Chapter 7
Citizen Social Science: New and Established Approaches to Participation in Social Research

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Abstract This chapter explores the ways in which the roles of citizens and researchers play out in the social sciences. This is expressed by numerous overlapping and related terms, such as co-production and participatory action research, to name but two, and by the different social topics that citizen social science draws attention to. The key question this chapter seeks to explore is what does naming citizen social science as such bring to the fields of citizen science and the social sciences? The chapter explores the different epistemic foundations of citizen social science and outlines the development and provenance of citizen social science in its broadest sense, reflecting on how it is currently practised. It draws on different examples from the experiences and work of the authors and notes the boundaries and overlaps with citizen science. The chapter also highlights some of the key issues that citizen social science gives rise to, emphasising that while citizen social science is a relatively new term, its underlying approaches and epistemic foundations are at least partially established in the social sciences.

Keywords Social impact · Co-production · Participatory action research · Co-creation

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'Citizen Social Science': A New Term or Old Hat?

Citizen social science is the term most commonly associated with a form of citizen science in the social sciences or alternatively one that has a specific focus on the social aspects of citizen science. It can involve citizens in the design and/or conduct of social research, including engagement in some or all research processes, such as ideation, research design, data collection, analysis, dissemination, and impact. This is seemingly not starkly different from what can be understood to constitute citizen science in the natural sciences (see Frigerio et al., this volume, Chap. 5). However, discussions about citizen social science bring to the fore its particular legacy, and the dichotomy citizen social science gives rise to in terms of whether it is perceived as a new term or a concept that has been in existence for some time, even if under a different name.

How can participation be organised in the social sciences, how does the involvement of citizens in social research impact society, and how can this impact be accounted for? A crucial starting point when considering these questions is to focus on the role of *citizens* in science and the social sciences – since the role is different to volunteering to participate in a research study, giving an interview, joining a focus group, or responding to a survey. By 'citizen' we mean 'citizens, publics, social groups and communities' (Kennedy 2016), in other words, social actors that are not necessarily professional scientists. Some view citizen social science as being about citizens gathering data about the world they observe around them (Purdam 2014), in other words, primarily observational data. Others make the case for citizen social science providing a basis for forging a new relationship between the social science academy and society (Housley et al. 2014) – a logical step towards more public social sciences (Burawoy 2005), building on the development of *participatory methods* that have a long legacy in the social sciences. These different types of citizen social science also bring with them different societal expectations, from researchers, participants, and everyone in-between, as well as a broad range of outcomes and impacts.

With the aim of being inclusive and simultaneously open-minded, in this chapter we propose combining under the 'social' label of 'citizen social science' not only a consolidated set of social science methodologies placed in an out-of-the-lab context but also social issues or concerns raised by groups of citizens and the ways in which these produce new scientific knowledge. Situating these social concerns at the centre of research, and its publics, has important implications in terms of the legitimacy of the research and of giving voice to under-represented or vulnerable groups. Citizen social science can be a powerful practice for both the inclusion of marginalised communities and the design of new evidence-based policies supported by the participation of citizens. Citizen social science also offers new routes to innovation and scientific research that deserve to be published in recognised scientific outlets and disseminated via public media.

In this chapter, we want to address the challenges and opportunities of citizen social science for bridging participatory traditions from the natural/technical sciences, the social sciences, and the humanities. In addition, we focus our attention on the question of what added value citizen science approaches can bring to the social sciences, especially to those that have a long-standing engagement with research partnerships, co-creation, and inclusive research practices – from the design of research questions to the translation of the results for social change. We discuss our own experiences with these bridging efforts and systematise our findings as a group of co-authors from diverse backgrounds, including science and technology studies (STS), geography, innovation studies, sociology, complex systems science, environmental science, and behavioural science. The second section of the chapter notes the different epistemic foundations of citizen social science – the development and provenance of citizen social science in its broadest sense – drawing on different examples from the experiences and work of the authors. The third section explores the boundaries and overlaps between citizen social science and citizen science. Academic interpretations of citizen social science are set out in the fourth section, reflecting on the current landscape. We present some of the key issues of citizen social science in the fifth section, before concluding with our reflections on what citizen social science adds to the fields of social science and citizen science.

The Epistemic Foundations of Citizen Social Science

Regarded as a form of citizen science that takes place in the social sciences, citizen social science is confronted with varying epistemic cultures (Knorr-Cetina 2003) and ways of doing or practising it (see Box 7.1). The epistemic foundations of citizen social science are set out in more detail in this section. When the social sciences are utilised in the context of citizen science, they are commonly mobilised for organising the participatory dimensions of a project and also for the evaluation of the processes, results, and learning (Phillips et al. 2018). However, although the social sciences represent a long-standing tradition and a whole canon of participatory methods in their own right, they are still regarded as an ancillary science (Darch 2017).

> **Box 7.1: The Mass Observation Project**
> The Mass Observation Project, which can be considered a prototype of citizen social science, consists of two parts: (1) the Mass Observation movement, 1937–1950s, and (2) the Mass Observation Project, 1981–present. Since it began, almost 4500 people have volunteered for the project. Many of these volunteers have been participating for several years, making the project rich in qualitative longitudinal material. In its current format, around 450 volunteer participants are recruited from all over Britain, to participate on the Mass Observation Project writing Panel. These writers (often known as 'Observers') respond to 'Directives', or open-ended questionnaires, sent to them by post or

Box 7.1 (continued)

email three times a year. The Directives contain two or three broad, open-ended themes, which cover both personal issues and wider political and social issues and events. The project solicits in-depth accounts (both opinion and experience) of everyday life: stories, memoirs, lists, letters, diagrams, drawings, maps, diaries, photographs, press cuttings, confessions, and reports on people, places, and events, across a wide variety of topics. The project is open in terms of the data generated being available for use by all, but also in terms of the ways in which the project organisers regularly consult and engage with the volunteer panel of Observers, to reflect on the developments of the project and how the process of participating in writing for Mass Observation impacts the Observers themselves. This adds to the overall research integrity of the project.

Citizen social science is linked to the participatory approaches of co-production and PAR, each of which has a distinct legacy in the social sciences. Co-production is becoming an increasingly popular term in policymaking, governance, and research (Filip et al. 2017), particularly in terms of a shift towards a deeper or more complex form of impact (Flinders et al. 2016). In co-production, practitioners and potential research users are drawn into all stages of the research process. Co-production promises to be transformative, not solely in research terms, but in social terms, by engaging citizens and thereby facilitating a renewal of democracy (Flinders et al. 2016). Co-production emerged as a solution to what was argued to be a relevance gap in research and to meet the demands of *impact* agendas (Durose et al. 2011), since co-production in research aims to put the principles of empowerment into practice. This entails working *with* communities and providing opportunities to learn and reflect from their experiences. It is also important to note that the term co-design is often used synonymously with co-production. *Co-design* (also referred to as co-creation) is more of an umbrella term to describe different processes of involving multiple partners in the development and/or provision of interventions (see Senabre Hidalgo et al., this volume, Chap. 11).

Citizen social science can also be viewed as building on the field of PAR, which in turn draws on a model of community organising that supports the capacity and expertise of people experiencing issues first-hand (Friere 1996). Arguably PAR is a research style, an orientation to inquiry (Reason and Bradbury 2013), and not a 'method' or a 'procedure' for research as such. It involves 'a series of commitments to observe and problematise through practice a series of principles for conducting social enquiry' (McTaggart 1996, p. 248). PAR is an approach that seeks to actively engage participants as co-researchers in the research process, from research design to dissemination. It not only challenges the status of researchers as experts but also raises questions and creates spaces of reflexivity about how knowledge is generated (Tolman and Brydon-Miller 2001); it questions the power dynamics in the research process. PAR is a complex effort, with research questions generated by the participants and with the overall aim of making a practical difference to participants.

However, few PAR projects fully involve participants in the entire research process or the governance of the project, often for practical or ethical reasons (Cahill 2007). It is difficult, in practical terms, to strictly adhere to the basic tenet of fully collaborative research, in which the community under study is engaged in every step of the research process. Furthermore, PAR projects predominantly focus on collecting and presenting information to inform and mobilise collective action, rather than on theory development, which can create tensions for academic researchers (see Box 7.2 for an example of a PAR project). Ethical questions about the approach can also be raised. For many, PAR is not actually research, but a form of activism to affect change (Cahill 2007). Arguably the body of literature that accounts for the practices of PAR positions it at the intersection of research and activism. The concept of citizen social science can thus contribute to better solidifying these sets of practices in scientific research, as well as in publication and dissemination activities, rendering them more readily usable, recognisable, and comparable.

Box 7.2: Voices for Change

The PAR project Voices for Change was run by a charity in Australia between 2007 and 2011 (Stevenson 2010, 2014). The aim of the project was to develop an Emancipatory Disability Research (EDR) framework, by involving young people with intellectual disabilities in academic research. In this case, researchers included lay people in the data analysis stages of the research process. Participants undertook a journey from research informant to co-researcher and engaged in elements of data collection, immersion in the data, interpretation, negotiating meanings, and critically appraising research outputs. The project was developed in consultation with young adults (18–25 years) with Down's syndrome and sought to assist young people in achieving their life goals and greater social connections using a *circles of support* model (Stevenson 2014). The core strategy of the research 'was to make all aspects of the research process as participatory as possible in respect of the co-researchers; to draw on their "local expertise", and ensure that their "voices" were heard throughout' (Stevenson 2014: 24). This example of a PAR project highlights how framing a project in certain ways allows for participation from targeted groups.

Another strand of citizen social science makes use of experimentation to engage with *civic epistemologies* – culturally specific ways in which publics expect expertise to be produced, tested, and used in decision-making (Jasanoff 2002). An interesting example is the computational social science work of OpenSystems in Barcelona – outlined in Box 7.3. Game-based civic learning is used, for example, to improve and foster the skills of citizens to collectively reflect on social issues (Devisch et al. 2016). Arguably, such approaches can also be manipulative and used for social control; gamification can fail to take into account citizens already participating in discussions on social issues, as well as in the design of the game itself.

Box 7.3: Games for Mental Health

The OpenSystems research group in Barcelona developed a set of public experiments in urban contexts: more than 5400 neighbours participated in over a dozen initiatives from 2012 to 2019. One example was a research collaboration to improve the lives of people with a mental health condition and their families and friends, initiated by a major organisation for the families of people with a mental health condition in Catalonia (Bonhoure et al. in press). The outputs of this collaboration included a scientific publication in an *open access* multidisciplinary journal (Cigarini et al. 2018), whose scientific data is openly accessible jointly with a report for the community, policymakers, and the general public.

The dominant paradigm in mental health research and practice still affords biomedical knowledge a privileged status, but other models entail more holistic approaches. The Community Mental Health Care model (Thornicroft et al. 2016) supports care in community and domiciliary settings. Individuals with a mental health condition, jointly with their informal and formal care-givers, social workers, and relatives, form an ecosystem in which social interactions play a central role in promoting efficient and sustainable care in the community. The research in practice is an informal mission-oriented *joint venture* undertaken by researchers and representatives of the mental health-care community. Participants are engaged actively and consciously to learn about the research outputs through an additional set of activities that can empower specific vulnerable groups. Furthermore, self-selection issues, which apply to standard experimental settings (Henrich et al. 2010), are considered through different lenses when participation is enhanced. This example provides a broad outline of the potential for a synergistic relationship between citizen science, mental health care, and the social sciences (social dilemmas) under the umbrella term of *computational social science*. It represents a novel addition to the approaches that have already been thoroughly analysed in the context of health (Wiggins and Wilbanks 2019).

On the other hand, notions of both public and collective experiments are already well developed (Latour 1983) and have been extensively discussed in the context of STS (see Karvonen and Van Heur 2014). Through the lens of such experiments, we can acquire a better understanding of citizen social science practices (Sagarra et al. 2016). In particular, attention has focused on the specificities of expanding participation in the field of human behavioural sciences (Cigarini et al. 2020). Public and collective experiments, first, have to capture the interests of non-professional scientists (Latour 1983); second, they have to collect information on 'real-world' problems in the form of in-the-field or in-the-wild research (Gneezy and Imas 2017); and,

third, they have to extend the laboratory to wider society by carefully relaying results back into the field in a fast and efficient manner. In this sense, impact is considered to be part of the experiment. Including citizens' social concerns in the research process can affect the whole research design: the main theme, the research question, data gathering through public intervention, data interpretation, and collective action (Bonhoure et al. in press; Sagarra et al. 2016). From a citizen social science perspective, this requires some effort: crowdsourced data gathering is comparable in volume to traditional in-the-lab work. In addition, collective action directed at social change to respond to citizens' concerns must be based on social science evidence. Therefore, in many ways, public participation – ranging from micro-sociological co-research to large-scale public experimentation – is faced with the challenge of not only being a significant pathway in the public sphere for raising social concerns but also of properly including and representing vulnerable, or marginalised, groups in the public sphere. Undertaking truly collective research must combine new scientific insights with very specific objectives that are valid and beneficial for all participants. In this sense, public experiments not only amplify the social dimension of citizen social science practices but also, more specifically, enhance the importance of making experiments public, and even placing experiments in public spaces, so that they might have proper impact.

These are just some of the varying epistemic foundations from which citizen social science can be seen to have developed. As previously stated, since citizen social science is still not an established term in the social sciences and is gaining traction in new ways as the field develops, this list is not exhaustive; it merely offers an initial overview of the landscape.

Boundaries and Overlaps with Citizen Science

The social sciences have more to offer to citizen science than bridging and mediating, and citizen social science has many more facets than merely mimicking natural science approaches. Based on the long tradition of participatory approaches in the fields of *participatory action research* (PAR) and the *co-production of knowledge*, tools and concepts in the social sciences are available to impart both scientific rigour and inclusivity to knowledge production. On the other hand, the social sciences can learn from citizen science about new forms of mobilisation, technological platforms, as well as socio-technical skills. STS promotes cross-disciplinary integration, civic engagement, and critical thinking in the study of science and explores how scientific knowledge and technological artefacts are constructed. Arguably STS seeks to overcome the divisions between the two disciplinary cultures of the humanities (interpretive inquiry) and the natural sciences (rational analysis). In STS, public participation in science is observed and analysed in terms of governance, regulation, and 'translation' into practical applications. It is now easier than ever for non-professionally trained people to participate in the governance, regulation, and

Table 7.1 Criteria for the classification of citizen science projects (Prainsack 2014)

Coordination: Who has influence in
1. Agenda setting
2. Determining the terms of the execution of the idea/procedural aspects
3. Deciding what results are (and what 'good' results are)
4. Deciding what will be done with the results
5. Deciding on intellectual property questions
Participation
6. Who participates (demographic and social parameters of those who participate)? Why, and how much, do they participate?
7. How much, and what kind of, training, skill, or expertise is required to participate in the project?
8. Are there cultural, institutional, and/or other differences in perception and framing of core issues and stakes?
Community
9. What forms of community pre-exist this project, if any? Which new communities does the project facilitate or give rise to? What is the constitutive factor for the feeling of belonging for participants?
Evaluation
10. How, and by whom, is it decided what good outcomes are?
11. What happens to the results of these evaluations?
Openness
12. Do participants in the project have access to the core data sets?
13. Can participants in the project edit the core data sets?
14. Is the contribution of participants adequately acknowledged in published materials?
15. Are data sets made publicly accessible (open-source/open access)?
16. Are the main findings made publicly accessible (open-source/open access)?
Entrepreneurship
17. How is the project funded?
18. What is the role of for-profit entities in this project? Are these small, medium-sized, or large entities, and where are they located?
19. How are for-profit and other interests aligned in this project (and/or do they conflict, and where)?
Locality
20. Where does the project take place (online/offline, in public/in the lab, geographical location, local/national/international)?

translation of science, as well as some of the core activities of science itself (Prainsack 2014).

In order to consider whether – and, if so, how – citizen science makes science more socially robust and can produce results that may be better in some ways than knowledge created by professional scientists, it is necessary to understand the nature of citizen social science in more detail. The list of criteria in Table 7.1 is a helpful schema for both understanding and classifying projects in citizen science and is a fitting typology that addresses dimensions which are also important in citizen social science. In this sense, it is a useful reminder of the overlaps between citizen social

science and citizen science, and it allows us to explore the kinds of participation that different citizen science and citizen social science projects involve.

There are many perceptions of citizen science, and there is no clear, concise definition of what constitutes citizen science (see Haklay et al., this volume, Chap. 2). The same is arguably true of citizen social science, with the added complication that few projects define themselves under the term citizen social science. The aim of the classification below is to give examples for the perspectives provided by Prainsack 2014 (see Table 7.1) and to provide an overview of the current landscape of citizen social science. Furthermore, considering the criteria listed adds a reflexive dimension to projects and should be regarded as a fundamental part of the research integrity of all citizen science and citizen social science. It is important to understand the ways in which projects and participation are organised, and their locality, sociopolitical contexts, and distributed interests, since these all co-shape the methods developed and used in projects.

Coordination As in citizen science, the coordination of a citizen social science project is important to better understand and think through who has influence in setting the agenda of the project, to determine how the project will be carried out, what 'good' results look like, how the results will be used, and any issues surrounding intellectual property. It also helps to systematically explore how coordination is organised and agency distributed in such projects (Prainsack 2014).

Participation It is also useful to consider who participates, or might participate, in a citizen social science project; requirements for participation in terms of skills, training, and expertise; and whether there are other ways to frame questions or approaches to allow for participation from targeted groups or indeed more diverse groups. Vaughn et al.'s study of the concept of *peer models in scientific research* found that non-academic partners involved in peer models of research, education, and social care, when identified, were mostly community members (16%), youth (11%), community health workers (8%), people with known health issues (8%), employees (6%), and immigrants (4%) (Vaughn et al. 2018, p. 777). Some citizen social science projects, although usually not named as citizen science or, indeed, citizen social science projects, also included disadvantaged communities and people with disabilities in the research process, facilitating social inclusion.

Community Community refers to whether the formation of new communities is facilitated by a citizen social science project or if the project taps into pre-existing communities. This is important in terms of the visibility and empowerment of marginalised groups. It is also important for community governance and other issues that can occur when bringing together new communities or groups or accessing existing communities that may already have their own governance structures to be considered.

Evaluation As with any research project, it is crucial to consider how to evaluate a project, and, more specifically, how and who can determine what good outcomes are and what happens to the evaluation results. Thus, in addition to scientific processes and results, evaluation has to incorporate social, socioecological, and economic

dimensions if it is to serve the needs of researchers, citizens, and funders. An exemplary model of such an evaluation focuses on the ethical and legal implications of a project. It is also important to consider how such an impact would be assessed and evaluated by the different actors in a project.

Openness The openness of a citizen social science project considers the extent to which the data collected in a project is made accessible for participants to use for their benefit, as well as whether the findings from a project are made publicly available. Also, the openness of a project is reflected in whether participants are adequately acknowledged in any published materials produced.

Entrepreneurship In this context, entrepreneurship refers to the ways in which the project is funded, taking into account any for-profit entity interests and what kind of entrepreneurial and innovative potential they utilise and foster. For example, projects may gain support and funding from various organisations, grants, and corporate social responsibility schemes. Local charities and informal citizen groups might promote projects locally, in newspapers and forums. Furthermore, municipal non-profit companies can act as donors.

Locality Another crucial factor in terms of undertaking citizen social science, which cuts across most of those listed above, is the importance of considering the locality of the project – whether that be online or offline and how formal the setting is. This is particularly true of citizen social science, as opposed to other areas of citizen science, since projects tend to take place outside of the traditional laboratory setting in social spaces where the roles of actors are not necessarily as clearly defined as in other types of research.

Academic Interpretations of Citizen Social Science

In the academic literature, citizen social science is a relatively new term, first appearing in the context of reassessing the roles of experts and publics in addressing social problems (Ochu 2014), whereas citizen science has a lengthy tradition (Irwin 1995; Bonney 1996). When citizen social science was first conceived as a distinct set of methods, the focus was on citizens collecting data on the world around them for social science research (Purdam 2014). Conceptualisations of citizen social science tend to converge around notions of mass participation and data collection at scale, where members of the public assist with research, and record their beliefs and opinions, generating large volumes of data (Procter et al. 2013). Citizen social science is perceived as having the pragmatic goal of securing scalable human effort for the analysis of large data sets (Housley et al. 2014) while preserving more equitable relationships than those generally established in, for example, computational social science. This relates to the growing body of work that explores *crowdsourcing* and *participatory sensing* in more detail, arguably approaches more often associated with citizen science. Crowdsourcing is a portmanteau of

'crowd' and 'outsourcing' (Solymosi et al. 2017) that refers to open-source data, produced by online collaborative effort, to contribute content to a central repository. Participatory sensing is an open-ended concept referring to the narratives, practices, and devices used to engage the public in using sensing devices (Nold 2017). A crowdsourced data methodology can be a powerful tool for large sample quantitative social science research (Purdam 2014). Crowdsourcing becomes citizen social science when managed within a framework of social science research (Dadich 2014).

The references to citizen social science in the academic literature are becoming more prevalent, though are still not widespread in social science literature, and can commonly be found in the literature on citizen science (Heiss and Matthes 2017) and environmental sciences (Kythreotis et al. 2019). As outlined in Irwin (1995), one of the most cited foundational works in citizen science, the term 'citizen science' should be associated with science that focuses on the concerns of citizens, as well as citizens' contextual knowledge generated outside formal scientific institutions. In more recent literature, the focus is on new socio-technical opportunities of digitalisation; thus, citizen social science is referred to as having a significant innovative potential for knowledge production by working collaboratively with citizens to enable access to both large-scale data and 'hidden' data which are collected in situ (Heiss and Matthes 2017). In spite of this, social science research projects 'which experiment with the idea of citizen science, are still hard to find' (Heiss and Matthes 2017, p. 24). There appears to be a disconnect between citizen science practitioners and scholars from the social sciences and the humanities (Mahr et al. 2018). The setting up of 'self-reflective and multi-perspective citizen science projects might hold the key to finally overcoming old distinctions, not only between "experts" and "laypeople" but also between the "sciences" and "humanities"' (Mahr et al. 2018, p. 101). In this way, there is potential for citizen social science being practised as both an approach and a bridging concept between the natural and environmental sciences and the social sciences and the humanities.

From a theoretical perspective, the practices and processes of citizen social science contribute to debates around the *social life* of methods – that is, the 'exploration of the changing historical boundaries between the implicit and the explicit, and the mechanisms and devices which can produce formal knowledge' (Savage 2013, p. 18) – and the literature on social studies of social science, which seeks to examine the ways in which participatory methods, in and of themselves, operate. Cohen (2017, p. 4) suggests that citizen social science has 'begun by repeating the project of classical social science, namely to found itself on the principles of natural science'. However, while it is possible for amateur naturalists to develop a distinct community of practice around spotting and identifying flora and fauna, Cohen (2017) draws attention to how unnatural it is to pretend to observe the social world as a natural science experiment. Cohen's critique strikes at a key tension that citizen social science gives rise to: between sourcing more data on a mass scale and the more democratic aim of opening up social science research.

What Are the Key Issues for Citizen Social Science?

This section focuses on five main intertwined challenges in undertaking citizen social science: (1) attempting to resolve diverse interests and motivations; (2) ethical issues; (3) the relations between researchers and participants; (4) evaluating the outcomes and using citizen social science as a form of evaluation in and of itself; and (5) the hollowing out of terminology as terms are adopted and used in multiple divergent ways. Arguably for many of these challenges facing citizen social science, parallels can be drawn with projects using other forms of citizen science, such as in the natural sciences. As set out in the previous sections of the chapter, there are fundamental similarities between different types of participatory research. However, the issues listed below play out in specific ways in citizen social science and in the social sciences. This is because participatory methods in and of themselves require a commitment to values and a high degree of flexibility, while the roles of different actors in the research process are not always clearly demarcated.

Diverse Interests and Motivations Some of the biggest challenges in undertaking citizen social science are around attempts to deal with, and potentially resolve, competing motivations and diverse interests amongst those driving and participating in citizen social science projects. Also, many citizen social science topics emerge around challenging issues, such as making citizens' voices heard in urban infrastructure developments and community mental health improvement experiments – examples include the projects undertaken by OpenSystems in Barcelona (see Box 7.3). It is also true that to build projects involving participants and organisations that have diverse interests but are allied to reach a common goal can be a powerful approach; diversity can thus reinforce and strengthen the robustness of projects if carefully handled. There are many parallels with the issues faced in citizen science in the natural sciences, especially around volunteer recruitment and management, considered by Land-Zandstra et al. (this volume, Chap. 13).

Ethical Issues Within the challenges of dealing with diverse interests and motivations, there are also ethical issues to consider, particularly around consent. Some of the aspects of ethics in citizen science are discussed by Tauginienė et al. (this volume, Chap. 20), though arguably there are ethical issues that are specific to the undertaking of citizen social science. While ethical review procedures in research and higher education institutions are a good starting point for discussions with community members and project partners about potential issues and power dynamics in the processes of the projects, what happens when projects are initiated by those working outside of those institutions? Who oversees the ethics of a project then? Also, related to this issue is the challenge of making use of the data generated in citizen social science projects. How do we ensure that, where relevant, the data generated is compatible with official data sources or in a format that can be reanalysed or reused where possible?

Hierarchical Power Relations Between Researchers and Non-academic Partners There are often unevenly distributed power dynamics at play when academic researchers work with non-academics; thus, one of the challenges in citizen social science is to keep the right balance in collaborations between academic and non-academic participants and different types of expertise. In many cases, citizen social science projects employ methods where, ideally, a process of mutual learning and co-creation takes place (Balazs and Morello-Frosch 2013). In this process 'the change is more likely to occur when non-academic researchers have participation, influence and control in the research process' (Vaughn et al. 2018, p. 771). Furthermore, the process is made easier when collaboration happens on an equal footing, and non-academic participants feel some degree of ownership of the research process as well as research results. The personal characteristics of researchers can also challenge the successful implementation of citizen social science projects. This is particularly the case considering 'the importance of the researcher [in] listening to participants, taking time to reflect with participants, [and] recognising the significance of apparent trivia, data interpretation and the value of silence' (Richardson 2002, p. 47).

Evaluation Until now, questions surrounding the evaluation of citizen social science and, indeed, citizen science, have rarely been discussed in the literature in the context of citizen social science (Mayer et al. in press). We need to bridge some of the positions on quality and evaluation in citizen science (Kieslinger et al. 2017; Schaefer et al., this volume, Chap. 25) with the scarce attempts to evaluate across methods and interventions in participatory research (Home and Rump 2015) and add insights from the broad literature of community-based participatory research, for example, on participatory monitoring (Estrella and Gaventa 1998) and participatory evaluation (Cousins and Whitmore 1998). Given the plethora of approaches – from platform-based crowdsourcing activities (including human-computer interactions and citizen-generated data) to micro-level interventions in daily social routines – the perceived value and success of a project are always affected by the setting and stakeholder dynamics, the goals and expectations spanning diverse fields of knowledge, as well as the feasibility of change-making and structural sustainability. Moreover, some of the intended results might only come into effect long after projects end, when no impact assessment scheme is in place to monitor activities. Citizen social science, despite only recently being considered a distinct set of research approaches, makes significant claims (Purdam 2014; Heiss and Matthes 2017). One of the claims is to foster productive exchanges of science in society, namely, driving sociopolitical change based on robust social scientific evidence for social good. Hence, an important question is how to assess the design, process, and outcomes of such activities? How can we evaluate the results, as well as the impact in terms of the proposed transformative or representative participatory, even emancipatory, dimensions? In citizen science most evaluation approaches focus on scientific outcomes and learning effects for individual participants, requiring the adoption of comprehensive and inclusive evaluative methods that consider different types of stakeholders (Shirk et al. 2012; Jordan et al. 2012). However, it would be

counterproductive to define overly strict quality criteria for participatory research, as they always depend on the objectives of the projects and initiatives – just as in any other citizen science project. The difference in citizen social science is that the quality criteria should be co-created with the participants. Similar to other community-based participatory research, citizen social science evaluation schemes should be assembled according to the project goals and the participants' expectations but also have to be flexible enough to meet changes in the dynamics of participatory research routines. The challenge, therefore, is to plan accordingly and develop the necessary skills and incentive structures for such inclusive evaluation settings, so that assessment is not left to the project's end, but actively implemented continuously from the research design stage. Evaluation should also include often neglected aspects, such as trust building and power relationships (Bryson et al. 2011). Another big challenge is how to bring those aspects together with more conventional evaluation measures for scientific quality and integrity, alongside quantitative indicators. How do we ensure projects are comparable beyond their unique features of effecting change in science and society?

Hollowing Out of Terminology Arguably many of the terms associated with citizen social science are used interchangeably, but often with different meanings and disciplinary understandings, leading to a hollowing out of terminology. The overuse and abuse of terminology in this context – particularly of terms such as citizen, social, laboratory, experimentation, and participation – have evacuated some of the meaning of these terms, rendering them increasingly imprecise. This constitutes one of the main reasons for our cautious approach to citizen social science. Furthermore, the term citizen science is mostly used in the Global North, whereas many other invisible participatory social science practices exist there and elsewhere that do not use such a term (Tauginienė et al. 2020). For example, the Global Informality Project is an online resource for 'ways of getting things done'. It is a global and growing database of invisible, yet powerful informal practices and the first multimedia online resource that explores informal practices and structures from a global perspective. Through its comparative and ethnographic investigations, the database includes entries from 5 continents, over 60 countries, and over 200 researchers. In Eastern and Central Europe, where democracy is only a relatively recent (and often questioned) experience, citizen participation in scientific research and policymaking is not well-institutionalised, and the social sciences and the humanities' efforts in knowledge co-creation are not yet realised. Such hidden forms of citizen science, practised by volunteers, can be considered a form of *marginalised science* (Frickel et al. 2010) – due to the lack of academic or government activity in a specialised area of knowledge and research interests that are unfunded and ignored, even though citizens, community-based organisations, and social movements identify them as worthy of investigation. Furthermore, there is also a danger of participation being seen as an increased burden of responsibility placed on the 'good citizen' and attached notions of citizenship.

What Does Citizen Social Science Add to the Fields of Social Science and Citizen Science?

Citizen social science is still an emerging area, but it raises important questions about the methods of participation and data collection in the social sciences, as well as conceptualisations of the 'social' in citizen science in general. We hope that this chapter illustrates that these concepts are constantly being negotiated in citizen social science. The opportunities for participation and co-production appear to be more prevalent than ever, and the social sciences have certain responsibilities in that regard. Including vulnerable groups in research, making citizens' concerns visible, and co-designing and co-evaluating projects with affected individuals (Mayer et al. in press) are all aspects that should be taken into account.

Citizen social science not only generates new scientific knowledge and understanding but also highlights the impact and applicability of citizen-generated data for the social sciences, as well as for participants (Fig. 7.1). Citizen social science contributes to an opening up of social science methods and feeds into debates about the politics of methods, giving rise to questions around what counts as data, who can collect it, and how it can be used (Albert in press). Furthermore, citizen social science provides many opportunities to systematically handle and reflect the blurring of boundaries between research objects, subjects, and researchers directly engaged in the everyday realities of science and society. The notion of citizen social science also feeds into the consolidation of the public engagement agenda and the belief that active participation in research can improve research quality, make it more relevant to society, and have significant benefits for those who participate.

Citizen social science offers the potential for including more reflexive dimensions in the practice of citizen science, particularly in terms of building on the legacy of
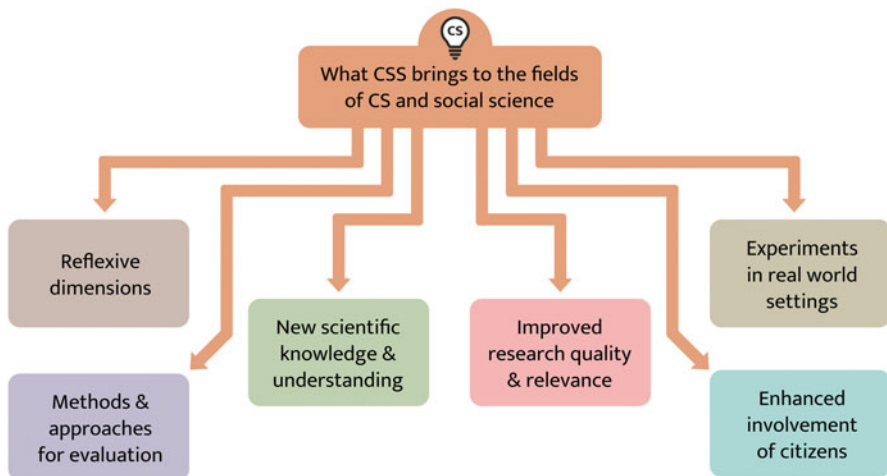

Fig. 7.1 How citizen social science contributes to citizen science and social sciences

participatory methods in the social sciences. In the context of evaluation, measuring learning and impact requires dedicated time, resources, and expertise in conducting social science research, which many citizen science projects lack. Furthermore, citizen social science addresses the societal distribution of expertise, from authoritative, institutionally accredited knowledge to individually expressed concerns (Nowotny 2000). It thus encompasses collaboration and partnership between different kinds of expertise, with a focus on emancipatory *citizen expertise* and *civic epistemologies* (Jasanoff 2002). Citizen social science also considers the expectations citizens have of the social sciences and their applicability in decision-making (Mayer et al. in press; Bonhoure et al. in press). Addressing ethical issues, the expected and actual benefits of research for participating social actors, diversity, as well as multiplying perspectives with new methods is far from straightforward. However, we are confident that new modes of inclusion, participation, and mobilisation will bring about improved and relevant insights and connections for action. The complexity of such research, however, requires learning, recognition from research policy, and funding. In the realms of performance-based funding and the 'publish or perish' knowledge markets, with their fetish for high-impact indicators, it will indeed be challenging to conduct citizen social science and realise its full potential.

What, therefore, are the benefits of naming citizen social science as such? Due to developments in the understanding of the importance and role of citizen participation in social research, and the way in which the term bridges different approaches, disciplines, and values, the adoption and understanding of citizen social science are increasing. Arguably, as this chapter has sought to demonstrate, the acknowledgment of different practices and approaches as citizen social science serves to consolidate and improve the ways in which citizens are involved in the undertaking of social research. This also serves the purpose of allowing the field to question and justify its own methods, and to contribute to, and hopefully improve the ways in which social research is undertaken.

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