Putting the 'Social' into Sustainability Science

Carolyn Kagan and Mark H. Burton

Abstract

The Global Goals for Sustainable Development (SDGs) were produced in 2015 to end poverty, protect the planet and ensure prosperity for all. Eight of the 17 SDGs address social dimensions of sustainable development, although there are interrelationships between these and environmental, economic and process dimensions. Despite this emphasis on social aspects of sustainable development, sustainability science often neglects *social* science perspectives. In this paper this neglect will be confronted, and the value of both theoretical and empirical critical social sciences to sustainability science will be explored. With reference to an action research project, it will be argued that the framework of ideology–action–structure complexes is a useful one that can help illuminate the social conditions in which strides to achieving sustainability goals are taken. Some core characteristics of a future sustainability social science will be outlined.

Keywords

Sustainability · Critical social science · Sustainable development goals · Ideology–action–structure complexes · Action research

C. Kagan (✉)
Social Change and Community Wellbeing Research Group,
Manchester Metropolitan University, Birley Campus, Manchester M15 6GX, UK
e-mail: c.kagan@mmu.ac.uk

C. Kagan · M.H. Burton
Steady State Manchester, 37, Chandos Road South, Manchester M21 0TH, UK
e-mail: mark.burton@poptel.org

W. Leal Filho (ed.), *Handbook of Sustainability Science and Research*,
World Sustainability Series, https://doi.org/10.1007/978-3-319-63007-6_17

1 Introduction

This chapter will highlight the role that critical, multi-disciplinary *social* science plays in addressing the challenges of sustainable development as promoted through the Sustainable Development Goals (SDGs). It will be argued that sustainability science places a disproportionate emphasis on biophysical sciences, which are limited in terms of addressing the SDGs, the majority of which focus on social[1] dimensions of sustainability. The consequence of this is that the social aspects of sustainability are relatively underdeveloped, thinking is constrained and the possibilities for achieving the SDGs thereby compromised. The ways in which a particular set of concepts from critical social science can help understanding the current sustainability challenges will be explored both theoretically and empirically.

The discussion will be built on an epistemological position that recognises the importance of human values in scientific endeavours, in this case, the values of stewardship (of environmental and human resources), social justice and solidarity.

The contradictions and paradoxes within the set of SDGs themselves will be examined, followed by an analysis of the sustainability challenges from an interdisciplinary social science perspective. The utility of ideology–action–structure complexes in contributing to understanding of transformative change will be considered. The argument will be illustrated with reference to an action research project developing local sustainability living groups.

1.1 Sustainable Development Goals

The overall aim of the SDGs is to form a "*universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity … [they] … are an inclusive agenda. They tackle the root causes of poverty and unite us together to make a positive change for both people and planet*" (UNDP 2015).

The (SDGs) stem from the United Nations resolution agreed by 193 countries in 2015 (UN 2015). The 17 SDGs and associated 169 action targets embrace the natural environment, the economy and social dimensions of living. Whereas the earlier Millennium Development Goals referred to countries from the global south, the SDGs refer to all countries and so are of relevance to the core capitalist countries[2] as well. It is from the position of the core capitalist United Kingdom that this chapter is written. Not only are there sustainability challenges for the UK, but also there are particular responsibilities to achieve greater environmental, social and economic security. This is due to the historic legacy of industrialisation and the disproportionate contribution made by the UK to extraction from the natural world

[1]In this context 'social' refers to the people aspects of ensuring healthy and flourishing futures, addressing economic and environmental catastrophe and maximising human and social capital, community assets and social networks in pursuit of social equity.

[2]Core capitalist countries are those wealthy, dominant nations that exploit 'peripheral' countries for labour and raw materials. They own most of the world's capital and technology and have great control over world trade and economic agreements (Wallerstein 2004).

and carbon and other emissions in pursuit of capital gain, threatening not only the environment but also, with the stress of climate change, to social solidarity within the country.

The SDGs are ambitious and explicitly grounded in the respect, protection and promotion of human rights and fundamental freedoms (para. 19), and, as the title of the report makes clear, with a commitment to transformation, setting the development agenda until 2030. They clearly present a challenge to not only understand current threats to sustainable futures, but to undertake national and international transformations to enable all to live well, within planetary resources and with greater equity. Importantly, the SDGs seek to link the social, economic and environmental aspects of goals (Stafford-Smith et al. 2016). Sustainability science must similarly integrate and link the social, economic and environmental (Kates 2011), moving beyond the tendency in the field to see the biophysical environmental challenges as superior to the social, which are often relegated to challenges of implementation (Jerneck et al. 2011; Kajikawa 2008). Indeed, a word cloud derived from titles of 20,000 articles between 1974 and 2010, containing the words 'sustainability' or 'sustainable development', rendered economics invisible and the only social terms, '*community based*' and '*health care*', very small (Kates 2011).

1.2 Impossible Contradictions Within the SDGs

The social goals of Agenda 30 include the elimination of poverty and hunger; good health and well-being and quality education; gender equality and reduced inequalities; sustainable cities and communities; peace, justice and strong institutions—all laudable social goals. Equally, goals relating to the natural environment—climate action, life below water and life on land—are indisputably essential for future survival, not just development.

Of course, these social and environmental dimensions cannot be separated from the economic dimensions, and it is here that contradictions and tensions become clear. Goals 7, 8, 9 and 12 explicitly highlight affordable and clean energy, decent work and economic growth, industry innovation and infrastructure and responsible consumption and production.

The take on economic growth is a traditional one, conflating growth in domestic product (GDP) with societal progress. As Esquivel (2016: 11) points out "*Industrialisation is still seen as the main driver of growth, and countries should 'significantly raise industry's share of employment and gross domestic product' (Target 9.2). Economic growth is the 'first and foremost' generator of domestic resources needed to achieve the SDGs (para. 66), tying social protection and other re-distributive policies (Targets 1.3, 5.4, and 10.4) to this 'grow first, redistribute later' proviso.*"

Esquivel goes on to argue that the conceptual approach to growth within the SDGs fails to put growth within environmental limits (Raworth 2014), thereby undermining attempts to achieve the environmental goals. It also fails to respond to, or challenge the macroeconomic and structural drivers of current patterns of

growth, including those of unpaid care and domestic work, making gender and other equalities impossible to achieve. Crucially, the approach does not challenge the ways inequalities in income, wealth and power are produced and reproduced at national and global levels—the province of a critical social science.

Theoretical social science provides an analysis outlining a range of systemic crises threatening sustainability, and the framework of ideology–action–structure complexes (Burton 2013; Kagan and Burton 2014), which both generate and maintain those crises. In both the identification of the crises and the IASCs, it is clear that they are saturated with both power and inequality.

2 Systemic Crises Threatening Sustainability and Contextualising the SDGs

The world is in an unprecedented time of turmoil and crisis, and one of the things that (social) sustainability science can do is try to understand and communicate the nature of these crises. Six crises are outlined below (Burton 2013; Kagan and Burton 2014).

An ecological crisis, with climate change and other planetary boundaries being crossed, which is likely to lead to the collapse of support systems for human life. As people's habitats are squeezed more conflicts of the most basic kinds are expected—competition for resources to sustain life. This is the overarching crisis—the one that supersedes all others.

An energy crisis, with peak oil leading to a rapid escalation of energy costs with profound consequences for the economy, agriculture, supply chains, etc. As people are no longer able to live their energy-rich lives, profound changes will be seen in the ways in which people live together, construct communities and organise work, family and leisure lives.

A demographic crisis, with worldwide population growth and, in many parts of the world, ageing populations, but in others there are missing middle generations; population movements and displacements due to climate shocks, wars, economic shocks and neoliberal strategies. As hitherto stable patterns of populations change rapidly, existing social relations are put under pressure with the dangers of increased political disruption (as illustrated by the 2016 US Presidential election and the UK BREXIT vote), violence and exploitation.

An economic crisis, comprising a structural crisis of capital and the undoing of the most recent strategies to maintain accumulation while accentuating strategies that attack living standards, previous gains, ecosystems, livelihoods. Governments' pursuit of unselective, aggregate economic growth will serve to deepen the crisis—and so might the SDGs in their pursuit of economic growth.

A crisis of work which sees increasingly intensified but at the same time insecure, casualised and precarious work, and high levels of worklessness. Unpaid work, caring and community building, continues to be regarded as predominantly women's work and is undervalued: invisible to economic models. Ageing

populations alongside the retraction of public services and social protection provisions means an increase in informal, unpaid care falling on families, predominantly women. Undocumented and migrant labour has increased and in many places community and solidarity activities have become commodified and moved into the private sphere. At the same time, in many places there has been a growth in the formal care sector workforce, again predominantly women, who are typically low paid and with poor working conditions. They frequently leave their own families in the global south to care for or clean for those in the global north. There has been a decline in real incomes, an increase in people working long hours or holding down multiple jobs, and a growth in poverty amongst working people.

A social and cultural crisis, in which the human and cultural capital of our societies is eroded and the humanising practices of social solidarity and cultural production are displaced by a model of passive consumerism, fuelled by the enormous expansion of consumer credit and household debt, feeding the secondary, speculative, global finance sector whose speculative bubbles triggered the 2008 global crash.

These crises undermine the promise of the SDGs, and share the following characteristics. They

(1) are *interdependent*; and have a *systemic nature* (not easily described, not easily predicted, complex and with properties that emerge). They are nonlinear, having positive ('vicious') feedback loops and quasi-autonomous subsystems;
(2) *differentially affect* the poor, women, disabled people, the elderly, children, the working class and those reliant on the informal economy, peasants and members of minority or dominated ethnic groups;
(3) are *likely to lead to a succession of waves* of misery, conflicts, population movements, hunger and want. Much of this 'future' is here already;
(4) *their nature is not transparent*, partly because of the complexity of global systems and partly due to the result of obfuscation through ideology and propaganda;
(5) *present us with perhaps our greatest challenge as social sustainability scientists*, to understand the contribution that can be made, and not to get disheartened by the scale of the problems.

3 Ideology–Action–Structure Complexes

These crises are a product of, and sustained by people's actions, underpinning ideologies and social structures.

Ideology, here, refers not just to ideas, but also to socially embedded and embodied systems of thought about the way things are and how they should be. Ideologies reflect structure but not in a simple 1:1 manner. They shape and

constrain action without fully determining it. Structure refers to the organisation of power, institutions and ordered systems (for example economic arrangements). Action refers to the socially structured practices and everyday activities—conversations, interactions, behaviours—that people engage with collectively and that produce, reproduce, resist and potentially transform both ideology and structure.

Ideology, action and structure, therefore, are reciprocally determined and inseparable, forming complexes (*ideology–action–structure* complexes, or IASCs) which are both distinct and shared, multiple determining social realities (Burton 2013: 803–804). The articulation of IASCs can help frame empirical social sustainability scientific projects.

Contemporary IASCs can be clustered in terms of some key interconnected dimensions deriving from critical sociology, psychology and political economy:

- capitalism (the system whose central purpose is the accumulation of capital through the maximisation of private profit);
- imperialism or colonisation (the domination and exploitation of large regions of the world by a succession of nation states and clusters of states);
- patriarchy (current and historic unequal power relationships between men and women whereby women are systematically disadvantaged and oppressed and men hold social status and privilege);
- modernity (the adoption of a rationalistic order in society characterised by a set of divisions: between arts and science, economy, law and humanities, ritual and production, humans and nature); and
- naturalism (in which socially constructed divisions and distinctions are taken to be part of the natural order of things).

Kagan and Burton (2014) suggest seven core IASCs within which other IASCs will be embedded. The last three IASCs will be articulated more fully with reference to issues of sustainability.

(1) Linear progress: progress is a culturally located idea, absent in some languages. It implies a linear path from the primitive to the modern, with no detours and no end. It is authoritarian since it defines other paths 'out of scope'. After all, 'you can't stand in the way of progress'!
(2) The primacy of exploitation: the system depends on exploitation. The high levels of consumption of the few (globally), mostly living in the core capitalist countries, depend on labour exploitation of varying degrees of savagery and on the ruthless exploitation of the planet's living and mineral resources.
(3) Mono-culturality and the suppression of other cultural systems: particular cultural forms dominate. Here, culture means the ordinary ways people live, and pass on and share that way of life through traditions, crafts, arts, rituals and the material trappings of everyday life.
(4) Assumed superiority: 'European civilisation' (promulgated, now, largely by the USA) is seen to be the pinnacle. It follows then that other cultures (and hence peoples) are inferior. This is deeply ingrained in our education, culture,

foreign and domestic policies. The assumption appears savagely in the far right and more subtly elsewhere.

(5) The rational administration of complexity: the administrative impulse to order and simplify rather than describing the dimensions and layers of complexity and working with the flow. By reducing complexity to a few elements, controlling them, the hope is to manage the complex system itself.
For example, urban regeneration in the UK focused on developer-led fixing of decaying infrastructure, bringing in private money (and taking out profits)—mostly housing and retail, with a nod to social projects, jobs and resident participation (Power 2012 on unfulfilled promises of regeneration delivered through Olympic infrastructure in East London; Woolrych et al. 2007). And yet the problems in areas of multiple deprivation in which urban regeneration is targeted extend well beyond this and include high levels of unemployment, poverty, crime and fear of crime, high levels of mental ill health, low levels of community cohesion, apathy, and a loss of community and economic resources. These problems are largely the result of the withdrawal of the economy from areas that had poor infrastructure in the first place, alongside a lack of social supports for the population as the local state contracted. Regeneration actions were upheld by structures which determined the allocation of resources over specific timescales and ideologies of personal responsibilities for poverty and self-improvement.

(6) Taming natures: the wild, the natural, is to be controlled, to be mastered, enclosed and channelled, or suppressed. It is seen as, or turned into, resources. It is seen as separate from humanity, and humanity as separate from it. When valued it is appreciated in a distorted version of itself.
For example, in recent years flooding of town centres and homes in the UK has increased. Simple solutions of dredging rivers and building ever-higher flood defences (the rational administration of complexity) have been proposed. And yet, the reasons behind the floods are linked to complex ways in which the natural environment has been controlled, used and abused. Trees have been removed from uplands, jeopardising soil stability and its capacity to absorb rain water. Hillsides are overgrazed, drained for the 'pleasures' of those who see sport in shooting grouse, and biodiversity reduced (Monbiot 2015). Even where upland areas have been reforested, once the trees have been harvested for economic purposes, hillsides are left scarified and incapable of holding water. The ideology of man's (sic) dominion over nature is upheld by actions creating environmental degradation and artificial means of controlling the elements and the structures of technological solutions to water management, and the ways farming and leisure is supported and politically sanctioned.

(7) The dominance of exchange and possession: what was once free is subject to exchange relations. That which was once common is now owned, in private hands, for the purposes of shareholder profit rather than the common good.

The case of water, again, in the UK is a good case in point. Water provision was originally organised by local elected representatives, particularly as towns and cities grew, but now extended to most rural areas. They built reservoirs to provide clean water, pipelines and wastewater and sewage infrastructure and processing. They had collective responsibility for ensuring the asset of water remained a public, commonly owned asset, available to all. With the privatisation of public utilities in the UK in the 1980s, water became owned by profit-making companies with no particular links or responsibilities to the local area from which they extract rent. Water and its infrastructure are no longer in common ownership (see Lobina and Hall 2001; Ostrom 1990). The economic structures of government subsidies at the point of privatisation, regulation, stock exchanges, water extraction and bottling (in the case of bottled water, in a country with no water shortages or purification issues) are upheld by ideologies of efficiency, competition and consumer choice, and the actions of increasing prices, poor customer service and the buying of bottled water, even for home use.

There is no limit to the identification of IASCs, although a potential problem arises in identifying them parsimoniously. A key social scientific task in relation to sustainability is to envisage alternative, counter-hegemonic IASCs and engage in research that takes us nearer the realisation of a sustainable future, and that highlights and addresses power relations and inequalities.

4 What Kind of Research Is Implied by IASCs?

Ideology–action–structure complexes can be examined, disrupted, revised or replaced, through a focus on either ideology, action or structure. The kinds of structures that support current unsustainability and the need for the SDGs are beyond the reach of social science, but, if the interrelatedness of the elements of IASCs is considered, they can nevertheless be influenced by changes in ideology or actions. It is change in all three elements that are needed to achieve the SDGs and there can be no prescription that is right in all circumstances as to which element is most open to transformative change (Harvey 2010). It is clear that complex social issues require complex research approaches, beyond particular methods, and most probably combining methods. The idea of exploring different forms of social relations, the process of de-ideologisation,[3] touching the heart of power differentials and equity, underpin promising research approaches. One such is the approach of action research (Kagan et al. 2008) that embraces different methods of data collection and interpretation as well as reflection and planning across different cycles of activity over time.

[3]A term coming from Latin America and featuring in liberation practices (Burton and Kagan 2009; Kagan et al. 2011).

Action research, therefore, enables small interventions to be tried out. Through reflection, from these small interventions, it is possible to learn about the wider system and possibilities for change within it. This facilitates understanding of the complex system in which the new intervention is situated, so that it can be improved. Following interventions are then more likely to grow and succeed. Let us see how this approach plays out in practice.

4.1 Sustainable Living in an Urban Environment: An Action Research Project

This is an account of an action research[4] project in which support for different actions began to change the narrative and thus the ideology in relation to climate change (Groundwork 2013).

A local authority commissioned a non-governmental environmental organisation and our research team to develop some sustainable living groups in the borough, in the context of previous work carried out by the authority to collect information about carbon saving across the borough. It was recognised that, in the light of the ecological crisis, the task was one of raising the awareness and critical consciousness of local people in relation to environmental issues, changing not just behaviours but hearts and minds, and that this was best achieved through small-scale action projects at local level.

The preliminary stages identified locations for the project in neighbourhoods that differed in terms of community needs, priorities, assets and risks in relation to climate change; vulnerability and adaptive capacity in relation to climate change; economic opportunity linked to environmental activism; levels of existing social capital; and affluence reflecting high and low carbon lifestyles.

Some public engagement days demonstrated that people did not connect with the idea of receiving supports for projects under the banner of reducing impact on climate change. However, presenting the project as stimulating existing and new food growing projects gave people something more concrete to think about, and facilitated engagement.

From the starting point of sustainable food, a number of project ideas emerged and were subsequently developed. Food growing proved a real catalyst for activity so the approach taken was to focus group activities on sustainable practices, low carbon and improved environmental performance more generally. While growing was the frame for the initial involvement, groups also explored other aspects of sustainability such as increasing biodiversity, reducing waste, sharing materials, tools and skills. These kinds of locally focussed recreational activities are expected to have a knock on effect in terms of carbon footprints (although to date this has not been systematically quantified), as does a focus on local food.

[4]Action research and participatory action research has a strong tradition in climate change research. See for example, Harvey et al. (2012) and Campos et al. (2016).

With regard to climate change, participants needed to understand the basics of climate change; the relationship between local action and global impact; the scope of local action; measuring impact; and personal and group action planning for climate change activity.

However, perhaps more important than knowledge and information about climate change was the community development that took place to ensure the widest possible engagement and long-term sustainability of the projects. Different strategies were used to engage people, ranging from information days to fun days to demonstration days. Local groups were introduced to key aspects of organisation and organising, including partnership working, managing internal and external relations, managing meetings (and conflict), decision-making and action planning, monitoring and evaluation and fundraising. This was to ensure that the groups remained sustainable beyond the period of support. (Four years later, groups were still operating.) The involvement of local people in the projects and their delivery was essential and the community development strand of the project included gaining trust and building local relationships.

4.2 What Was Learnt?

An eclectic, 'bricolage' approach (Rogers 2012) was used to gather data from the projects. Different types of information were collected from a wide range of participants in the research. Photographs, accounts, interview and questionnaire responses all combined to provide a holistic picture of both the processes involved and outcomes of the work. In addition, detailed field diaries, kept by the main project facilitator as well as the university researchers, provided additional information (see Kagan et al. 2008 for plurality of methods in participative action research).

A minority of projects were slow to develop or did not take off, although others did and 4 years later are still in existence. Issues of power and control at local level impeded wider participation in some projects, as some influential local people exerted control over developments. The '*sustainable living*' angle was too vague and amorphous to get people involved in large numbers. Taking action against '*climate change*' and for '*environmental sustainability*' does not motivate the majority of people if they are not already concerned about the issues. On the other hand, '*resourcefulness*' and '*resilience*' are concepts that can easily be made locally relevant, i.e. not wasting resources, supporting local businesses, growing your own fruit and vegetables. It was easier to develop a wider programme of sustainable living activities where there were already existing groups with relevant activities with which to connect and on which to build. In areas with no such groups, even more effort would be needed to stimulate interest and find the points of connection from which to motivate people.

It was clear that it was important to have a catalyst project to get people together, inspire them to action and to galvanise a group. People do not form groups first and then decide to do something afterwards, as is well known in community

development practice. People were given the opportunity to come forward with ideas and suggestions for new projects—to co-design and co-produce the projects—rather than have projects thrust upon them.

The project funding came to an end, and although there were some wider impacts of the programme in terms of citizen involvement in the city's food board and enhanced networking between projects across the boroughs, resources were not found to build on the momentum that had been created. It was not possible to deliver further training and capacity building around food growing, skills sharing and community development, or to extend the project into new neighbourhoods.

How best, then, to explain this successful action research project which stalled? The climate messages and understanding of some of the dimensions of sustainable living in a wider context had been achieved, but this was only a start: there was much more to be done to develop sustainable living across the city. At the time (2013), local authorities were in the throes of a savage austerity programme in which their funding was cut drastically and they were being reduced to providing only essential services. Action on climate change and sustainable living, instead of taking its rightful place at the top of the priorities, disappeared from immediate priorities, and thereby from support at both local and central government levels. What was learned at a more macro-level was that there was little appetite, nor funding, for sustainability research to continue in the borough, or, indeed, nationally.

4.3 What Roles Were Played by the IASCs?

IASCs permeated the research discussed above. First, the *rational administration of complexity* was in play in the very commissioning of the research—dealing with the challenges of the complexity of climate change through the simplistic development of sustainable living groups, in practice, growing projects. (In fairness, this was only one strand of the borough's work on climate change, which included monitoring of, for example, transport and energy use. But no funds were allocated to linking the sustainable living projects with other things going on.) Nevertheless, it was clear that the IASC was challenged by the participants in the study. Far from confining their interests to the relatively narrow, and in and of itself the non-transformative business of small food growing projects, it was clear that understanding and action in some cases extended beyond food growing to more complex ideas about sustainability and a quest for broader-based action. The IASC was beginning to weaken in favour of a more holistic, albeit still local, approach to sustainability.

Second, *the taming of nature*. The very essence of the project, food growing, ran counter to this dominant IASC, positioning participants differently in relation to the natural world and the production of food. The growing projects helped people gain a new respect for the natural world and the rhythms of the seasons. More than this, an outcome of the set of projects was to bring people closer together in communities and to enable the forging of new relationships between people and nature. One

participant described the area in her neighbourhood, now full of flourishing edible plants as "*now a perfect place to just sit and simply 'be'*". Another claimed the project "*has brought us together and been a fantastic catalyst for a really useful community movement*".

Finally, *exchange and possession*. Many participants in the community projects had only ever known food bought in shops. They did neither forage, nor did they cultivate food in their gardens. Indeed, some did not have access to gardens until community gardens and allotments were supported within some of the projects. Discovering a new way to relate to food was captured by a participant who said "*I have learned skills that I can pass on to my children to help us grow food for free into the future*". Thus the projects began to enable the recovery of historical memory and the restoration of cultural traditions and non-rationalised, subsistence[5] production.

The three IASCs outlined above began to change through new sets of actions and new ways of thinking about elements of sustainability at local levels. Counter-hegemonic IASCs may well arise as more, small, community development focused projects grow and link with others nearby and further afield. An action research orientation helps identify the systemic and structural blocks to achieving changes implied by the SDGs, through the learning from small-scale explorations and offer the prospect of transcending the scale limitations of a project-based strategy (Kagan and Burton 2000).

5 What Now for Sustainability Social Science?

The above discussion has shown that sustainability social science can offer new ways of understanding the challenges of sustainability, including those characterised by the SDGs. It has been argued that there are merits in understanding the current sustainability challenge as a series of systemic crises supported by deeply ingrained ideology–action–structure complexes. It is not enough to look at either the ideas people hold and the thoughts they hold about the world; or about the structural inequities that exist; or the actions contributing to environmental and social degradation. The three elements of social experience have to be examined together and sustainability social science is well placed to effect changes that can become transformative. An action research stance to social experimentation, prefiguring the possibilities for change, is useful for learning about the social forces enabling and constraining transformational change. It is only then that the ways in which the exertion of different kinds of power, permeating transformational change, can be understood, changed, and possibilities for achieving the SDGs reached.

Martens (2006: 38) outlines the possibilities of a new paradigm of sustainability science "*one represented as* ***co-evolution, co-production*** *and* ***co-learning***". Opportunities will be missed if co-everything remains between like-minded people

[5]See Mies and Bennholdt-Thomsen (1999) who argue that a subsistence perspective on science, technology and knowledge is one that leads to a revaluation of older survival wisdoms and traditions.

(Richardson and Durose 2016). To reap the benefits of this kind of jointly achieved research it is necessary to involve groups of stakeholders or participants with different world views. And this in itself requires different skills of researchers, and an understanding of how to be open, inclusive and participative; how to be people centred, sensitive to power and inequality with a focus on the poorest and most vulnerable—they who are not the cause of the ecological crisis but may have some solutions—and be able to provide the necessary capacity building and support for participation (Kagan et al. 2011).

These are the skills of community development: community development in the service of a sustainability social science, and it is inconceivable that even the smallest of innovations, as discussed above, can be achieved without this.

Furthermore, a sustainability social science must

- be able to demonstrate the interrelationships of different sustainability elements;
- articulate the ideology–action–structure complexes that maintain the status quo;
- introduce small-scale social innovations through which counter-hegemonic IACSs can form; and be open to learning from those who live the lowest carbon lifestyles and about the social forces affecting any innovation.

A sustainability science without the *social* will be unfit theoretically, and unable empirically to deal with the complex crises facing humanity, as reflected in the SDGs.

References

Burton, M. (2013). A renewal of ethics. *The Psychologist, 26*(11), 802–807.

Burton, M., & Kagan, C. (2009). Towards a really social psychology: Liberation psychology beyond Latin America. In M. Montero & C. Sonn (Eds.), *Psychology of liberation: Theory and applications* (pp. 51–72). New York: Springer.

Campos, I. S., Alves, F. M., Dinis, J., Truninger, M., Vizinho, A., & Penha-Lopes, G. (2016). Climate adaptation, transitions, and socially innovative action-research approaches. *Ecology and Society, 21*(1), 13.

Esquivel, V. (2016). Power and the sustainable development goals: A feminist analysis. *Gender and Development, 24*(1), 9–23.

Groundwork. (2013). *Sustainable living in Stockport* (unpublished). Manchester: Groundwork.

Harvey, D. (2010). *The Enigma of capital: And the crises of capital*. Oxford: Oxford University Press.

Harvey, B., Burns, D., & Oswald, K. (2012). Linking community, radio, and action research on climate change: Reflections on a systemic approach. In D. Burns (Ed.), *Action research For development and social change*. Brighton: Institute for Development Studies. doi:10.1111/j.1759-5436.2012.00326.x, IDS Bulletin, 4(3).

Jerneck, A., Olsson, L., Ness, B., Anderberg, S., Baier, M., Clark, E., et al. (2011). Structuring sustainability science. *Sustainability Science, 6*(1), 69–82.

Kagan, C., & Burton, M. (2000). Prefigurative action research: An alternative basis for critical psychology. *Annual Review of Critical Psychology, 2,* 73–87.

Kagan, C., & Burton, M. (2014). *Culture, identity and alternatives to the consumer culture*. Educar em Revista, Curitiba, Brasil, n. 53 (pp. 75–89), jul./set. Editora UFPR. https://www.

academia.edu/9219654/Culture_identity_and_alternatives_to_the_consumer_culture. Retrieved November 12, 2016.

Kagan, C., Burton, M., Duckett, P., Lawthom, R., & Siddiquee, A. (2011). *Critical community psychology*. London: Wiley-Blackwell.

Kagan, C., Burton, M., & Siddiquee, A. (2008). Action research. In C. Willig & W. Stainton-Rogers (Eds.), *The Sage handbook of qualitative methods in psychology* (pp. 32–53). London: Sage.

Kajikawa, Y. (2008). Research core and framework for sustainability science. *Sustainability Science, 3,* 215–239.

Kates, R. W. (2011). What kind of a science is sustainability science? *Proceedings of the National Academy of Sciences of the USA (PNAS), 108*(49), 19449–19450. http://www.pnas.org/content/108/49/19449.full. Retrieved October 11, 2016.

Lobina, E., & Hall, D. (2001). *UK water privatisation: A briefing*. London: Public Services International research Unit, University of Greenwich. http://www.archives.gov.on.ca/en/e_records/walkerton/part2info/partieswithstanding/pdf/CUPE18UKwater.pdf. Retrieved November 12, 2016.

Martens, P. (2006). Sustainability: Science or fiction? *Sustainability: Science, Practice and Policy, 2*(1), 1–5.

Mies, M., & Bennholdt-Thomsen, V. (1999). *The subsistence perspective: Beyond the globalized economy*. London: Zed Books.

Monbiot, G. (2015). The flood was not only foretold, it was publicly subsidised. In *The Guardian*. 29th December. https://www.theguardian.com/commentisfree/2015/dec/29/deluge-farmers-flood-grouse-moor-drain-land. Retrieved November 12, 2016.

Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge: Cambridge University Press.

Power, A. (2012). *The Olympic investment in east London has barely scratched the surface of the area's needs. British Politics and Policy at LSE*. August 15, 2012 Blog Entry. http://eprints.lse.ac.uk/48624/. Retrieved November 12, 2016.

Raworth, K. (2014). *Will these sustainable development goals get us into the doughnut (aka a safe and just space for humanity)?* http://oxfamblogs.org/fp2p/will-these-sustainable-development-goals-get-us-into-the-doughnut-aka-a-safe-and-just-space-for-humanity-guest-post-from-kate-raworth/. Retrieved November 1, 2016.

Richardson, L., & Durose, C. (2016). *Designing public policy for co-production: Theory, practice and change*. Bristol: Policy Press/University of Chicago Press.

Rogers, M. (2012). Conceptualising theories and practices of bricolage research. *The Qualitative Report, 17*(7), 1–17. http://www.nova.edu/ssss/QR/QR17/rogers.pdf. Retrieved November 13, 2016.

Stafford-Smith, M., Griggs, D., Gaffney, O., Ullah, F., Reyers, B., Kanie, N., et al. (2016). *Integration: The key to implementing the sustainable development goals*. Published online 8 July 2016. doi:10.1007/s11625-016-0383. http://link.springer.com/article/10.1007%2Fs11625-016-0383-3. Retrieved October 11, 2016.

UN. (2015). *Transforming our world: The 2030 agenda for sustainable development UN resolution document*. New York: United Nations. http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E. Retrieved October 19, 2016.

UNDP. (2015). *Sustainable development goals*. New York: United Nations Development Programme. http://www.undp.org/content/undp/en/home/sustainable-development-goals.html. Retrieved October 11, 2016.

Wallerstein, I. (2004). *World systems analysis: An introduction*. Durham, NC: Duke University Press.

Woolrych, R., Sixsmith, J., & Kagan, C. (2007). *The impact of regeneration on health and well-being of local residents: The case of East Manchester*. Manchester: RIHSC. ISBN 19000139.14.6.