

Citizen Humanities as a Fusion of Digital and Public Humanities?

Barbara Heinisch

Universität Wien, Österreich

Abstract Digital and public humanities have gained a foothold in academia, but very little is known about citizen humanities, which is referring to the engagement of the general public in scholarly research. Although the term is new, public participation in the humanities, either as the citizens' contribution of intellectual effort or knowledge to academic research, or as the contribution of resources and tools, looks back on a long tradition. The citizen humanities range from the creation of dictionaries, the transcription and annotation of historical records to the decoding of ancient Egyptian papyri. While the digital humanities provide the citizen humanities with data, tools and techniques, the public humanities offer the means of engaging diverse publics in research activities. After embedding the citizen humanities theoretically in the responsible research and innovation paradigm, this paper will illustrate how digitisation and public involvement laid the foundations for today's citizen humanities. With a focus on the fusion of digital and public humanities in citizen humanities, this paper will demonstrate the mutual influence on practices (of research). This influence is not only reflected in the approaches to research, analysis, communication, and dissemination but also in the citizen humanities' novel ways of knowledge co-production.

Keywords Responsible research and innovation. Third mission. Crowdsourcing. Public participation in research. Participatory research. Citizen science. Public engagement.

Summary 1 Introduction. – 1.1 Citizen Science. – 1.1.1 Citizen Humanities. – 1.1.2 Related approaches. – 1.1.3 Long tradition. – 1.2 Digital Humanities. – 1.3 Public Humanities. – 1.4 Digital Public Humanities. – 1.5 Third Mission. – 1.6 Responsible Research and Innovation. – 2 Analysis. – 2.1 Ethics. – 2.2 Gender Equality. – 2.3 Open Access. – 2.4 Science Education. – 2.5 Public Engagement. – 2.6 Governance. – 3 Case Study. – 4 Discussion. – 5 Conclusion.



Edizioni
Ca' Foscari

Peer review

Submitted	2020-07-17
Accepted	2020-10-27
Published	2020-12-22

Open access

© 2020 | Creative Commons Attribution 4.0 International Public License



Citation Heinisch, B. (2020). "Citizen Humanities as a Fusion of Digital and Public Humanities?". *magazén*, 1(2), 143-180.

1 Introduction¹

The humanities are subject to continuous change. As diverse as the broad spectrum of disciplines it encompasses, ranging from philosophy, history, archaeology to literature and ancient and modern language, are the topics under investigation and the methods and technologies applied. Under the umbrella of the humanities, different forms to study human culture have emerged, such as the digital humanities or the public humanities.

While the digital and public humanities have gained a foothold in academia, very little is known about citizen humanities, which is referring to the engagement of members of the public in scholarly research. Although the term is new, the concept of public participation in the humanities and in activities of cultural heritage institutions is old. Members of the public have contributed their resources, effort and knowledge to academic research or initiated research themselves also in the past. Participants in projects of the citizen humanities or of cultural heritage institutions contribute to the creation of dictionaries, the transcription and annotation of historical records or the decoding of ancient Egyptian papyri.

Both the digital humanities and the public humanities contributed to the development of the citizen humanities. Digitalisation and public involvement laid the foundations for today's citizen humanities, impacting processes, approaches, and practices of research in this wider field being considered a fusion of digital and public humanities. While the digital humanities provide the citizen humanities with data, tools, techniques and infrastructures that do not only facilitate humanistic inquiry but also communication and collaboration with different actors, the public humanities offer the means of communication and ways of engaging diverse publics in research activities.

The citizen humanities are not only influenced by but do also exert impact on the digital and public humanities. This mutual influence is characterised by the materials collected or analysed, the methods applied, the media of (knowledge and data) representation and the ways of collaboration (between researchers and citizens). The citizen humanities thus can lead to mutual exchange and knowledge co-production.

In order to identify the contributions of the digital and public humanities to the citizen humanities and to identify the aspects that shaped the fusion of digital and public humanities in citizen humanities, the third mission paradigm, the pillars of responsible research and innovation and a citizen linguistics case study are used as the basis of analysis. This work will generate fresh insight into the com-

¹ This research was partially supported by the Austrian Science Fund (FWF): TCS 57G. Thanks also go to the anonymous reviewers.

monalities of the public humanities and the digital humanities with the citizen humanities and their interrelations with responsible research and innovation. Nevertheless, this study is unable to encompass the entire sphere of public humanities, digital humanities and the long tradition of collaboration between academia and members of the public, ranging from different technologies and methods to different sub-disciplines, such as public history or public archaeology.

This paper first gives a brief overview of the emergence of the citizen humanities before aligning the core aspects of the public humanities (PH) and digital humanities (DH) with the citizen humanities.

The term ‘citizen humanities’ has come to be used to refer to “citizen ‘science’ in the humanities” (Heinisch et al. forthcoming). Since it is derived from the notion of ‘citizen science’, it is important to shed some light on citizen science before proceeding to elaborate on the citizen humanities.

1.1 Citizen Science

Several definitions of citizen science (CS) have evolved. According to the *White Paper on Citizen Science for Europe*, citizen science is basically understood to mean the “general public engagement in scientific research activities when citizens actively contribute to science either with their intellectual effort or surrounding knowledge or with their tools and resources” (Serrano Sanz et al. 2014, 8). Interestingly, “public engagement” is mentioned in the *White Paper’s* definition, which is also one of the pillars of responsible research and innovation, which will be discussed later.

In other words, CS can also be described as science done by people (Silvertown 2009, 470), i.e. non-professional academics engage in scientific investigations and ask questions, collect or analyse data or interpret results (Miller-Rushing et al. 2020, 17). This means that being a volunteer in a medical trial or responding to a social science survey do not qualify as CS (Haklay 2013, 2).

CS ranges from “large-scale data collection” to “engaging public perspectives and knowledges in science discourse and policy making” (Shirk et al. 2012, 26). Thus, the understanding of CS is rather broad, ranging from crowdsourcing to participatory action research.

While the term ‘citizen science’ is rather new, the underlying concept is old. Members of the public without professional training in the field of research have been contributing to science for centuries. Either members of the public carried out academic investigations independently or they collaborated with academic experts (Reiheld, Gay 2019). For centuries, citizens have made observations and records, for example of flora and fauna, phenology, weather or astronomy (Miller-Rushing, Primack, Bonney 2012, 285).

The emergence of CS was shaped by two strands of CS: Democratisation of science (Irwin 1995) and public participation in scientific research (Bonney et al. 2009). The first strand addresses the relationships between citizens and science and the responsibility of science towards society. Thus, it has a clear relation to responsible research and innovation and service to society based on two assumptions: “a science which assists the needs and concerns of citizens” and “a form of science developed and enacted by citizens themselves” (Irwin 1995, xi). The second strand subsumes different models of public participation in scientific research under three categories according to the degree of public involvement and the control participants can exercise in different steps of the research process (Bonney et al. 2009, 11).

CS has recently been fuelled by technological developments, entailing new means of communication, collaboration and data. Scholars ask the public to support them in their research, beyond being the mere subject of investigation.

Different reasons for the current popularity of CS have been proposed. First, democratised knowledge production may not only lead to societal transformation but also to academic breakthroughs (Bela et al. 2016, 990). Another explanation are social movements, such as the environmental justice movement or the women’s health movement, that call for social change and intervene in science, technology or medicine to make them more participatory and inclusive. For this purpose, they use and contest scientific expertise and demonstrate the value of local and indigenous knowledges. This way, academic research is subjected to increased public scrutiny, opened up to participation and different views of knowledge, thus, paving the way for the acceptance of citizen science. Simultaneously, science is undergoing neoliberal transformations regarding funding and organisation that lead to a decline in public funding and, thus, to an increased interest in using citizen science to conduct research with the help of volunteers. Other factors are a society oriented towards risk management that requires continuous monitoring of the environment, and the scientisation of politics (Kimura, Kinchy 2016, 335-7).

1.1.1 Citizen Humanities

The European Citizen Science Association (ECSA) sees the citizen humanities as inherent part of citizen science. However, the fact that “science” primarily comprises “natural sciences” and that citizen science has a strong focus on studies of the environment and biodiversity (Tweddle et al. 2012, 1) resulted in new strands entitled ‘citizen social science’ and ‘citizen humanities’. The major difference between these three strands is the object of investigation. While citizen science encompasses natural science disciplines, such as biolo-

gy, chemistry and physics, citizen social science studies societies and the citizen humanities cover literature, language, philosophy or history (Heinisch et al. forthcoming). Additionally, research approaches and schools of thought may differ significantly.

In the humanities, public engagement can take various forms, including the transcription of handwriting, tagging of text or images, entry of structured data, participation in discussions, commenting or doing oral history and recording personal memories and experiences (Hedges, Dunn 2018, 1) as well as correcting content, cataloguing, contextualising, mapping, georeferencing or translating content (Dunn, Hedges 2012, 21).

1.1.2 Related approaches

As diverse as the CS landscape are the designations used for the different types of participatory research practices or engagement of non-academics in scholarly research. Related terms that are sometimes used interchangeably are community research, community science, crowdsourced science, civic science, amateur research, public participation in science, (academic) crowdsourcing, (community-based) participatory research, participatory science, participatory action research etc. (Pettibone, Vohland, Ziegler 2017; Kullenberg, Kasperowski 2016, 2). Since they originate from different schools of thought and, thus, emphasise different aspects, and in some cases even different degrees of public engagement in research, they cannot be considered synonyms.

For example, participatory research, which is often associated with the social sciences, puts the participating humans, including their perspectives, learning processes and their empowerment at the centre. It is not a purely academic endeavour but always a joint project with non-academic, societal actors who are considered co-researchers. The characteristics of participatory research are to conduct research on and influence social reality. Participation refers to both participation in research and participation in society with paying particular attention to the actors' empowerment and values that guide the research endeavour (Unger 2014, 1-2).

Another differentiation can be made between community-initiated projects (bottom-up CS activities) and researcher-initiated projects (top-down activities, where a researcher has a clear hypothesis or research assumption and already defined the research process who needs participants to contribute to smaller tasks and activities in the research project, e.g. collecting or analysing large amounts of data).

The latter form of the citizen humanities is also referred to as 'academic crowdsourcing' in the humanities (Hedges, Dunn 2018). "Crowdsourcing is the process of leveraging public participation in

or contributions to projects and activities” (1). Usually, an organisation or researcher calls for assistance from volunteers who undertake small portions of a task to solve a problem in humanities research. Although crowdsourcing sometimes carries a negative connotation, in the humanities and cultural heritage institutions, it is rather considered a contribution towards a shared and significant goal of community and intellectual value (Terras 2016, 427; Tanner 2015).

Large-scale crowdsourcing projects in the culture and heritage sector include digitisation projects, such as the correction of optical character recognition errors in digitised material, the transcription of historical records or playing games to improve the metadata of collections (Terras 2016, 424). Since the (digital) humanities are intertwined with culture and (cultural) heritage, it is sometimes not easy to draw boundaries between academic crowdsourcing in the humanities and crowdsourcing in and for cultural heritage institutions. Even if crowdsourcing projects in cultural heritage institutions have a major focus on sorting, labelling or formatting historical data, these data can provide the raw materials for academic research aimed at inquiring human culture (426).

Thus, crowdsourcing adopts a top-down approach, in which researchers specify what they need from the crowd and the crowd contributes small pieces to a project. The citizen humanities have a wider scope than crowdsourcing. Although the citizen humanities also include crowdsourcing, such as tagging, transcribing or annotating research data, they cover a broader range of activities and would also encompass forms of participatory (action) research or co-creation, such as initiatives in which the community has the lead or shares stronger responsibility with academics or co-develops research questions, research designs or project management.

1.1.3 Long tradition

Participatory (research) practices and public engagement as well as collaborative approaches in the humanities look back on a long tradition. Related movements that (also) rely, more or less, on the collaboration between research institutions and the public are, among others, democratic education, settlement houses, service learning or community development. While service learning states that higher education institutions are responsible for helping their students develop skills that are required for being an active citizen, including finding solutions to (public) problems that are solved through collective labours (Boyte, Farr 1997, 7), community development “involves actions based on values and principles” (Kenny, MacGrath 2018, xx) that address issues impacting humans and their conditions while starting with the communities’ perspectives, thereby aiming at the

‘what should be’” (xxi). The ‘new scholarship’ is defined as a “scholarship of *action*, a scholarship of *practice* that takes place both *in* and *with* the community” (Fitzgerald, Primavera 2013, 131; emphasis in the original) which challenges the epistemologies of universities and the scope of legitimate knowledge. It offers a more socially utilitarian and more egalitarian model on the definition, acquisition, communication, use, and evaluation of knowledge, in which academia is only one among many proprietors and distributors of knowledge. The new scholarship includes a collaboration between academia and the community who share their knowledge and resources to tackle pressing societal problems and resulting in rich and deep relationships (131-2).

In comparison to today’s citizen humanities, these participatory practices have a stronger focus on (co-)production of knowledge for the purpose of solving public or societal problems, including inequalities. To succeed, these approaches require participation, engagement, collaboration and partnerships that rely on values, such as trust, inclusion and transparency. This interest in participatory approaches to research creation and cross-disciplinary alliances is symptomatic for the public turn at universities. Various forms of participatory practices (that can also be found under the heading of ‘going public’) are committed to collaboration at all project stages to challenge power structures and increase a project’s impact. Any collaborative endeavour requires time and resources to build relationships and trust, clarify expectations and include reflection. Moreover, researchers are required to be open, i.e. open to co-create, to new methods, new tools, new ideas, media and relationships, especially if cultural and disciplinary boundaries are crossed. Moreover, ideas get better if they are discussed by different people. Researchers have to work outside their comfort zones and engage in creative ways and try new approaches. Nevertheless, this in contrast to the boundaries of academic disciplines, with a closed set of methods and a level of authority. Cross-disciplinary methodologies include photo-voice, community mapping, digital storytelling or participatory archiving. Moreover, this public turn resulted in a rethinking of research creation, including how, why, with whom and for whom research is done. Funding bodies accelerated this development by providing grants for creating new spaces of (sustained) conversation and co-creation between university researchers, (artists) and the wider community. Not only artists and activists, but also feminists and indigenous researchers “contributed to a deeper reflexivity about the situated nature of research, demanding transparency and raising critical questions about who owns and benefits from any research endeavour” (Miller, Little, High 2017, 4-6). The notion of ‘impact’ as used in today’s research jargon may be less important than the relationships fostered (The CRESC Encounters Collaborative 2013, 2). This shows that today’s citizen humanities are preceded by different movements

and approaches of interaction between universities and the public that may also influence the way the citizen humanities are conducted.

1.2 Digital Humanities

Several definitions of digital humanities (DH) have been proposed. DH “involves the application of computers and various digital tools and resources to the study of Humanities” (Siemens 2010, 39). The DH are the overlap between traditional humanities and computational methods and digital tools (Burdick et al. 2012, 3). They are characterised by scholarly methods in the form of computer-based methods that support the creation, analysis and dissemination of research and teaching in the humanities (Hughes, Constantopoulos, Dallas 2016, 152). Thus, the DH designate “humanities research in the digital era” and “digital scholarship in the humanities” (Vanhoutte 2013, 144) characterised by three aspects: data, tools and collaboration. Technological advances lead to new digital research methods and tools for data analysis (including natural language processing, artificial intelligence and machine learning), the new availability of (large amounts) of data sources due to digitised collections, born-digital content or open data; as well as collaborations that encompass interdisciplinary, intersectoral and international collaboration that inject new ideas and perspectives into projects (Hedges et al. 2019, 7-8). The promises of the DH lie in the sharing of data, results and tools to distribute knowledge in a fair and broader manner and in new ways of representing, sharing and discussing knowledge (Sample 2013, 255-7).

The “Digital Humanities Foresight” study identified five major topics that should be the foundation for a DH research agenda. In addition to research infrastructures, the establishment of the digital commons, artificial intelligence and evaluation and impact metrics and methods, this study also put an emphasis on public engagement (Hedges et al. 2019, 11), which is at the core of the citizen humanities.

1.3 Public Humanities

In general, the academic humanities are targeted at academic professional audiences, while the public humanities (PH) are “oriented to nonspecialist audiences and nonacademic careers” (Ellison 2013, 289). The humanities are usually conducted within academic and institutional frames and public refers to something outside of these institutions (Carton 2009, 11-12). While the term PH is often used for non-academic humanities careers (Ellison 2013, 291), other authors regard the PH as “acts of reflexive, collaborative meaning-making informed by a collective good” (Cox, Tilton 2019, 129-30). “Public

humanities is about finding both practical and conceptual locations, spaces, and translations between the various kinds of humanities work that people are doing privately, publicly, in groups, in families, in religious communities – as well as in universities” (Carton 2009, 12). In either case, partnerships are at the heart of the PH. PH encompass collaborative research projects with communities, public or online lectures, conferences planned with regional partners, (social) media coverage or exhibitions (Ellison 2013, 293; Wickman, Browne 2014).

Thus, the PH are strongly related to outreach science communication and public engagement. Usually, the PH engage members of the public to participate in conversations and reflect about topics and ideas. Nevertheless, public history and public archaeology, for example, usually have a stronger focus on the work done by the public, i.e. public history “as a mixture of history for the public, about the public, and by the public” (Cole 1994, 12).

1.4 Digital Public Humanities

As the terms already suggest, the DH are characterised by the digital, while the PH are defined by the public, sometimes also understood as the responsibility of serving communities (Brennan 2016, 384). “Public digital humanities, then, should be identified by the ways that it engages with communities outside of the academy as a means for doing digital humanities scholarship” (384). However, only being present on the web does not qualify as digital public humanities (DPH).

The DPH invite non-academic audiences to contribute to scholarly research. Since the audiences are contributors and users alike, the digital technologies should be subject to user-centred design, including functionalities, languages, navigation etc. in order to make them feel welcome.

What the DPH share with the citizen humanities are that the participants or the public are involved in the project as early as possible and not only at the end of the project as part of outreach activities to disseminate findings. Another commonality between the DPH and the citizen humanities are the relevance for the community. Although the DPH may address shared responsibility, this may be less prominent in the citizen humanities, for example in academic crowd-sourcing in the humanities. Here, often scholars have the lead, make the decisions and assume responsibility for the project.

While Brennan (2016) rather describes the joint design of digital technologies for joint research agendas as core aspects of the DPH, other authors attribute a transformative character to the DPH shaped by co-creation, shared authority and collaboration that should ensure

unpredictable results, a shared mission and collaborative meaning-making (Cox, Tilton 2019, 130-1). The latter comes close to the understanding of the citizen humanities presented in this paper.

However, the roots are different since the DPH are strongly related to public history, which was shaped by volunteers preserving community objects or stories. Moreover, the PH sometimes have a service character (Brennan 2016, 385) that is rather not at the core of the citizen humanities.

Another concept not addressed in this paper is the “engaged humanities” that raise related issues, such as community engagement versus the political economy of higher education, institutional barriers to engagement and public scholarship, putting the discipline or the community first, educating students and practitioners, the necessity for asset mapping of community and participants, turning projects into partnerships, reexamining course goals, learning outcomes and assessment, institutionalising engaged courses, balancing workloads for faculty, students and community partners as well as diversity and engagement (Jay 2012, 57-60).

1.5 Third Mission

CS is strongly linked to the third mission of universities. In addition to research and teaching, universities are required to exert impact (on society) beyond academia (Henke, Pasternack, Schmid 2018, 57). These third mission (or third stream) activities refer to “the generation, use, application and exploitation of knowledge and other university capabilities outside academic environments” (Molas-Gallart et al. 2002, iii-iv). They cover various types of interactions between a university and society, between academia and non-academic practice. The main target audience of these (communication) activities are non-academic communities, whereas engagement plays a central role (Molas-Gallart et al. 2002, 5). The term third mission is generally understood to cover three areas: continuing education, research and knowledge transfer, and societal commitment. Examples of societal commitment include civic engagement (creating a democratic citizenship), community outreach (giving knowledge to society), community service (integration of university members in social projects with mutual learning successes), service learning (societal commitment as part of the curriculum and preparation of students for societal projects), social entrepreneurship (changing societal conditions through entrepreneurial behaviour) and widening participation (broadening the target group of higher education). This shows that the third mission encompasses more than knowledge and technology transfer. It considers universities as part of society that (voluntarily) contribute to developments in society. Therefore, third mission activities are

characterised by interactions with actors outside academia and by contributing to societal development interests beyond research and teaching (Henke, Pasternack, Schmid 2018, 45-80).

Another concept often used in connection with third mission and CS is responsible research and innovation.

1.6 Responsible Research and Innovation

Responsible Research and Innovation (RRI) is defined as “the on-going process of aligning research and innovation to the values, needs and expectations of society” (Rome Declaration on Responsible Research and Innovation in Europe 2014, 1). Therefore, multiple stakeholders, including researchers, policy makers, business, NGOs and civil society assume responsibility and must be part of the research and innovation process. Stakeholders should be engaged from the very beginning to improve creativity and enhance academic quality throughout the process. Furthermore, RRI is aimed at achieving acceptable, desirable and sustainable innovation. Therefore, excellence is more than innovative discoveries and covers responsibility, openness and the co-production of knowledge (Rome Declaration on Responsible Research and Innovation in Europe 2014, 1) to align research outcomes and processes with the values, expectations and needs of society. One major driver of RRI is the European Commission’s Horizon 2020 framework programme in which projects should tackle the grand challenges, such as climate change, energy or health to foster intelligent, sustainable and overall growth in Europe (enRRICH 2016). These grand societal challenges need to be tackled by engaging all societal actors in jointly finding solutions. The major characteristics of grand societal challenges are their complexity, their mutual dependency and intertwined social, economic and ecological issues on local and global levels. Their multidimensional, transdisciplinary and systematic nature requires new approaches and perspectives to allow for complex transformation processes (Lindner et al. 2016, 41). This also means that societal needs are addressed by participatory approaches that engage all actors throughout the entire research and innovation process (EU 2012). This should ensure that new perspectives and otherwise unnoticed solutions (and also risks) come to the fore when addressing societal challenges so that sustainable and inclusive solutions build trust between all institutions and citizens involved in research and innovation (Rome Declaration on Responsible Research and Innovation in Europe 2014, 1).

RRI considers academia, economy and society as a whole and has several dimensions and aims. Moreover, RRI does not only focus on the final product or outcome of the research and innovation process but also on the process itself (Schomberg 2012, 50).

RRI helps researchers challenge own underlying assumptions on an individual and institutional level (reflexivity), involve the population in academia, research and innovation processes (participation, inclusion, stakeholder engagement), consider the perspectives and needs of society in research and innovation processes and adapt the development accordingly (responsivity), anticipate developments and achieve socially desirable aims (anticipation), promote equal opportunities, gender equality and diversity, consider ethics in research and innovation and strengthen the researchers' integrity, increase access to research (open access) and improve science education (RRI-Plattform Österreich 2020).

Therefore, the outcomes of RRI are threefold: learning outcomes that result in responsible and empowered actors; sustainable, socially desirable and ethically acceptable outcomes of research and innovation and solutions to societal challenges (RRI Tools 2020).

The six pillars of RRI are ethics, gender equality, open access and data, science education, public engagement and governance, thus covering various areas of the relationship between research and innovation, on the one hand, and society, on the other (RRI Tools 2020).

Having defined what is meant by responsible research and innovation and having discussed the relationship between RRI and CS, the following section will explain the RRI pillars before proceeding to examine the contributions of the PH and the DH to the citizen humanities according to the RRI pillars.

2 Analysis

The objective of the analysis is to identify the commonalities of the DH and PH with the citizen humanities and testing the assumption that the citizen humanities are a fusion of the DH and PH. To compare and find similarities between these three strands of the humanities, the six RRI pillars were used as a common basis.

“RRI entails engaging all actors (from individual researchers and innovators to institutions and governments) through inclusive, participatory methodologies in all stages of R&I processes and in all levels of R&I governance (from agenda setting, to design, implementation, and evaluation)” (RRI Tools 2020). Therefore, the concept of RRI gives researchers the opportunity to seize the population's creativity and knowledge either through open innovation or CS (RRI-Plattform Österreich 2020, 3).

This shows that CS and RRI are intertwined. The opinion “Toward an International Definition of Citizen Science” specified inclusion and exclusion criteria for projects and initiatives that qualify as CS. The major categories addressed in this opinion are scientific standards (based on scientific questions or hypothesis testing, the methods and

the rationale for generating new knowledge or new methods), collaboration (e.g. active involvement of participants in the research process or the added value for all persons in the project), open science, communication (transparency, dialogue among interest groups via various communication channels, data quality), ethics (adherence to ethical standards, data policy, governance, informed consent and inclusiveness) and finally, data management (including a data management plan) (Heigl et al. 2019, 8091).

ECSA's ten principles of CS, for example, also address RRI aspects, such as ethics, governance, public engagement and open access and data etc. (European Citizen Science Association 2015, 1). This is also found in the "Quality Criteria for Citizen Science Projects on Österreich forscht", the Austrian citizen science platform. These quality criteria cover RRI pillars such as ethics, governance (covered by the criteria collaboration and communication) or open science (Heigl et al. 2018).

Additionally, since there are different degrees of public participation in science (Haklay 2013; Bonney et al. 2009), the extent to which the RRI pillars of governance and public engagement are covered in CS projects also depends on the degree of public participation. Co-created approaches (Bonney et al. 2009) or extreme CS (Haklay 2013) consider governance and public engagement to a greater extent. Governance in co-created CS projects means shared responsibility and provision of related instruments; and public engagement means working with societal actors through the entire research process (and not only during data collection or analysis) to align research processes with the needs, values and expectations of society. The RRI pillars of governance and public engagement require that various stakeholders must be involved in the research process. However, not all CS projects are able to recruit multiple stakeholders.

When evaluating CS projects, RRI aspects and third mission also play a role. Evaluation frameworks may consider "three dimensions of participatory science: (i) scientific impact, (ii) learning and empowerment of participants and (iii) impact for wider society" (Kieslinger et al. 2018, 81). CS projects may also be evaluated based on their scientific output, citizen participation and involvement in research processes, education (scientific literacy or disciplinary knowledge), nourishing a new consciousness of socially relevant topics, transparency regarding roles, functions and use of the outcomes as well as data protection and privacy and long-term consequences and sustainability (Pettibone et al. 2016, 21).

In the following, the six RRI pillars are used to analyse the commonalities between the digital, public and citizen humanities and address the fusion of the DH and PH in the citizen humanities. Since an in-depth analysis is beyond the scope of this paper, two aspects are studied in more detail: ethics as a core discipline of the humanities

and public engagement, which is at the centre of the citizen humanities. Additionally, a citizen linguistics project serves to illustrate the implementation of RRI in the citizen humanities.

2.1 Ethics

The RRI pillar of ethics is based on the shared values in European society. When responding to societal challenges, not only legal aspects but also ethical standards must be observed. This also enhances the acceptability and relevance of research and innovation in society. Although ethics is often perceived as impeding research and innovation, the European Union sees ethics that is considered throughout the research and innovation process as fundamental aspect of research excellence in all domains, including the humanities (EU 2012), which are a branch of knowledge significantly contributing to the discourse on (research) ethics.

Ethics covers research integrity and good research practice, research ethics for the protection of objects of research and societal relevance and ethical acceptability of research and innovation outcomes (European Commission 2015, 6-7).

Research integrity and good research practice are at the heart of any academic research, including the DH and PH. These include the compliance with legal regulations, such as intellectual property rights and data protection regulations. These also apply to the citizen humanities, but additionally they explicitly focus on the ethics concerning the participation of certain groups of people as participants and their role and right to information. However, this is not related to the aspect of protection of objects of research but to societal relevance and ethical acceptability of research and innovation since members of the public are not the objects of research but perform scholarly tasks themselves.

Related to ethics in CS are also trust and the relationships between different actors in research, such as individuals and organisations. While crowdsourcing in the commercial sector is sometimes described as exploitation (of free and volunteer labour), in the cultural heritage sector and the humanities, crowdsourcing is justified with a long tradition of altruistic participation and volunteering in academic projects or cultural heritage institutions, such as libraries, museums, galleries or archives. Moreover, crowdsourcing means working for the social good in a variety of interesting fields. This includes, for example, the correction of OCR (optical character recognition) text of newspaper articles or the transcription of (handwritten) observation cards in museums. These corrections and transcriptions enabled (digital) access to sources and further research (Terras 2016, 427-8).

As mentioned before, CS encompasses a wide range of forms and projects. Especially from the viewpoint of democratisation of science (Irwin 1995), CS is envisaged as public engagement characterised by mutual dialogue on eye level and giving all persons an equal voice, thus decreasing the divide between science and the public (Riesch, Potter 2014, 109). To overcome this divide, transparency, trust and different forms of benefits are needed. However, traditional forms of involving members of the public may reinforce hierarchies that hamper humanists in reaching the impact they actually seek. Moreover, 'going public' and allowing for transparency alone do not make citizen humanities projects significant (Wickman 2016, 9). It may be hard to work in a non-hierarchical and reciprocal way and to establish trust, for example, in the case of commissioned research. Therefore, "the symbolic and material act of listening to participants' viewpoints" (The CRESC Encounters Collaborative 2013, 5) is crucial to establish an environment of trust.

The *ECSA's Characteristics of Citizen Science* mention ethics and explicitly require transparency throughout research, consensual involvement of the participants, research integrity and quality (ECSA 2020, 3). Transparency includes information about the topic, rationale and methods of the research project, the team and organisation behind the research, the research process, the use of (personal) data, the participants' contributions and the outcomes. Transparency also necessitates a permanent feedback loop with the participants and progress reports.

The benefits for participants can take many forms, including status, personal development, such as receiving training, gaining experience or gratification (Dunn, Hedges 2012, 16) as well as personal rewards, such as contributing to a good cause. Moreover, gamification, competition and other rewards can increase the motivation of participants. These encompass being part of a community or giving back to a community, achieving group goals or discovering new fields as well as competition or rewards in the form of rankings or badges for high achievers (Terras 2016, 426-7). Contributors are usually drawn to a project based on their passion for the subject. Additionally, they are also part of a community, which can develop dynamically and also develop mechanisms for mutual support and self-correction (Dunn, Hedges 2012, 2).

A major concern is the sustainability of the participants' contributions since projects may be short-term and data can be easily lost if there are no institutional resources for long-term storage and maintenance. Moreover, short-term projects also have the risk of petering out and frustrating participants if they are no longer continued although the community would be willing to further contribute.

The quality of the participants' contributions and the question if people without academic training can produce reliable academic

data are major concerns. To gather high-quality data, clear instructions and training are necessary. Scholars may also worry that participants may distort the dataset. To enhance the quality of the data, CS projects usually have mechanisms, such as validation of content by several other users or moderation or verification by experts that ensure that the quality meets a specified benchmark (Terras 2016, 427-8). However, even if there are well-designed software, useful manuals, data entry rules and various trained user groups, the material on which the participants work may be problematic, unrecognisable and include additional notations that question the previous interpretation of data (The CRESC Encounters Collaborative 2013, 9).

The quality of the results, e.g. of transcriptions or annotations, plays an important role to ensure that the research outcomes can be used for further humanistic inquiries in the future. Here, sustainability comes into play in order to allow for the re-use of the project results for different purposes in the long term, including research and innovation. This includes the format in which the data are stored, interoperability and standards to ensure the re-use, re-purposing or integration into other projects (Terras 2016, 431-2).

Here, the DH offer various techniques to ensure both the quality and the sustainability of research data. These include the Text Encoding Initiative (TEI) guidelines that provide a framework for modelling, analysing and presenting textual data. However, the compliance with TEI varies between (citizen) humanities projects. Nevertheless, projects that make use of TEI for transcriptions have shown that users can follow text encoding guidelines. If the participants are trained according to (scholarly and pedagogical) standards, they can also broaden their competences (Terras 2016, 432). Terras emphasises that the role of the DH in the area of crowdsourcing is twofold (436). On the one hand, they can increase the understanding of and seize the opportunities offered by the method of crowdsourcing in the humanities. These opportunities may include outreach and public engagement and demonstrating the value of the humanities. On the other hand, they can give advice to crowdsourcing projects in the humanities or the areas of culture and heritage to create datasets that meet academic standards, are useful and are re-usable in academic research to promote the understanding of culture and history.

Despite the promises of new technologies and new data that allow researchers to pose new research questions, the (digital) humanities also have the responsibility to take a critical stance towards the application of digital methods and the types of data made available (Hedgès et al. 2019, 13). The humanities should not only apply trendy technologies but put these technologies and related developments under scrutiny since ethics and values are at the heart of the humanities.

The humanities should critically reflect on and bring ethical considerations to the use of artificial intelligence as part of and as means

for research and innovation (Hedges et al. 2019, 13-14). This also applies to the DH, where scholars should put the impact of the digital on scholarly practice under scrutiny, in addition to using digital techniques to address research questions in the humanities. Moreover, the humanities are asked to reveal potential fields of tension that may arise in the citizen humanities.

The citizen humanities themselves are a field of tension since work that has been previously accomplished by professional scholars is now (partly) done by persons with not professional training in the field of research. This raises issues of data quality, professionalism, free labour and reliability. Moreover, it raises issues of trust between researchers and participants and trust in the results. Moreover, funding for CS could have also been used to fund professional researchers instead (Terras 2016, 431). The citizen humanities also challenge existing divides, academic power and thus, the understanding of who is entitled to produce knowledge and conduct research, i.e. scholars, and who should rather receive knowledge, i.e. the 'public'. The citizen humanities mean a shift from seeing members of the public only as an audience to considering them as active participants in framing and conducting research (Belknap 2015). At the interface between science, society and policy, CS also has a social mandate (Serrano Sanz et al. 2014, 18).

2.2 Gender Equality

In Horizon 2020, three aims address gender equality. First, research teams should promote gender balance to increase the number of women participating. Second, gender balance has to be ensured in decision-making. These two aims target the removal of barriers and combating discrimination of women in academic careers and decision-making processes. This should lead to (long-term) institutional change, such as structures that affect women's career progression in institutions, promotion of gender equality and reduction of (the unconscious) gender bias as well as adjustments to workplace arrangements. Third, the gender dimension has to be integrated in research and innovation content in order to enhance the academic quality and societal relevance of the outcomes since the behaviours, needs and attitudes of both genders are considered (European Commission 2015, 6; 2020c).

Gender equality is addressed by the citizen, public and digital humanities to a different extent and on different levels. In general, several funding schemes or organisational policies require a balanced gender ratio in research projects and may also require the inclusion of the gender dimension in research. Citizen humanities project have to address an additional level. In addition to the gender-balanced re-

search team as well as decision-making bodies, and the inclusion of the gender dimension in research, they may also aim at achieving a gender balance among the group of participants. However, since the participants are usually self-selecting, this can be hard to reach.

Nevertheless, inclusion also plays a significant role in CS, which is exemplified by various publications and initiatives that aim at addressing groups that have not participated in CS projects so far, including ECSA's Equity, Inclusion and Empowerment working group.

2.3 Open Access

Responsible research and innovation require transparent and accessible research and innovation. Open access “means giving free online access to the results of publicly-funded research (publications and data)” (EU 2012). The availability of research findings free of charge fosters knowledge circulation and the uptake of academic results by different societal actors, who, in turn, can boost innovation. Moreover, it can improve and make research more efficient. However, it also raises issues of intellectual property rights and the necessary infrastructure as well as collaboration among and dialogue with all societal actors in the research and innovation process (European Commission 2020b).

Open access covers the accessibility and ownership of scholarly information. Open access is key in the citizen humanities since the results of the research to which citizens contributed should be published in a way so that participants can freely access all project results that have been achieved with their help.

Despite the benefits open access entails, scholars also face different obstacles in this area. Especially intellectual property rights (also with regard to citizen humanities) and data protection regulations, such as the General Data Protection Regulation (GDPR) are identified obstacles to sharing data and findings (in the DH). Other barriers include funding and the digital divide (Hedges et al. 2019, 8). In some cases, researchers have to pay to publish their publications as open access publications.

Open access has the promise of being able to re-use data. Therefore, the FAIR (findable, accessible, interoperable and re-usable data) principles have to be applied to research data. Nevertheless, data sets may be dispersed, may have no uniform metadata or annotations, or do not comply with standards which makes them either hard to find or to re-use, including combining data from various sources.

A major contribution by the DH to both the citizen humanities and the PH are research infrastructures that provide services and resources to research communities assisting them in conducting research and making innovations. Research infrastructures are also crucial with re-

gard to collaboration and sustainability in the humanities and the cultural heritage sector. Moreover, they should help to overcome the digital divide by ensuring that also persons less versed in the use of digital technology can access and analyse material. Furthermore, research infrastructures should shed light on previously unnoticed data or topics. Additionally, findable and usable research infrastructures that follow good practice and standards are also crucial for public engagement. Related to research infrastructures are the digital commons that aim at making collections available and re-usable online free of charge, integrating various data sets, creating provenance and context for resources available online. Catalogues and databases should be interoperable, data consistent and data cleaning should be an inherent part of managing the digital commons (Hedges et al. 2019, 12-13).

2.4 Science Education

Science education has two major goals. The first goal is to enhance education so that citizens, including researchers and societal actors are equipped with the knowledge and skills to become RRI actors and participate in debates on and assume responsibility in the area of research and innovation. The second goal is to increase the interest in science among younger generations to either pursue a research career or to become a scientific citizen and contribute in a science-literate society (European Commission 2015, 6). This capacity building is necessary to foster change (EU 2012), connect science and society in order to pave the way for further innovation. This requires the interaction between the education and higher education system, funding of research and innovation, NGOs, civil society organisations, policy-makers, industry, professors, teachers, pupils and students as well as science centres or science museums to develop scientific citizenship and attract people to research and to develop RRI in university curricula (European Commission 2020e).

Science education is an inherent part of citizen humanities and, partly, also of the public humanities since the participants need some degree of factual or procedural knowledge when contributing to a project. In many citizen humanities projects or projects by cultural heritage institutions participants undergo training to be able to contribute to a project. This may be an introduction to tagging according to TEI principles, information about the history of a collection or metadata, transcription rules etc. Throughout a project, participants can further develop competences in certain fields (Dobрева, Azzopardi 2014, 451), including disciplinary, procedural or technological competences.

The citizen humanities can alter the relationship between members of the public, universities and cultural heritage institutions. Through

the citizen humanities, participants get an insight into academic research and the related processes. This does not only enhance academic literacy in general but also domain knowledge and transferable skills, such as critical and connected thinking, research and technological skills. The role of the humanities in imparting skills of critical thinking should not be underestimated in the digital age, which is shaped by information overload, fake news and post-factual tendencies. However, in the citizen humanities, learning is not unidirectional. Scholars can also learn from the participants which can improve their research and personal development (Heinisch et al. forthcoming) by being challenged in their traditional way of conducting research, being required to think out-of-the-box (Bonfond, Riboli-Sasco, Sescousse 2015, 518). The DH, and online platforms in particular, allow a two-way dialogue, knowledge co-creation and community-building (Terras 2016, 421).

2.5 Public Engagement

Public engagement is at the interface between science, policy and society. It refers to the engagement and participation of all societal actors, including researchers, citizens, NGOs, civil society organisations, policy-makers and industry in research and innovation processes. This joint development of solutions should also help to tackle societal challenges based on representative concerns and common principles that are aligned to the needs, expectations and values of society (EU 2012). Therefore, multi-actor dialogues characterised by inclusion and participation are necessary. This means to embed public engagement in the research design and iteratively throughout the research process that ideally lead to co-created policy agendas and research and innovation outcomes. These outcomes should tackle societal challenges and be widely accepted. Here, CS is explicitly mentioned as a participatory research and innovation action. The benefits of public engagement according to the European Union are a scientifically literate society that can support democratic processes as well as research and innovation, injecting creativity and other perspectives in research and enhancing those outcomes of research and innovation that are relevant and desirable in society and that can tackle societal challenges. Furthermore, citizens should be engaged to contribute to policy or participatory foresight. Moreover, research and innovation policy can offer both knowledge and evidence that support thematic policies, for example on environment or health at different levels (European Commission 2020d). Suggested indicators of public engagement include policies, frameworks and regulations, events, initiatives and attention creation as well as competence building. Here, CS plays an important role as well (European Commission 2015, 6).

In its broadest sense, public engagement may refer to any type of interaction between science and society. Therefore, public engagement is not only at the core of the PH but also of the citizen humanities since they are nothing without their participants. The ‘members of the public’ or the ‘citizens’ in the citizen humanities may encompass different partners and groups, ranging from local communities, special interest communities, cultural heritage professionals, associations, elderly groups, trade unions, third-sector organisations, environmental teams, urban and rural councils, indigenous communities, engineers, government bodies, environmental impact consultants, public bodies, agencies, charities to school and university students, genealogists, NGOs and NPOs.

This includes approaches that are related to CS, but often not defined as such, for example, participatory health research, transdisciplinary research or public history. Moreover, public engagement as science-society interaction also encompasses science communication or science shops as well as open science (Pettibone, Vohland, Ziegler 2017, 12).

CS, also sometimes referred to as ‘amateur science’, has a strong focus on the inclusion of non-academic actors in academic research. In general, ‘citizen’ comprises anybody. However, people who are engaged in academic research as part of their profession or of professional training, for example, doctoral candidates, would rather not be regarded as citizen scientists (Pettibone, Vohland, Ziegler 2017, 12).

From the perspective of the public or engaged humanities, the crux in public engagement is to work at eye level and to foster partnerships that generate knowledge in a collaborative and reciprocal manner so that all participants, including researchers, students or communities are served (Jay 2012, 55).

Barriers to public engagement in public scholarship are that these types of research or collaboration are not recognised as activities helping to progress in the academic career. Furthermore, public engagement may also be just seen as outreach or service to the public (Jay 2012, 57). Moreover, collaborative research may not follow the model research process in the humanities, consisting of a linear research sequence, comprising the steps of finding a research question and a suitable methodology to answer this question, (collecting and) analysing data with the selected method, analysing the findings and disseminating them. In some cases, such as allotment projects, it may be hard to tell when the actual research starts and when it ends. Moreover, in collaborative projects, the research design, the methods and the outputs may be questioned, changed or adapted throughout the project. Additionally, the categories of ‘expert’, ‘scholar’ or ‘activist’ may be blurred in collaborative endeavours. Debates may develop in unexpected directions. Aspects of collaborative projects that are also related to ethics are the sustainability, potential impact

and the afterlife of a project. A project should be beneficial to all persons involved. Therefore, it may not end with a research article published in an academic journal by a researcher but may include other (non-proprietary, multi-authored) outputs, such as policy reports, transcription manuals, relationships or press releases, YouTube videos, blogs or social media discussions that are of different value for the persons involved. Another output can be the extrapolation of insights to non-academic contexts and audiences (The CRESC Encounters Collaborative 2013, 4-25).

A contested designation is 'citizen science' itself, since it may exclude all those persons that do not enjoy the official status of 'citizen'. Therefore, alternative terms that include all members of the public, such as 'community science' etc. have been proposed to avoid this type of exclusion. Nevertheless, as already addressed in the introduction, terms carry different connotations. Civic or community science is bottom-up science "initiated and driven by a group of participants who identify a problem that is a concern for them and address it using scientific methods and tools" (Haklay 2015, 15). Here, the community formulates the problem, collects and analyses data in collaboration with academics or research institutions.

The word 'science' in CS also raises the issue if participants in CS projects can be referred to as 'citizen scientists', since scientists have undergone professional training which enables them to address topics, apply methods and discuss theory. Therefore, there is a qualitative difference between the activities done by scholars and the activities scholars ask participants to perform. This is also the reason why some authors argue that participants in CS projects do not accomplish real scholarly work but rather perform auxiliary work that does often not go beyond data collection, data preparation or analysis (Terras 2016, 431). Here, public engagement can help promote research and extract free labour, but it also has the potential to empower participants and raise their motivation to further engage with a certain topic.

The notion of public engagement demonstrates a clear differentiation from outreach and service. On the one hand, outreach carries the connotation of a university that is privileged over the community and reinforces the view that universities are the only places of legitimate ownership and production of knowledge, where scholars are the guardians of expert knowledge (Gale, Carton 2005, 40). Service learning, on the other hand, addresses collaborations between the university and partners from the community to create intellectual projects that exert their effect in real life. Thus, students work on a project in the service of the community through which they should learn to apply research into practice (Jay 2012, 55).

Technology, that is at the core of the DH, offers many opportunities for humanities scholars and cultural heritage institutions. In ad-

dition to technologies used for collecting, analysing, storing and visualising (research) data, it also offers new ways of collaboration and communication, such as virtual reality, augmented reality, mobile apps or social media. However, creating usable technology in the citizen humanities that is appealing to different stakeholders that may have needs diverging from the scholars' needs is not always an easy task (Hedges et al. 2019, 11).

Technologies are an important means to solicit contributions from the public. This is exemplified by CS project directories or crowd-sourcing platforms (Hedges et al. 2019, 11).

Thus, digital technology in general and the DH in particular, contribute to promote (volunteer) participation in CS. Centralised websites or digital platforms that list a wide variety of CS projects to which participants can contribute have become important means of participant recruitment (Colston, Vadjunec, Wakeford 2015, 67). Among these platforms are SciStarter, Zooniverse or national CS platforms, such as *Bürger schaffen Wissen* in Germany, *Österreich forscht* in Austria or *iedereenwetenschapper* in the Netherlands. Although members of the public can browse CS projects on these platforms and find a project that spark their interest, the projects usually have their own website or own app through which people can submit their contributions. For citizen humanities projects, this means that the project's website, the interfaces and the tools which the participants have to use should be characterised by a high usability. Here, the citizen humanities can draw on the experience gained from the DH in tool development on the one hand, and on the means of public engagement from the PH, on the other.

While digital technologies can also increase the digital divide, scholars principally see digital technologies as an opportunity that facilitates their research. Also, in citizen humanities projects, digital technologies play a central role since web-based technology allows a wide range of people to contribute to scholarly inquiries from the comfort of their homes. On the other hand, due to technological advances, such as artificial intelligence, some activities may become obsolete to which participants currently contribute, such as transcribing, tagging or pattern recognition (Heinisch et al. forthcoming).

2.6 Governance

Governance is the umbrella dimension that acts under the slogan "Design science for and with society" (EU 2012) and integrates all other RRI pillars. Governance covers processes, policies, rules and behaviour that affect the exertion of power. The EU has defined five requirements for good governance, including participation, accountability, openness, coherence and effectiveness. Institutional practic-

es and policy-making, i.e. governance in research and innovation, should become more accountable, transparent and inclusive. This refers to the policymakers' responsibility of preventing unethical or harmful developments. This should be achieved through RRI, which aligns innovation, science and society and fosters research and innovation that is more responsive to societal concerns, aspirations and needs. Therefore, topics under the governance pillar include incentives for responsible conduct both on an individual and an institutional level, the role of academic advice and expertise and the types of policies and processes needed to achieve RRI (European Commission 2020a). The overarching aim is to reach desirable and acceptable futures. This requires governance arrangements that are adaptable to the development of research and innovation, have to align with existing practices in research and innovation, share accountability and responsibility among actors and offer governance instruments for this shared responsibility (RRI Tools 2020). Since governance is the umbrella for all the other RRI pillars, it was already addressed before.

3 Case Study

On Everyone's Mind and Lips – German in Austria (abbreviated as IamDiÖ, <https://iam.dioe.at/>) is a citizen humanities project in the field of linguistics that was initiated by the Centre for Translation Studies at the University of Vienna, Austria, as an add-on to an already existing externally funded research project entitled *German in Austria. Variation – Contact – Perception* (<https://dioe.at/>). The latter addresses the variety and the change of the German language in Austria via the three aspects of variation, contact and perception, thereby investigating the ways the German language is used and perceived in Austria and showing the influence of other languages on the German language in Austria. Additional funding was acquired for a citizen science project (iam.dioe.at) that follows different approaches to citizen science. The first approach, the 'Question of the Month', consists of co-creation, i.e. the participants select a research question and, with the help of the researchers, decide on a method, collect and analyse the data and publish the results. The second approach is called 'Linguistic Treasure Hunt' addressing the Austrian linguistic landscape. Participants take pictures of written text (in any language or language variety) in the public sphere, such as on the streets or in public buildings and annotate them by specifying the geographical location, the language(s) and language variety, the medium, the context, function etc. While the Question of the Month concentrates on involving members of the public in the entire research process, the Linguistic Treasure Hunts rather focus on data collection and an initial data analysis by the participants. In the following section Iam-

DiÖ is analysed according to the RRI principles introduced above.

In the field of ethics, since the project participants are using language, which is at the core of linguistics, citizen linguistics raises the issue of where to draw the line between research subject and co-researcher. However, since IamDiÖ participants performed scholarly tasks, such as data collection and analysis, themselves, they were not the subjects of investigation but co-researchers.

Related to legal issues, the General Data Protection Regulation and intellectual property rights were affecting IamDiÖ. Participants could submit their Questions of the Month via a form on the project website that requires participants to enter personal data. Intellectual property rights were considered for the blog entry in which they answer their research questions. For the Linguistic Treasure Hunts, the participants needed to register via an app to upload and tag their photos.

Since the RRI principle of ethics also refers to the societal relevance and ethical acceptability of research, participants in several linguistic treasure hunts were surveyed afterwards. Although ethical acceptability was not part of the questionnaire, the respondents indicated an increased awareness for linguistic landscapes and expressed their motivation to continue their participation. In an informal meeting, one person also indicated that he integrated the search for written text in the public sphere in his daily routine and used breaks and daily routes to contribute to research (i.e. a greater good).

Although the project was aimed at dialogue at eye level, giving all persons an equal voice, seeing participants as co-researchers and using informal ways of communication, including being on a first-name basis with the participants (which is rather unusual in the communication with unfamiliar persons in German), IamDiÖ could not (entirely) overcome the hierarchies and the deficit model. On the one hand, this may be due to the project design of the Linguistic Treasure Hunts, where the researchers define the design, specify the categories of analysis according to their interests and provide participants with instructions. Here, participants hardly have a say. However, a similar observation was made for the Question of the Month. Only a small number of participants could be reached via social media or the website. Interestingly, the collaboration worked best in situations with face-to-face communication compared to communication through online means. The majority was reached through face-to-face interactions during science communication festivals, where visitors were eagerly asking questions about the topic of German in Austria but were not willing to find an answer to their question on their own. The reasons mentioned by some visitors suggest that the deficit model still prevails, i.e. "You are the researchers. You should know the answer/ You should find the answer", clearly specifying who is knowledge producer or knowledge receiver. Another reason mentioned for not partic-

icipating was a lack of time to delve into a research question. Although persons may be personally affected by their question, e.g. “Do dialects disappear?” if they are speakers of a dialect in Austria and may consider the question to be of societal and personal relevance, this did not result in (further) participation in the project. This, again, may be due to the setting of the personal encounter during a science festival where researchers present themselves as experts and where they could not provide prospective participants with the necessary information on the project and could not emphasise the potential benefits, such as personal development, receiving training or being part of a community, which would be required to build trust.

Another ethical concern is the sustainability of the project since it is only funded for a period of two years. This is a rather short period to build a community, establish partnerships and trust. Although a small community could be built and their contributions feed into an openly accessible research infrastructure that makes their contributions re-usable, they may be frustrated if, after two years, their contributions and their interests are no longer needed, not used or not acknowledged.

Other ethical issues raised during the project were the use of incentives, such as prizes for Linguistic Treasure Hunts, and the degree of voluntariness as well as the notion of ‘citizens’, if university students receive bonus points for a course if they participate in research fields in which they are actually trained in.

Regarding the RRI pillar of gender equality, IamDiÖ did not achieve a gender balance, neither among the core project team nor among the participants, both dominated by females. Therefore, the project may not consider the needs and attitudes of all genders. Moreover, the gender dimension is only addressed indirectly in research, e.g. if participants raise these issues as part of a Question of the Month.

With regard to the open access RRI pillar, the majority of the material developed as part of IamDiÖ is made openly accessible, either via the website, such as educational and training material, answered Questions of the Month as blog entries or photos from Linguistic Treasure Hunts on the relevant project website and in the app. Moreover, the results also feed into a research infrastructure addressing the topic of German in Austria. Academic publications, such as journal articles, are also published in an open-access format. However, the adherence to the FAIR principles and the visibility of the participants’ contributions and ideas could be (further) increased. IamDiÖ strongly relied on digital (in many cases also visual) means of collaboration and communication that may exclude certain groups of people, e.g. people with disabilities or people not having internet access or not being versed in using digital technologies.

With respect to the science education RRI pillar, IamDiÖ enhanced education among citizens. The humanities, and especially the human-

ities conducting fundamental research, do not receive a lot of recognition, which held partially also true for IamDiÖ, when participants questioned the need for research in the project's topics. While the volunteers were strongly participating in debates in the area of research, they strongly relied on language myths and their personal experience and opinions. Therefore, the project was able to present the academic foundation and results (underlying or contradicting their experience or opinions). This showed that equipping societal actors with the relevant knowledge and skills is crucial for making informed decisions. Although the Question of the Month aimed at both, increasing the participants' (factual and procedural) knowledge and academic skills to contribute to a science-literate society, the initial concept of the Question of the Month did not meet the expectations of the public. Whether the Question of the Month could increase academic literacy and alter the relationship between the university and the public requires further research. As part of the science education element, scholars and participants learned from each other, since the researchers saw the societal relevance of their research topics exemplified by the number of questions raised by members of the public and they also saw research gaps when volunteers raised issues that are not or under-explored in academic research. Although the digital humanities offer various means of communication, for IamDiÖ personal dialogue resulted in the most fruitful discussions.

Regarding the RRI pillar of public engagement, the research design for the Question of the Month changed drastically during the process based on the interaction with participants. The initial idea that participants do not only raise but also answer their questions could not be implemented because the number of persons who were willing to go through the entire research process was too small. Therefore, the Question of the Month was changed according to the feedback from the visitors at science festivals. Although persons could still answer their own research questions, IamDiÖ researchers also answered some questions from the participants if there were already academic findings available. Thus, the Question of the Month, which was initially intended as co-creation rather became a science communication exercise. Adaptations of the categories of analysis and their explanations were also made for the linguistic treasure hunt based on the participants' feedback. However, these were only minor incremental changes. Moreover, in linguistics, the boundaries between expert and non-expert are blurred when it comes to the use of a (local) language (variety), when participants can often draw on considerable practical experience. Additionally, by selecting blog posts and social media for disseminating and voting on the Question of the Month, IamDiÖ aimed at reaching a broader audience. Although IamDiÖ was listed on the Austrian citizen science platform, where CS projects that meet certain quality criteria present them-

selves to attract participants, this was not the most successful recruitment strategy. This runs counter to the argument that digital platforms help promote volunteer participation in CS.

Since almost no background information on the participants was collected in the project, the ‘citizens’ cannot be specified in more detail. However, IamDiÖ will directly approach special interest associations, e.g. dialect associations, in the future for conceptualising the research design, frameworks, events, competence building and policy actions with them.

Regarding the RRI pillar of governance, IamDiÖ was designed as an open project allowing anybody to participate in linguistic research. However, since the Question of the Month could not be implemented as planned, also the project governance was affected. Although IamDiÖ strived for transparency and being responsive to societal needs and concerns, inclusion and shared responsibility could not be achieved.

To sum up, although IamDiÖ aimed at co-creation (for the Question of the Month) and aligns well with several RRI pillars, the initial plan could not be implemented for reasons that still need further investigation, but that may be related to the unconventional research project design, where many aspects are unclear in the beginning, such as the research question, the methods and the outcomes. This fuzziness is difficult to communicate and to relate to the participants’ life worlds, i.e. making the project useful (enough) and meaningful to its participants. Moreover, it seems that the deficit model prevails in the participants’ minds impeding them from taking agency and responsibility in the project. Interestingly, the digital means of collaboration were less successful than face-to-face encounters. This case study also demonstrates that “sustainable co-creation can only emerge after considerable time and effort has been made to cultivate a spirit of trust and reciprocity grounded in an embodied respect for cultural knowledge and experience” (Miller, Little, High 2017, 10).

4 Discussion

This study set out with the aim of assessing the fusion of the digital and public humanities in the form of the citizen humanities. Although the definition of citizen science is a contested one, it shows clear links to RRI.

Although the citizen humanities can be considered a fusion between the DH and PH, they go one step further. Nevertheless, aspects that all three forms of the humanities (DH, PH and citizen humanities) have in common are their object of research, namely human culture, as well as their roots in scholarship, their potential for the advancement of research and contribution to knowledge pro-

duction. Moreover, these forms of the humanities continue the tradition of “critical thinking, interdisciplinarity, debate over values, and the posing of profound philosophical questions typical of humanities scholarship” (Jay 2012, 53). While the ‘traditional’ humanities significantly differ from the tools and methods used in the research of the three forms of the humanities presented in this paper, the DH, PH and citizen humanities have certain tools and methods in common, since they all heavily rely on the use of digital technology. However, going digital is not the only way to conduct citizen humanities, since volunteers who travel to archives, collect documents, gather local and special knowledge or who participate in field surveys do not necessarily require digital infrastructures and tools provided by the DH (Heinisch et al. forthcoming).

A major difference between these three forms of the humanities is public engagement. While the degree of public engagement might differ significantly in PH or citizen humanities projects, the DH are, in general, not aimed at non-academics (beyond outreach and dissemination). However, the DH can be regarded as auxiliary (discipline) for the PH and the citizen humanities providing tools and methods that support them, or that make them possible, in the first place. Digital technologies, including the Internet, lead to spaces that are inhabited by both non-academic and academic communities and which provide the rooms for connecting academic research to public communities (Dunn, Hedges 2012, 3).

The *Digital Humanities Manifesto 2.0* creates connections to the citizen humanities since it acknowledges that digital tools, media and techniques changed the generation and dissemination of knowledge, including new ways of scholarly discourse in which universities are no longer the sole stewards of culture or knowledge. Although the DH seem to have a focus on quantitative rather than qualitative work, also the experiential, interpretative, generative and emotive nature of the DH should be taken into account (DH 2020). While the quantitative aspect of the DH would rather foster crowdsourcing in the humanities and cultural heritage institutions, the qualitative character would help boost co-created approaches in the citizen humanities as well. Moreover, since universities are no longer the sole producers of knowledge, also other types of knowledge, e.g. local knowledge could gain a foothold as well.

Moreover, the *Manifesto* stresses that interdisciplinarity or transdisciplinarity would require changes in the DH themselves, including methods, practice and output. In addition, it fosters the democratisation of culture and scholarship (DH 2020). This again shows that the DH build bridges not only to other disciplines but also beyond academia, which includes public engagement in humanistic inquiry, and thus the citizen humanities. A direct link to CS can also be found in the request to democratise scholarship which was also at the heart

of Irwin's (1995) understanding of citizen science. While the *Manifesto* highlights the multi-purposing of humanistic knowledge and the creation of bigger pictures and co-creation (DH 2020), it still emphasises the role of experts. Co-creation rather means teamwork among scholars although the Manifesto also sees the DH "as an umbrella under which to group both people and projects seeking to reshape and reinvigorate contemporary arts and humanities practices, and expand their boundaries" (DH 2020).

The contributions of the DH to the citizen humanities are manifold. While the humanities primarily produce textual outcomes, the DH allow for additional media, such as platforms, images and different types of visualisations. Since the DH rely on computational methods, larger amounts of data can be collected, stored, analysed, shared and presented, also automatically or semi-automatically. This requires or opens up new ways of collaboration and publication, not only among academics but also with non-academics, as it is the case in the citizen humanities (Heinisch et al. forthcoming).

The PH contribute to the citizen humanities in different ways: first, citizen humanities as well as PH require the establishment of partnerships, dialogue and trust between academic researchers and volunteers or participants. Transparency and feedback are key to citizen humanities projects. This may also require to make volunteers advocates, not only for the materials they are working on and the project but also for the discipline and the humanities as a whole (Terras 2016, 431). Citizen humanities mean a shift in the scholars' thinking – away from what citizens can do for science to how to bring together humanities disciplines, DH (and public humanities) to conduct citizen humanities (Belknap 2015).

Kimura and Kinchy (2016, 339) found seven distinctive virtues of CS, encompassing the increase in data available for research, the enhancement of public understanding of research as well as of community capacity to address environmental issues, the formation of more equal university-community relationships, the closing of knowledge gaps and putting official accounts under scrutiny, driving policy change and catching polluters (the latter rather specific to natural science projects).

This demonstrates that the aim of 'going public' may not be to reach a high number of people but rather to influence only a small number of stakeholders or policy makers. Therefore, it is necessary to tailor communication to the target audience, including the language, the form and the aesthetics (Miller, Little, High 2017, 8).

Despite the benefits and the promises offered by the citizen humanities, not all scholarly projects are suited for public engagement and not all processes and decisions within a project qualify to be opened to the public. This may be due to the complexity, the sensitivity or the specialisation of the object of investigation or the research

project (Davidson 2009). Therefore, further research should be undertaken to investigate the different relations and interrelations, boundaries and overlaps between other forms of the humanities.

The citizen humanities (as well as DH and PH) are influenced by framework conditions. Corporate practices, defunding in universities, power disparities as well as a general lack of status and (competition for) resources characterise humanities disciplines (at universities). Especially, collaboration with members of the public is often interdisciplinary work for which it may be more difficult to receive funding. Therefore, institutional precarity, institutionalisation, disciplinarity and formalisation can be barriers and informal labour may be needed for transformation (Desai, Murphy 2018, 26-39). Moreover, funding bodies may consider citizen science as a means to bridge gaps in research funding, since the labour of the volunteers participating in CS projects is 'for free'. However, this perspective is neglecting the amount of work needed to run a CS project, including participant recruitment, communication, preparation of training materials, events, protocols, software development etc. Since the citizen humanities may not always address an urgent societal need or concern (compared to topics such as air pollution or ethnic segregation that affect persons directly), it may be difficult to argue for an immediate impact or effect.

Additionally, actors may not always participate in collaborative research freely, but out of the need to respond to problems (such as ethnic segregation and racism), budget cuts or limited capacities (The CRESC Encounters Collaborative 2013, 25).

Furthermore, the use of digital technology in citizen humanities may increase the digital divide. As illustrated by the case study, digital technology worked best in combination with more traditional forms of interaction. Although the citizen humanities and cultural heritage institutions make use of latest technologies to remain relevant, reach a broader audience and make history more meaningful, the digital divide also needs to be considered in university-community partnerships (Hurley 2016, 70).

Tensions in the citizen humanities are similar to those found in other collaborative endeavours, including institutional imperatives, (power) inequalities, ownership (of the project and the results), diverging interests and different agendas of the persons involved in a project. For example, researchers may wish to publish an academic paper (keyword: 'publish or perish') while city councils may require a policy paper and local communities may wish for tangible change in their environment which may run counter to the other actors' objectives. Collaborative projects are also subject to the tension of power relations: who participates under which conditions and whose voices are prioritised. If there are hardened fronts, researchers may also (be expected to) act as unbiased and objective mediators. Col-

laboration may also be characterised by opportunism as well as the ambition of balancing ethics and politics. To be a success, participants need a common interest, a common problem and a common politics (The CRESC Encounters Collaborative 2013, 4-26). Researchers are, in this respect, also cultural producers and advocates for social change (Miller et al. 2017, 14). Therefore, impact, benefits and relationships may take various forms and may rely on reciprocal 'gifts'. These 'gifts' can be reports or the acquisition of expertise through training. Therefore, the mutual benefits of collaboration can also be expertise or information. However, different actors may have different benefits, ranging from monetary value, social networks to prestige or legitimation (The CRESC Encounters Collaborative 2013, 17-24). Mutually meaningful and mutually beneficial outcomes can be related to RRI itself: achieving acceptable, desirable and sustainable research outcomes and processes that align with the values, expectations and needs of society, and that help to address societal challenges.

Therefore, citizen science, including the citizen humanities, may cause cultural change (both in academia and in society) and lead to new ways of thinking. As illustrated by the case study, participants have to understand that they are no longer the subject of investigation but conduct research (partially) themselves. Depending on the governance aspect of a citizen humanities project, participants may also help to design the project itself and assume responsibility for the project and its outcomes.

What differentiates the citizen humanities from other types of public engagement then? The citizen humanities have a focus on knowledge (co-)production (and the advancement of research). Although grassroots activities (where the community identifies a problem and the knowledge of the local community, in addition to scientific findings, are used to solve the problem) with a research objective also fall under the citizen humanities, the citizen humanities are often driven by professional (university) researchers and cultural heritage institutions.

While equity, inclusiveness, social justice and well-being may be the goal (or one of the goals) of citizen humanities projects, they are not a prerequisite. This also means that the citizen humanities (and the produced knowledge) are not necessarily transformative or empowering. To exert impact, knowledge creation needs to be context-relevant (Leadbeater, Banister, Marshall 2011, 9-10).

5 Conclusion

The citizen humanities engage members of the public in humanistic research with the aim of (co-)producing knowledge, or even change.

The citizen humanities are related to responsible research and innovation. Although the digital and public humanities helped to pave the way for the citizen humanities, the citizen humanities are more than a fusion between them. These findings raise intriguing questions regarding the nature of the citizen humanities and their relation to other forms of public engagement and academic research. However, the line between the different types of the humanities, including academic humanities, public humanities, digital humanities, public digital humanities and citizen humanities can get fuzzy.

Bibliography

- Bela, G.; Peltola, T.; Young, J.C.; Balázs, B.; Arpin, I.; Pataki, G.; Hauck, J.; Kelemen, E.; Kopperoinen, L.; Herzele, A.; Keune, H.; Hecker, S.; Suškevičs, M.; Roy, H.E.; Itkonen, P.; Külvik, M.; László, M.; Basnou, C.; Pino, J.; Bonn, A. (2016). "Learning and the Transformative Potential of Citizen Science". *Conservation Biology*, 30(5), 990-9.
- Belknap, G. (2015). "From Citizen Science to Citizen Humanities – 19th Century History in the Digital Age". <https://bit.ly/34ifnfl>.
- Bonnefond, M.; Riboli-Sasco, L.; Sescousse, G. (2015). "Repainting citizen science". *Science (New York)*, 350(6260), 518. <https://doi.org/10.1126/science.350.6260.518-b>.
- Bonney, R.; Ballard, H.; Jordan, R.; McCallie, E.; Phillips, T.; Shirk, J.; Wilderman, C.C. (2009). "Public Participation in Scientific Research: Defining the Field and Assessing Its Potential for Informal Science Education. A CAISE Inquiry Group Report". Center for Advancement of Informal Science Education. <http://files.eric.ed.gov/fulltext/ED519688.pdf>.
- Boyte, H.C.; Farr, J. (1997). *The Work of Citizenship and the Problem of Service-Learning*. Civic Engagement 2. <https://digitalcommons.unomaha.edu/slceeciviceng/2>.
- Brennan, S. (2016). "Public, First". Gold, M.K.; Klein, L.F. (eds), *Debates in the Digital Humanities*. Minneapolis: University of Minnesota Press, 384-90.
- Burdick, A.; Drucker, J.; Lunenfeld, P.; Presner, T.; Schnapp, J. (2012). *Digital Humanities*. Edited by A. Burdick, J. Drucker, P. Lunenfeld, T. Presner, J. Schnapp. Cambridge (MA): Cambridge: MIT Press.
- Carton, E. (2009). "Keyword: Public Humanities. Interview by Kevin Bott". *Imagining America*, 12, Spring, 11-12.
- Cole, C.C. (1994). "Public History: What Difference Has It Made?". *The Public Historian*, 16(4), 9-35. <https://doi.org/10.2307/3378008>.
- Colston, N. M.; Vadjunec, J. M.; Wakeford, T. (2015). "Exploring the Entry Points for Citizen Science in Urban Sustainability Initiatives". *Current Opinion in Environmental Sustainability*, 17, 66-71. <https://doi.org/10.1016/j.coust.2015.11.006>.
- Cox, J.; Tilton, L. (2019). "The Digital Public Humanities: Giving New Arguments and New Ways to Argue". *Review of Communication*, 19(2), 127-46. <https://doi.org/10.1080/15358593.2019.1598569>.
- Davidson, C. (2009). "Calling Citizen Humanists". HASTAC. <https://www.hastac.org/blogs/cathy-davidson/2009/05/27/calling-citizen-humanists>.

- Desai, J.; Murphy, K.P. (2018). "Subjunctively Inhabiting the University". *Critical Ethnic Studies*, 4(1), 21. <https://doi.org/10.5749/jcritethnstud.4.1.0021>.
- DH (2020). "The Digital Humanities Manifesto 2.0". <http://manifesto.humanities.ucla.edu/2009/05/29/the-digital-humanities-manifesto-20/>.
- Dobrev, M.; Azzopardi, D. (2014). "Citizen Science in the Humanities: A Promise for Creativity". Papadopoulos, G.A. (eds), *Proceedings of the 9th International Conference on Knowledge, Information and Creativity Support Systems* (Limassol, Cyprus, November 6-8, 2014). Cyprus: Cyprus Library, 446-51.
- Dunn, S.; Hedges, M. (2012). "Crowd-Sourcing Scoping Study. Engaging the Crowd with Humanities Research". Arts & Humanities Research Council. <https://stuardunn.files.wordpress.com/2013/04/crowdsourcing-connected-communities.pdf>.
- ECSA (2020). "ECSA's Characteristics of Citizen Science". <https://doi.org/10.5281/zenodo.3758668>.
- Ellison, J. (2013). "Guest Column: The New Public Humanists". *PMLA*, 289-98.
- enRRICH (2016). EnRRICH – Enhancing Responsible Research and Innovation through Curricula in Higher Education. <https://www.das-wissenschaften.de/en/unsere-projekte/enrrich/>.
- EU (2012). Responsible Research and Innovation. Europe's Ability to Respond to Societal Challenges. https://ec.europa.eu/research/swafs/pdf/pub_public_engagement/responsible-research-and-innovation-leaflet_en.pdf.
- European Citizen Science Association (2015). "Ten Principles of Citizen Science". http://ecsa.citizen-science.net/sites/default/files/ecsa_ten_principles_of_citizen_science.pdf
- European Commission (2015). Indicators for promoting and monitoring Responsible Research and Innovation. Report from the Expert Group on Policy Indicators for Responsible Research and Innovation. https://ec.europa.eu/research/swafs/pdf/pub_rri/rri_indicators_final_version.pdf#view=fit&pagemode=none.
- European Commission (2020a). "Governance". <https://ec.europa.eu/research/swafs/index.cfm?pg=policy&lib=governance>.
- European Commission (2020b). "Open Science (Open Access)". <https://ec.europa.eu/programmes/horizon2020/node/1031>.
- European Commission (2020c). "Promoting Gender Equality in Research and Innovation". <https://ec.europa.eu/programmes/horizon2020/node/797>.
- European Commission (2020d). "Public Engagement in Responsible Research and Innovation". <https://ec.europa.eu/programmes/horizon2020/node/766>.
- European Commission (2020e). "Science Education". <https://ec.europa.eu/programmes/horizon2020/node/795>.
- Fitzgerald, H.E.; Primavera, J. (eds) (2013). "Going public. Civic and Community Engagement". East Lansing: Michigan State University Press.
- Gale, S.; Carton, E. (2005). "Toward the Practice of the Humanities". *The Good Society*, 14(3), 38-44. <https://doi.org/10.1353/gso.2006.0006>.
- Haklay, M. (2013). "Citizen Science and Volunteered Geographic Information – Overview and Typology of Participation". Sui, Elwood, Goodchild 2013, https://doi.org/10.1007/978-94-007-4587-2_7.

- Haklay, M. (2015). *Citizen Science and Policy: A European Perspective*. Woodrow Wilson International Center for Scholars.
- Hedges, M.; Dunn, S. (2018). *Academic Crowdsourcing in the Humanities. Crowds, Communities and Co-production*. Cambridge (MA): Elsevier.
- Hedges, M.; Stuart, D.; Tzedopoulos, G.; Bassett, S.; Garnett, V.; Giacomi, R.; Sanesi (2019). "Digital Humanities Foresight: the Future Impact of Digital Methods, Technologies and Infrastructures". DARIAH-DE Working Papers Nr. 40. <http://nbn-resolving.de/urn:nbn:de:gbv:7-dariah-2019-12-3>.
- Heigl, F.; Dörler, D.; Bartar, P.; Brodschneider, R.; Cieslinski, M.; Ernst, M.; Fritz, S.; Greilhuber, I.; Hatlauf, J.; Hecker, S.; Hübner, T.; Kieslinger, B.; Kraker, P.; Krennert, T.; Oberraufner, G.; Paul, K.T.; Tiefenthaler, B.; Vignoli, M.; Walter, T.; Würflinger, R.; Zacharias, M.; Ziegler, D. (2018). *Quality Criteria for Citizen Science Projects on Österreich forscht | Version 1.1*. <https://doi.org/10.31219/osf.io/48j27>.
- Heigl, F.; Kieslinger, B.; Paul, K.T. Uhlik, J.; Dörler, D. (2019). "Opinion: Toward an International Definition of Citizen Science". *Proceedings of the National Academy of Sciences of the United States of America*, 116(17), 8089-92. <https://doi.org/10.1073/pnas.1903393116>.
- Heinisch, B.; Oswald, K.; Weißpflug, M.; Shuttleworth, S.; Belknap, G. (forthcoming). "Citizen Humanities". Vohland, K.; Land, A.; Ceccaroni, L. et al. (eds), *The Science of Citizen Science*. Chams: Springer.
- Henke, J.; Pasternack, P.; Schmid, S. (2018). *Mission, die dritte. Die Vielfalt jenseits hochschulischer Forschung und Lehre: Konzept und Kommunikation der Third Mission*. Berlin, BWV Berliner Wissenschafts-Verlag.
- Hughes, L.; Constantopoulos, P.; Dallas, C. (2016). "Digital Methods in the Humanities". Schreibman, Siemens, Unsworth 2016, 150-70.
- Hurley, A. (2016). "Chasing the Frontiers of Digital Technology". *The Public Historian*, 38(1), 69-88. <https://doi.org/10.1525/tph.2016.38.1.69>.
- Irwin, A. (1995). *Citizen Science. A Study of People, Expertise and Sustainable Development*. London: Routledge.
- Jay, G. (2012). "The Engaged Humanities: Principles and Practices for Public Scholarship and Teaching". *Journal of Community Engagement and Scholarship*, 3(1), 51-63.
- Kenny, S.; MacGrath, B. (eds) (2018). *The Routledge Handbook of Community Development. Perspectives from Around the Globe*. New York, NY: Routledge.
- Kieslinger, B.; Schäfer, T.; Heigl, F.; Dörler, D.; Richter, A.; Bonn, A. (2018). "Evaluating Citizen Science. Towards an Open Framework". Hecker, S.; Haklay, M.; Bowser, A. et al. (eds). *Citizen Science. Innovation in Open Science, Society and Policy*. London: UCL Press, 81-95.
- Kimura, A.H.; Kinchy, A. (2016). "Citizen Science. Probing the Virtues and Contexts of Participatory Research". *Engaging Science, Technology, and Society*, 2, 331. <https://doi.org/10.17351/ests2016.99>.
- Kullenberg, C.; Kasperowski, D. (2016). "What Is Citizen Science?--A Scientometric Meta-Analysis". *PloS one*, 11(1), 1-16. <https://doi.org/10.1371/journal.pone.0147152>.
- Leadbeater, B.J.; Banister, E.M.; Marshall, E.A. (2011). "How-What-We-Know-Becomes-More-Widely-Known Is Context Dependent and Culturally Sensitive". Banister, E.M.; Leadbeater, B.; Marshall, A. (eds), *Knowledge Translation in Context. Indigenous, Policy, and Community Settings*. Toronto: University of Toronto Press, 1-12.

- Lindner, R.; Goos, K.; Güth, S.; Som, O.; Schröder, T. (2016). "Responsible Research and Innovation' als Ansatz für die Forschungs-, Technologie- und Innovationspolitik – Hintergründe und Entwicklungen". <https://www.tab-beim-bundestag.de/de/pdf/publikationen/berichte/TAB-Hintergrundpapier-hp022.pdf>.
- Miller, E.; Little, E.; High, S.C. (2017). *Going Public. The Art of Participatory Practice*. Toronto: University of British Columbia Press.
- Miller-Rushing, A.J.; Primack, R.B.; Bonney, R.; Albee, E. (2020). "The History of Citizen Science in Ecology and Conservation". Lepczyk, C.A.; Boyle, O.D.; Vargo, T.L.V. et al. (eds), *Handbook of Citizen Science in Ecology and Conservation*. Oakland: California, University of California Press, 17-24.
- Miller-Rushing, A.; Primack, R.; Bonney, R. (2012). "The History of Public Participation in Ecological Research". *Frontiers in Ecology and the Environment*, 10(6), 285-90. <https://doi.org/10.1890/110278>.
- Molas-Gallart, J.; Salter, A.; Patel, P.; Scott, A.; Duran, X. (2002). *Measuring Third Stream Activities. Final Report to the Russell Group of Universities*. Science and Technology Policy Research.
- Pettibone, L.; Vohland, K.; Bonn, A.; Richter, A.; Buhus, W.; Behrisch, B.; Borchding, R.; Brandt, M.; Bry, F.; Dörler, D.; Elbertse, I.; Glöckler, F.; Göbel, C.; Hecker, S.; Heigl, F.; Herdick, M.; Kiefer, S.; Kluttig, T.; Kühn, E.; Kühn, K.; Oswald, K.; Röller, O.; Schefels, C.; Schierenberg, A.; Scholz, W.; Schumann, A.; Sieber, A.; Smolarski, R.; Tochtermann, K.; Wende, W.; Ziegler, D. (2016). *Citizen Science für alle. Eine Handreichung für Citizen Science-Beteiligte. Bürger Schaffen Wissen (GEWISS)-Publikation*. Deutsches Zentrum für Integrative Biodiversitätsforschung (iDiv) Halle-Jena-Leipzig, Helmholtz-Zentrum für Umweltforschung – UFZ, Leipzig; Berlin-Brandenburgisches Institut für Biodiversitätsforschung (BBIB), Museum für Naturkunde (MfN) – Leibniz-Institut für Evolutions- und Biodiversitätsforschung. http://buergerschaffewissen.de/sites/default/files/assets/dokumente/gewiss_citscifueralle_handreichung_web_0.pdf.
- Pettibone, L.; Vohland, K.; Ziegler, D. (2017). "Understanding the (Inter)disciplinary and Institutional Diversity of Citizen Science. A Survey of Current Practice in Germany and Austria". *PLoS one*, 12(6), e0178778. <https://doi.org/10.1371/journal.pone.0178778>.
- Reiheld, A.; Gay, P.L. (2019). "Coercion, Consent, and Participation in Citizen Science". <https://arxiv.org/abs/1907.13061>.
- Riesch, H.; Potter, C. (2014). "Citizen Science as Seen by Scientists: Methodological, Epistemological and Ethical Dimensions". *Public Understanding of Science*, 23(1), 107-20. <https://doi.org/10.1177/0963662513497324>.
- Rome Declaration on Responsible Research and Innovation in Europe (2014). https://ec.europa.eu/research/swafs/pdf/rome_declaration_RRI_final_21_November.pdf.
- RRI Tools (2020). "What is RRI?". <https://www.rri-tools.eu/about-rri>.
- RRI-Plattform Österreich (2020). Policy Brief: Responsible Research and Innovation in Österreich. <https://www.rri-plattform.at/wp-content/uploads/2020/03/RRI-Policy-Brief-RRI-Plattform.pdf>.
- Sample, M. (2013). "The Digital Humanities is not about Building, it's about Sharing". Terras, Nyhan, Vanhoutte 2013, 255-7.
- Schomberg, R. von (2012). *Prospects for Technology Assessment in a Framework of Responsible Research and Innovation*. VS Verlag für Sozialwissenschaften.

- Schreibman, S.; Siemens, R.G.; Unsworth, J. (eds) (2016). *A New Companion to Digital Humanities*. Chichester: Wiley Blackwell,
- Serrano Sanz, F.; Holocher-Ertl, T.; Kieslinger, B.; García Sanz, F.; Silva, C.G. (2014). "White Paper on Citizen Science for Europe". http://www.socien-tize.eu/sites/default/files/white-paper_0.pdf
- Shirk, J.L.; Ballard, H.L.; Wilderman, C.C.; Phillips, T.; Wiggins, A.; Jordan, R.; McCallie, E.; Minarchek, M.; Lewenstein, B.V.; Krasny, M.E.; Bonney, R. (2012). "Public Participation in Scientific Research. A Framework for Deliberate Design". *Ecology and Society*, 17(2). <https://doi.org/10.5751/ES-04705-170229>.
- Siemens, L. (2010). "Time, Place and Cyberspace: Foundations for Successful e-Research Collaboration". Anandarajan, M.; Anandarajan, A. (eds), *E-Research Collaboration. Theory, Techniques and Challenges*. Berlin: Springer, 35-48.
- Silvertown, J. (2009). "A New Dawn for Citizen Science". *Trends in Ecology & Evolution*, 24(9), 467-71. <https://doi.org/10.1016/j.tree.2009.03.017>.
- Sui D.; Elwood S.; Goodchild M. (eds) (2013). *Crowdsourcing Geographic Knowledge*. Dordrecht: Springer. <https://doi.org/10.1007/978-94-007-4587-2>.
- Tanner, S. (2015). "Crowdsourcing is Dead - Long Live Citizen Humanities". <http://simon-tanner.blogspot.co.at/2015/09/crowdsourcing-is-dead-long-live-citizen.html>.
- Terras, M.; Nyhan, J.; Vanhoutte, E. (eds) (2013). *Defining Digital Humanities. A Reader*. Farnham: Ashgate Publishing Ltd,
- Terras, M. (2016). "Crowdsourcing in the Digital Humanities". Schreibman, Siemens, Unsworth 2016, 420-38.
- The CRESC Encounters Collaborative (2013). "(Un)Doing Collaboration: Reflections on the Practices of Collaborative Research". [http://research.gold.ac.uk/8850/1/CRESCEncountersCollective\(Un\)doingCollaborationWP127_0.pdf](http://research.gold.ac.uk/8850/1/CRESCEncountersCollective(Un)doingCollaborationWP127_0.pdf).
- Tweddle, J.C.; Robinson, L.D.; Pocock, M.J.O.; Roy, H.E. (2012). "Guide to Citizen Science: Developing, Implementing and Evaluating Citizen Science to Study Biodiversity and the Environment in the UK". <http://www.ceh.ac.uk/sites/default/files/citizenscienceguide.pdf>.
- Unger, H. von (2014). *Partizipative Forschung. Einführung in die Forschungspraxis*. Wiesbaden: Springer.
- Vanhoutte, E. (2013). "The Gates of Hell: History and Definition of Digital | Humanities | Computing". Terras, Nyhan, Vanhoutte 2013, 119-56.
- Wickman, M. (2016). "What Are the Public Humanities? No, Really, What Are They?". *University of Toronto Quarterly*, 85(4), 6-11. <https://doi.org/10.3138/utq.85.4.6>.
- Wickman, M.; Browne, J. (2014). "CHCI Public Humanities Survey-Draft Report. BYU Humanities Center". <https://humanitiescenter.byu.edu/files/2016/06/CHCI-Public-Humanities-Survey-Report.pdf>.

