberhauser, 2016).
- vii. The 7-year Mildew Mania project has been run by Curtin University in Western Australia, and works with 220 schools and 16,000 students to establish trap crops of barley and wheat in school grounds. Primary age children grow the crops between June and October, and monitor them for powdery mildew. If the disease becomes present, samples are sent to Curtin researchers to map the spread of mildew strains across the state, helping timely solutions to be developed for farmers (Ryan et al., 2018).

It is now clear that Citizen Science can create significant economic value. Elli Theobald and colleagues (2015) from the University of Washington, Seattle, quantified the value of 1.3-2.3 million citizen scientist volunteers to 388 biodiversity projects at US\$0.7-2.5 billion per year.

There is, however, no consensus on what to call the public engaged in Citizen Science: participants, volunteers, amateurs, non-professionals, or citizen scientists - but only if “they maintain activity and contact with professional scientists throughout the entire project” (Lee et al., 2020). A range of universities have established Baby Labs to investigate mother and child development during the first

1000 days of life. At the University of Essex, Baby Lab Director Silvia Rigato calls the infants “baby scientists.”

These kinds of PE in research systems raise awareness while seeking behaviour changes and recommendations for amendments to policy and practice.

7. Emergent Institutional Models and New Power

“How can I possibly sleep, this moonlit evening?
Come my friends,
Let’s sing and dance, all night long.”
[Ryokan, 1758-1831]

To what extent have these systems of innovative learning and research involving PE been institutionalised? And have they led to new forms of power expression? There are two possible processes: forms of PE could lead to expressions of new power through emergent institutional models. And new institutions might be developed in order to increase public engagement.

A core theme to the examples of success centres on building a movement. Movements have narrative: they tell stories with values and morals. Henry Timms and Jeremy Heimans (2018) have observed that “A movement is not a movement unless it moves without you,” and indicate there are six ways to build a crowd or platform:

- i) Don’t try to connect to everyone;
- ii) Build a brand (idea) with a call-to-action;
- iii) Use the voices of members to ensure salience;
- iv) Lower the barriers to participation so that people can just join;
- v) Think about the PE typology, and aim eventually for transformational;
- vi) Harness stories and flashpoints by acting on behalf of whole platform of the engaged.

A good example of the institutionalization of PE methods has been the incorporation of formal and independent scientific advisors into UK ministries.

This began in the 1990s with the appointment of the first government Chief Scientific Advisor, and was followed by CSAs for each ministry. During this period, the Nolan Rules formalized the memberships and working of scientific advisory committees. This has produced a dense network of advisory roles played by academics from universities. Some are members of scientific committees established to give formal advice to government, some are members of boards and act as trustees for cultural, heritage and wildlife charities, some are seconded for formal advisor roles with national ministries.

Two universities, Essex and Southampton, have funded the appointment of academics to the roles of Chief Scientific Advisor for the devolved administrations of Essex County Council and Southampton City Council.

Here we explore the institutionalization of PE in the cases of Participatory Budgeting, Place-Based Climate Action Networks, the Buurtzorg neighbourhood nursing, PatientsLikeMe, Grameen Bank Microfinance, Collective Water Groups, Landcare Australia, and Social Prescribing.

i. Participatory Budgeting

Participatory Budgeting (PB) is a major innovation in public and civic engagement at city or regional level (Touchton and Wampler, 2013; Touchton et al, 2017; Wampler et al., 2018). It began in Venezuela and Porto Alegre in Brazil, and has since spread to many countries, including India, Indonesia, Kenya, Mexico, Peru, Philippines, Poland, Portugal, South Korea, and the USA. It is centred on a simple idea: civic authorities engage their public to decide how to allocate and spend public money within their cities, regions or neighbourhoods. PB in Brazil, for example, tends to be a year-long process, in which citizens exercise voice and vote. They negotiate amongst themselves and with government. More than 120 cities and communities in Brazil alone have adopted PB, some now with 20 years of experience. PB receives widespread support from development assistance donors, international agencies and charities, and was initiated by Michel Touchton and Brian Wampler of Boise State University.

The simple idea of giving local people the power to decide on priorities for public expenditure in their own places has led to multiple outcomes. At its best, PB produces “a school of democracy”, where citizens learn to deliberate, learn about government functioning, and engage in democratic practices. It is, however, least likely to be successful in single party states. PB programmes are strongly associated with increases in health care spending, decreases in infant mortality, and growth in numbers and membership of civil society organisations. Participatory Budgeting produces benefits in six areas: stronger civil society by increasing the number of groups and their links with government; improved transparency by increasing citizen knowledge; greater accountability and shared interaction; improved social outcomes especially for underserved communities. “PB has generative effects within civil society,” concluded Touchton and Wampler (2013).

ii. Place-Based Climate Action Network, UK

The Place-Based Climate Action Network (PCAN, 2022) was established by the University of Leeds. Its aim was to provide an institutional architecture situated between national government and individual households. The model of independent commissions supported by commissioners drawn from the public sector, business, charities and universities has been adopted by cities, counties and sub-regions, including Aberdeen, Belfast, Croydon, Edinburgh, Essex, Kirklees, Leeds, Lincoln, Surrey, Yorkshire and Humber. This close engagement with the concerns and interests of the public in their regions has ensured the opportunities for addressing the climate crisis are embedded in a wider set of social, economic and cultural structures. Climate action is not just about developing and adopting low-carbon technologies, it is also about inequality, social justice, behaviour change, volunteering and sharing economies, and visions for new ways of living. Many Commissions began with a target of Net Zero for 2050, echoing national and UN targets, but since the Glasgow COP26 have become more ambitious. The Yorkshire and Humber Commission has set a target of 2038 in their late-2021 report.

iii. PatientsLikeMe

PatientsLikeMe (PLM) is an online community of 930,000 people with 2900 conditions and diseases. The mission of PLM is to improve the lives of patients through knowledge derived from real-world experiences and outcomes. Begun in 1998 by one patient, it has grown to become the world’s largest community-health management platform. Each individual is seen as a citizen scientist. Data is collected and quantified, and provides context on lifestyle choices, social and demographic

conditions, and the effects of treatments on individuals. This gathering and sharing empowers patients with their own agency. It is thus said to be transformative. More than 100 peer-reviewed papers have been published using PLM data, showing benefits to medical services of patient data and the health benefits to members (Wicks et al., 2018; Borentain et al., 2020; PLM, 2022).

iv. Buurtzorg Community Health Care, Netherlands

Jos de Blok established *Buurtzorg* community health care in the town of Enschede with four nurses in 2006. He had a simple idea for the social enterprise: eliminate bureaucracy and luxurious back-offices and managers, and give teams of nurses the authority and responsibility for providing care to groups of patients in particular neighbourhoods. Teams are connected through a web-portal that enables nurses to share information and knowledge, and extend and receive support. Today they have grown to 500 self-governing teams, 10,000 nurses and 4500 home-help workers, caring for 100,000 people. They have only one stated objective: delivery of the best and most appropriate care (Kreitzer et al., 2015; Drennan et al., 2018; Leask et al., 2019).

The patient-centred model of community nursing has been found to be good for patients, carers, general practitioner doctors and other health professionals. The service is more responsive to specific needs of patients, with community nurses able to make operational and clinical decisions. *Buurtzorg* has high patient and employee ratings, and is now the most satisfied workforce of any Dutch company with more than 1000 employees. On average, *Buurtzorg* nurses end up using only 40% of the care hours they are allocated per client/patient, realising considerable local and national savings for health care. Healthcare systems across the world are trying to adopt primary care service models that will reduce health costs and keep as many people out of hospital as possible. There are teams now in the Netherlands, Sweden, Japan, US (Minnesota) and France (*Soignons Humain*). In the UK, pilots have been established in Aberdeen and Suffolk, and the 2021 government White Paper, *People at the Heart of Care*, presented *Buurtzorg* as a favourable model.

v. Grameen Bank Microfinance in Groups

A successful PE innovation in poor communities and countries has seen the spread of informal microfinance systems embedded in local groups. The largest numbers of groups have been formed in Bangladesh (1.8M groups), India (4.16M groups) and Pakistan (0.12M groups). The leading innovator was Grameen Bank in Bangladesh, later joined by the third-sector organisations Bangladesh Rural Advancement Committee and Proshika (Rahman, 2019; BRAC, 2022; Grameen, 2022; Proshika, 2022). All groups work primarily with women, and members of groups save each week in order to create some of the capital for re-lending.

A major change in thinking and practice occurred when banking professionals began to realise that it was possible to provide micro-finance to poor groups, and still ensure high repayment rates. The systems work on trust, and payback rates typically reach 98% (Rahman, 2019). Grameen has 8.9 million members in groups spread over 81,000 villages: 97% of its members are women. BRAC has 5.4 million members, and takes a deliberately integrated approach to poverty pockets, especially in wetlands, on riverine islands and for indigenous populations. Through a single platform they provide agricultural and skills support, education, legal services, health care, and loans. More than 130 of its women members have been elected into government structures.

vi. Collective Water Management

Water is a further example where collective management of a resource across a landscape or local economy can result in greater productivity and fairer sharing. In some agricultural systems, such social structures have been able sustainably to govern water use over millennia, such as the 1800 subak groups in Bali, and the several thousand irrigation-tank groups in Tamil Nadu (Mosse, 1999; Yekti et al., 2017). Whilst recent agriculture has tended to ignore, eliminate or replace social groups, there has been a counter-trend towards the formation of water users' associations, participatory irrigation management groups, water user schools and farmer managed irrigation systems. Some 210,000 groups now collectively manage water on 49 million hectares worldwide. Without regulation or collective control, water tends to be overused by those who have access to it first, resulting in shortages for tail-enders, conflicts over water allocation, and waterlogging, drainage and salinity problems. Where social capital is well-developed, then groups with locally-developed rules and sanctions are able to make more of existing resources than individuals working alone or in competition. In China, a quarter of all villages have Water User Associations (WUAs), and these have reduced maintenance expenditure whilst improving water delivery and fee collection. Farm incomes have improved whilst water use has fallen by 15-20% (Zhou et al., 2017). Water user associations have become the primary vehicle for water management in Mexico and Turkey.

vii. Landcare, Australia

The Landcare movement in Australia is one of few land-based social movements to emerge in industrialised countries. The National Landcare programme was launched in 1989 when both the Australian Conservation Foundation and the National Farmers' Federation joined forces to promote a collective vision and consensus politics (Campbell et al., 2017; KPMG, 2021). To rehabilitate landscapes for multiples users requires people to work together, making such redesign an act of social ecology (Wright et al., 2011). With the key use of some national funding for rural facilitators to work as change agents, more than 6000 Landcare groups were formed. Some focused solely on farmers and the innovations they would develop by working together; others focused on conservation objectives, such as protecting turtles or frogs. More, though, sought and co-created both environmental and agricultural outcomes. Many have resulted in personal transformations. But there have also been backward steps: some groups became distracted by competitive and limited national and state funding, some suffered burn-out, and later governments permitted greater bush and forest clearances. Andrew Campbell and colleagues (2017) concluded, "The countryside looks in better health today than it did thirty years ago."

viii. Social Prescribing in the UK

The final example centres on the innovation of social prescribing in the UK health systems. This has emerged from a wider understanding of the social determinants of health and recovery, and increased calls for more patient involvement in medical systems (Sweet, 2017; Beresford and Carr, 2018; Holmes et al., 2019; Zaki, 2019; Francis, 2021). Social Prescribing (SP) is a relatively recent term applied to the systems of referral used by GP primary health care operators. The National Academy for Social Prescribing (NASP) was then established by the NHS in 2019, and is seeking to expand SP as a new social movement. It is a prevention-pays model, seeking to keep patients and the public out of hospital (NASP, 2019; Pretty and Barton, 2020). The GP and writer, Gavin Francis (2021), observed: "We are all patients sooner or later; we all want faith that we'll be heard."

SP has been defined as “supporting people via social prescribing link workers to make community connections and discover new opportunities, building on individual strengths and preferences, to improve health and well-being” (NASP, 2019). The longest serving SP operation is at Bromley-by-Bow (25 years), and there are exemplars located across the country. Link Advisers act as guides to patients, interviewing and assessing needs, and then ensuring they can take advantage of the community-based options available with good signposting. These fall into distinct categories: (i) for advice and knowledge (e.g. on benefits or housing); (ii) for skills development (e.g. computing, food and cooking); (iii) for activities in social groups (e.g. befriending and self-help groups, dance, art, or crafts); and (iv) for activities with therapeutic design, especially nature-based (e.g. walking for health or woodland therapies) and formal counselling. Most well-developed SP operations have more than 50 options for onward patient referral; some have more than 200, such as at Bromley-by-Bow.

The NASP notes that SP is part of an aim to prescribe bespoke personalized medical and social interventions, but also note that health improvements may be long slow journeys for many patients. The term green social prescribing has been used to refer to the nature-based options available to SP operations (Pretty and Barton, 2020). Evaluations of SP programmes have measured reductions in GP visits, falls in Emergency Department visits, reductions in secondary care appointments, and reductions in patients having to enter the police and justice system.

It is important to note, nonetheless, that public engagement has often emerged as deliberate resistance to existing institutions, norms and political structures. It has not been organised by external professionals or experts. In the health and social care sector, examples include the PatientsLikeMe website and platform, and Shaping Our Lives that began as a user-led project, and is now a Community Interest Company led by disabled people. The key aim of Shaping Our Lives is to give stronger voice to individuals with multiple identities and disadvantages. They note that 70% of the UK health spend and most of adult social care is for people who are disabled. They seek to consult, engage and co-produce (Beresford and Carr, 2019; Shaping Our Lives, 2022).

In a similar fashion, Engage Britain has recently emerged as a charity to “support people, across communities to share their different knowledge and experiences,” with the aim of helping them work together on ideas that address the country’s greatest and long-standing problems (Engage Britain, 2022).

8. Building Regenerative Cultures

“Gambatte kudasai: Please, do your best.”

[Traditional farewell to pilgrims, Japan]

PE can lead to the formation of social capital and the development of regenerative cultures, where natural, social and human assets are built. Christian Wahl (2021) notes: “A regenerative future requires the capacity to listen and learn from diverse perspectives.” New forms of social design are needed (Walker, 2011).

This is what Patricia Wilson of the University of Texas (2019) calls “ensemble awareness”: the quality of presence, relational awareness, and effectiveness. She uses the concept of the social field, in which transformative outcomes are sought in both the outer and inner journeys. Deploying public engagement effectively does mean changes in both attitudes and mind. It implies generative patterns of practice, where creativity leads to new ways of seeing the world and acting in it. The story is reframed through PE, and people are able to say, “We did it ourselves.”

But PE clearly cannot solve all social, economic and environmental challenges requiring unprecedented action and change. All things are connected, has written Naomi Klein (2014, 2019). Now we face a climate crisis, declines in global biodiversity, the growth in inequality, and the spread of non-communicable diseases of affluence (type 2 diabetes, obesity, coronary heart disease, many cancers, mental ill-health, and loneliness). Some 300 million people have become economic and social migrants, forced away from their homes. A total of 800 million still are hungry across the world. Great technological, medical and communications advances have been made, and the world population is heading towards stability in total numbers. Many believe the 2-year Covid pandemic and lockdowns are a rehearsal for the climate crisis. In the early 1970s, the *Limits to Growth* team led by Donella Meadows produced scenarios that suggested planetary limits would be breached within 30-40 years, with consequences for all human societies (Meadows et al., 2004). Now everything must change (Mason, 2015; Hickel, 2020).

How then can we find the innovations that support co-creating diverse regenerative cultures worldwide? We will need to start with place, seek diverse perspectives, design for circularity, reduce consumption, prioritise health, happiness and longevity, and utilise forms of new power to spread social justice.

And how might PE help? We have seen how participatory budgeting has transformed policies and priorities for many cities. The development of the national K-Diet in South Korea is another exemplar. Korean citizens had already engaged in a remarkable experiment on policy evaluation, following 30 years of authoritarian military rule. Some 700 citizens were formally involved in evaluating the effectiveness of 43 ministries in Policy Evaluation Committees (Kim, 2017).

A national PE programme led by the Korea Food Research Institute sought the nomination and listing of the top one hundred representative dishes for the K-Diet. National engagement brought credibility and pride to findings, and then to support for a new national policy. The public chose their

favourite dishes, and then voted. The average adult was found to eat a total of 300 types of vegetable over the course of a year.

At the end of the process, the Korean government proclaimed a *Seoul Declaration on K-diet: Korean Heritage and Healthiness* in order to raise awareness and promote Korean cuisine, as well as develop the Korean food industry. The Seoul Declaration promotes a cohesive understanding of the nature and characteristics of the Korean diet (K-diet) and an introduction to Korean food (K-food), its traditions, and health benefits (Kim et al., 2016). The declaration served an important role in promoting the cultural values of Korea internationally by combining traditional knowledge with scientific evidence. A Code of Conduct then closed the loop to affirm commitment to people by government. In this way, the K-diet has been the route to promote dietary-goods and not just focus on stopping bads.

The Seoul declaration had affirmed the authenticity and value of traditional foods and dishes, and above all of public discussion about food and health.

For people to invest in collective action and social relations, they must be convinced that the benefits derived from joint approaches will be greater than those from going it alone. External agencies, by contrast, must be convinced that the required investment of resources to help develop social and human capital, through participatory approaches or adult education, will produce sufficient benefits to exceed the costs. Elinor Ostrom (1990) put it this way: “Participating in solving collective-action problems is a costly and time consuming process. Enhancing the capabilities of local, public entrepreneurs is an investment activity that needs to be carried out over a long-term period”. For initiatives to persist, the benefits must exceed both individual costs and those imposed by free-riders. There will also need to be new forms of social capital.

These structures can be called platforms: stages for actors to perform together. This will include for wider public deliberation, such as the successful *An Tionól Saoránach* Citizens’ Assembly of Ireland, established by government in 2016, with each topic-focused assembly comprising 99 members plus the chair (Muradova et al., 2020; Citizens’ Assembly, 2022). Intermediary platforms can also be created to bring together researchers and journalists to foster trust and information flow, such as the highly successful and independent *Science Media Centre*, founded by Fiona Fox in 2002.

PE can thus be framed as open method, approach and platform (Boyle et al., 2017). It can also be transformative, co-creating a healthier and more equal world. It is conceivable that we have rarely needed transformative approaches more. The 2020s brought us a rolling global pandemic with 320 million recorded cases and 5.5 million deaths (by the beginning of 2022). Many now believe that new forms of economy are needed: post-capitalism (Mason, 2015), post-growth (Jackson, 2021) and embedded within planetary limits (Raworth, 2017).

There exists, however, in a persistent echo from the use of the term “dark side of social capital” (Coleman, 1990), and the emergence of a similar and potentially regressive side to PE (Weller, 2014). New transit-hire companies use apps to connect quickly to the public wishing to take a taxi. New drivers can sign up in minutes instead of spending years learning the street maps of a particular city. It is super-convenient, yet drivers often lack the normal protections and norms of employment, and

customers often pay more during surge-pricing episodes. New online apps provide platforms for home-owners to offer their homes for holiday-letting. These systems work by trust, and provide improved outcomes for letters and renters. But they bring a regressive side by disrupting rental markets for existing dwellers, who become quickly priced out of whole neighbourhoods.

Social media companies encourage the public to use numbers of engagements (such as likes) as a sole measure of success and approval. They further develop through targeted feeds and advertising material that may confirm in-group views at the expense of opening up the world through multiple perspectives. Lobbying is a further form of public and policy engagement, designed to serve the needs of specific groups (who can afford to pay). It can appear to be good PE: people are involved and influenced. These forms of PE can bring confirmation bias and close down options for progressive and transformative outcomes.

It is also true that public participation may not need external institutions to be making deliberate efforts to mobilise the public. Resistance may occur in different ways, such as after the first #MeToo social media posting by Alyssa Milano in 2017. In the late 1980s, Rudolf Hess was buried at a cemetery in the German town of Wunsiedel in Bavaria. The location began to attract neo-Nazi sympathisers on the anniversary of Hess's death, and this attracted anti-fascists. Some felt the ensuing violence gave strength to the neo-Nazi worldview. In 2014, the local community adopted a proposal by Fabian Wichmann: for every metre marched by the neo-Nazis, they would donate 10 Euro to an organisation helping people escape from far-right groups. The townspeople marked off start and finish lines, put up banners thanking the marchers, and cheered and showered them with confetti: some 10,000 Euro were raised (Bregman, 2020).

The Stolperstein project ("stumbling stones") takes this resistance into the space of public memorials. Begun in 1992 by Gunter Demnig, concrete cubes with brass plates inscribed with the names and life-dates of victims of Nazi persecution and extermination have been installed on streets. Some 75,000 have now been installed in 1200 cities and towns, making these Stolpersteine the world's largest decentralised memorial bringing daily engagement by walkers.

Low-impact communities and ecovillages are deliberate resistance-based initiatives to create new forms of living. There are 300 communities in the UK with ten thousand adults and children as on-site members. Some have religious foundation, others are secular. All share values of self-reliance and common values, living collectively, usually eating together, consideration for others, sustainable consumption and low-impact living. They have come together partly to live lightly on the land. They share universal concerns about how to limit resource and energy use. Low impact communities have already taken a deliberate step away from the high-consumption ways of living common elsewhere in society. These low impact settlements can be called intentional communities to differentiate them from those that are inherited (such as indigenous communities). Members have decided they wish to live in a particular way, have crossed a threshold, and have adopted new low-carbon habits (Bunker et al., 2014; Pretty, 2022). They are part of a wider utopian movement of social innovation (Neima, 2021; Worpole, 2021).

Participatory approaches leading to greater engagement could help change institutions, their sectors and even have consequences across the world. One approach would be to launch more citizen

assemblies, youth assemblies and parliaments, extend city-wide participatory budgeting, establish more place-based collective institutions for change, ensure there are more compacts between institutions explicitly seeking inclusive, innovation and impact (Civil Society Futures, 2018). “It is not enough to have facts on your side”, noted Henry Timms and Jeremy Heimans (2018). Transformative PE will need to be part of the picture too.

David Orr (2000) of Ohio’s Oberlin College, put it this way: “Now we have to learn entirely new things, not because we have failed in the narrow sense of the word, but because we succeeded too well... What must we learn? We must learn to embrace a higher and more inclusive level of ethics”. Norman Fischer in *The World Could be Otherwise* (2019) tells of care volunteers at their Zen Hospice in San Francisco: “We tell them they will receive more from their service than they give.” The patients somehow act unintentionally as guides to the volunteers, who find themselves opening up and feeling whole. This small world of a hospice, on the outside looking like only a place for death, ends up being a gift.

PE needs this type of language and tone of kindness and generosity. It is about togetherness, forming bonds and trust to solve problems, and builds natural and social capital. Universities need public purpose and social action.

Paul Manners of the NCCPE has observed that universities could start by seeing themselves as publisher and broadcaster, generating and co-producing rich and engaging content, but that they must find ways to go on to transform society. Some of that content is the very methods of engagement, some is books, festivals, videos, podcasts and papers. Some have observed that (some) universities have become out of touch with their students, staff and publics.

WeWashing remains a real danger: the corporate washing of reputation using the language of the crowd. At the same time, there is a need for salient forms of storytelling. Perhaps it is harder to tell and sell good news stories, about improvements and making the world a better place. It is well-established that controversy and disaster attract more public and social media attention. Rutger Bregman suggests in *Human Kind* (2020) that we might imagine a reporter speaking in this way: “I am standing in the middle of a fine meadow... and the numbers of people in extreme poverty worldwide fell by 100,000 people since yesterday.”

Bregman also notes, if you stand up for human goodness, this can invite accusations of naivety and weakness. It is easy to be a cynic. Old power is defined by central control and ruthless competition, by creating winners and losers, and by experts who hoard and protect. New power is defined by participatory combinations of many knowledges and worldviews, a sense of collaborative agency, calls to action to improve the world, and experts who share and facilitate.

“It’s the platform,
Where the magic is happening,
The magic that is happening inside each person.”

Liz Kuti, *Louder Than Words* podcast, February 3rd, 2022

9. Concluding Guidelines

PE is already diverse. It is being practised by universities, other public agencies, third sector organisations and private businesses. It can often emerge as resistance against existing institutions and norms.

To many organisations, it looks hard to do. It undoubtedly means giving up some power and much certainty. If PE is to involve people, then their perspectives, ideas and views matter. They will change processes and priorities by being able to express wishes and wisdom, and thus help create new knowledges.

PE brings a positive premium. It changes minds, institutions and environments. It can lead to improvements.

I conclude with five simple guidelines:

1. *Choose* methods and approaches carefully using the PE typology, and ask: what can be done to escalate engagement and hear more voices?
2. *Think* about how PE can transform existing systems, structures and institutions towards greater sustainability and equality; PE will change the people involved, so tell them in advance what could now be achieved.
3. *Be flexible* and open to changing research and education systems, and modes of institutional working: if you involve people, they will bring new ideas.
4. *Ensure* the principles of co-production are part of all research and education activities. Power structures may constrain, but they may also change with increasing clarity and breadth of voices working together.
5. *Tell stories* about impact and outcomes, and ask: what was surprising, and how did the world and its institutions change?

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