

Opening a networked learning dialogue on postdigital citizen science and humanities

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Abstract

Citizen science, or community science, is generally defined as the involvement of citizens in the collection and analysis of data in collaboration with professional scientists or ecologists. Citizen science initiatives have become more common as technological innovations have increased ways that individuals can participate, enabled larger scale projects and more volunteers to be engaged. Citizen humanities could be said to be a form of citizen science where investigation concerns human values and embedded, diverse, and culturally sensitive knowledge. The development of digital technologies has led to both the field of digital humanities and to new ways to involve citizens in the activities of cultural heritage institutions and academic research. These broad understandings of citizen science and citizen humanities are drawn from disciplinary distinctions concerning how we treat ‘the sciences’ or ‘the humanities’. This is primarily an English language distinction which is much less clear-cut in other languages and cultures, including the ways in which metaphors are adopted as explanatory tools but also carry tacit beliefs and assumptions. In postdigital society it is increasingly hard to separate people’s lives and diverse positionalities from scientific, technological, cultural, linguistic, and political economic changes as these converge to affect communities and individuals. Networked learning is a field that has always shown an active interest in convergences, contribution, and community along with a desire to avoid determinism when examining relationships between learning, technology, and social change. In this paper we draw on this critical networked learning ‘tone’ to explore the activities of citizen science and citizen humanities as they appear to operate as separate fields of research within postdigital society. We argue that discussing the postdigital context surrounding these fields contributes valuable perspectives of knowledge socialism, peer production, collegiality, collaboration, and collective intelligence to help fill certain gaps to meet challenges of the future through community and citizen research. Cross-sector projects that bridge citizen, social, or natural sciences and citizen humanities in diverse locations also need to be community led. This empowers communities not only to acquire new technology enabled capabilities as appropriate to their needs, but also to participate as citizens and activists in the wider political discourse. Therefore, in opening a critically reflexive and relational networked learning dialogue we can locate and occupy important gaps as we grow our understanding of ‘postdigital citizen science’ and ‘postdigital citizen humanities’ as dialectically intertwined fields of cross-sector community research.

Keywords

Citizen science, citizen humanities, networked learning, postdigital society, human data interaction, acquisition, participation, metaphors, postdisciplinarity, cross-sector research, hybrid methodologies

Introduction

Networked learning is a field that has always shown an active interest in convergences, contribution, and community (Jones & Steeples, 2002, p.3) along with a desire to avoid determinism when examining relationships between learning, technology, and social change (2002, p. 4). It is our intention to draw on these strengths as we seek to open a broad and participatory dialogue on future directions for postdigital citizen science and citizen humanities, as dialectically intertwined, through community research (Jandrić et al., 2023). In opening any debate across different fields of activity we unleash differences of opinion, assumptions, and conceptual frameworks. Through discourse people acquire ideas as well as participate to share them, and whilst we anticipate tensions in these exchanges, these can be helpful too in exploring the boundaries between research into both citizen science and citizen humanities.

After considering networked learning as a ‘community-oriented activity’ where dialogue on societal, technological, environmental, and cultural convergences, and also acquisition and participation, are integral (Sfard, 1998), we then examine some different viewpoints on citizen science and citizen humanities to demonstrate how variable these can be. We argue that discussing the postdigital context surrounding these apparently separate fields contributes valuable perspectives of knowledge socialism, peer production, collegiality, collaboration, and collective intelligence (Peters et al., 2020), which can help to fill certain gaps to meet challenges of the future through community and citizen research. This includes embedding diverse, and culturally sensitive knowledge and inclusive participation, preserving and enriching cultural heritage, and encouraging interdisciplinary and cross-sector projects that bridge (citizen) (social or natural) science and (citizen) humanities (Heinisch et al., 2021). Placing the focus on communities (Hsu & Nourbakhsh, 2020) and on people’s postdigital positionalities within these (Hayes, 2021) helps to confront the blurred nature of human computer and data interactions and identify both local and global disadvantages that can arise (Hayes et al., 2023). It empowers communities not only to acquire new technology enabled capabilities as appropriate to their needs, but also to participate as citizens and activists in the wider political discourse (Hayes et al., 2021).

This is particularly important when advances in Artificial Intelligence (AI) systems are accompanied by technologically determinist media hype and political economic agendas that can drown out other discourses on human rights and protection for those who are vulnerable or digitally excluded. Collaborative postdigital research across sectors and with citizens is necessary too, in response to advances in AI that mean that citizen science and humanities fields may soon not need human participants at all for many tasks that require minimal human intervention. This situation requires critically reflexive discussion on what such shifts mean in relation to traditional research methodologies and data collection that have been understood through separate disciplinary approaches. It requires too, a close consideration of how citizen participants in humanities or science projects identify their own roles, and the meaningful language they themselves would choose, to describe these.

With these challenges and opportunities to consider, we invite an open and critical interdisciplinary and cross-sector dialogue on ‘postdigital citizen science’ and postdigital citizen humanities, as intertwined fields of community research and collaborative networked learning.

Dialogue comprising acquisition and participation metaphors

Dialogue involves exchanges of language and the sharing of tacit beliefs and assumptions. According to Anna Sfard (1998, p. 4), this means ‘digging out the metaphors that underlie both our spontaneous everyday conceptions and scientific theorizing’. Sfard describes metaphors as ‘the most primitive, most elusive, and yet amazingly informative objects of analysis’. Crossing borders between the spontaneous and the scientific, between the intuitive and the formal, the choice of a metaphor is a highly consequential decision, bringing with it certain expectations (Sfard, 1998, p. 5). Describing the conveyance of metaphors through language from one domain to another, Sfard argues that ‘they enable conceptual osmosis between every day and scientific discourses, letting our primary intuition shape scientific ideas and the formal conceptions feed back into the intuition’ (Sfard, 1998, p. 4). Whilst scientists may consider metaphors to be no more than explanatory tools, philosophers of science may view them as constitutive parts of research where the scientific vocabulary is usually borrowed from other domains.

In an article on Covid and its Metaphors (2021), Francisca Bartilotti Matos discusses the societal divisions brought about by the treating of the Covid-19 pandemic as ‘a war’ and new treatments as ‘weapons’, with such primed language in turn helping to justify abuses of power, as these metaphors crossed borders from the scientific to the political (see also Wagener, 2020). Sfard points to a situation where ‘we seem to be doomed to living in a reality constructed from a variety of metaphors’ (1998, p. 12). Citing the metaphors of acquisition versus participation in theories about learning, she suggests that such figurative sense-making activities cross disciplinary boundaries, theory, and practice, but also significantly that neither metaphor alone suffices to cover the entire field of learning. This has parallels with Koro-Ljungberg’s (2004) emphasis on the importance of reading both for and against metaphors.

Then there are considerations concerning the status and changing nature of data (Hayes et al., 2023), also taking into account that the ‘relationship between theory and data is dialectic in that they have a tendency for generating each other’ (Sfard, 1998, p. 12). This is illustrated in the concept-metaphor of *broken data*, where critical discussions of digital data are called for to account for how data undergoes processes of decay, making, repair, re-making and growth, which are now inextricable from the ongoing forms of creativity associated with human activity (Pink et al., 2018).

Such tensions are a helpful reminder for us that dialogue, as both acquisition and participation, crosses the boundaries between research into both citizen science and citizen humanities. To return to metaphors linked to war, we now discuss networked learning as a route to help escape ‘the logic of technoscientific determinism’ and indeed ‘disciplinarity as a battlefield between various values and ideologies’ (Jandrić, 2016, p. 167).

Why open a networked learning dialogue on these tensions?

Networked learning can be considered the outcome of convergence (Jones & Steeples, 2002, p. 3), both in the sense of the coming together of telecommunications and computer technologies in a digital form and the coming together of distance and place-based learning into a new hybrid form (Mason & Kaye, 1990). In the decades that have followed these comments there has been an acknowledgement of many further convergences and ‘implicit links with broader global concepts, such as bioinformation, biodigitalism, postdigitalism, critical posthumanism and viral modernity’ (Jandrić & Hayes, 2023, p. 35). Networked learning has a long trajectory of research-based practices that have sought to bridge the many gaps between theoretical and practical approaches via ‘community-oriented activity’ (Steeple & Jones, 2002, p. 306). However, as a global community there remains recognition that ‘there is no necessary connection between the increasing use of computer networks and learning’ (Jones & Steeples, 2002, p. 2). Instead, an ongoing exploration of ways to bridge the many gaps between theoretical and practical approaches is the ‘tone’ that has been set by the networked learning community over more than two decades (NLEC 2021). Such a tone is valued for the learning we might appreciate through cross-sector dialogue on ‘postdigital citizen science’ and postdigital citizen humanities.

An established locus for this work is the biennial Networked Learning Conference but a particular strength is that a diversification of this work continues between the conferences through the researchers’ own networks, ‘hot seat’ debates and publications (Ryberg & Sinclair, 2016). Thus, our ongoing ‘dialogue’ on postdigital society (Jandrić, et.al., 2019), as both acquisition and participation, continually crosses boundaries and bridges gaps but also acknowledges that we can never cover or unify entire fields. Instead, a global body of work flows across cultural, technological, epistemological, and ontological spaces and networks through hybrid postdigital encounters (Jandrić et al., 2018). It produces ‘boundary conversations across multiple communities of practice’ (Carr, Czerniewicz & Brown, 2010). The networked learning community applies a relational model to explore the nature of meaning and knowledge and how it contributes to the wellbeing of society and the world in which we live. Critical reflexivity and relational dialogue are key theoretical perspectives and values in networked learning, along with trust, cooperation and collaboration (Hodgson, McConnell, & Dirckinck-Holmfeld, 2012).

We seek to draw on these strengths and values in opening a relational networked learning dialogue on the activities of citizen science and citizen humanities as they appear to operate as separate fields of research within postdigital society. Our critically reflexive networked learning dialogue is intended to locate and occupy important gaps as we grow our understanding of ‘postdigital citizen science’ and ‘postdigital citizen humanities’ as dialectically intertwined fields of cross-sector community research (Jandrić et. al., 2023) and learning.

Where are the gaps?

Bearing in mind some tensions that we have already raised at the intersections between metaphors of acquisition and participation (Sfard, 1998), we will now contemplate some recent, diverse statements made about citizen science and citizen humanities. These articles and books illustrate a range of viewpoints, not necessarily the most extreme, but illustrative of the variability we wish to highlight. We appreciate that there will be other perspectives too, that there is not scope to discuss in this short paper. In the first article, citizen science is described as creating ‘a nexus between science and education that, when coupled with emerging technologies, expands the frontiers of ecological research and public engagement’. (Newman et al., 2012, p. 298). Such a nexus is likely to interest many researchers in the wider postdigital and networked learning communities. However, this article tends to discuss citizen science as a coordinated research process, influenced by emerging technologies that will in turn streamline data collection, management, communication, the gathering of teams, resources, partners, and citizen participants. It is expected that new technologies and skills will appeal to a diverse set of citizen science participants, but it is also acknowledged that those unwilling or unable to adopt them could potentially be marginalized. Still, it is envisaged that ‘a network of organizations (local, regional, and global) and professional associations, as well as open-access peer-reviewed journals and cyberinfrastructure support systems, will help organize the growing citizen science community and provide future direction to the field’ (Newman et al., 2012, p. 298). As such, more of an acquisition of these new technology enabled capabilities into the established field of citizen science in general seems to be suggested, with rather less participation from citizens in different communities to co-design research that may meet their own needs, disrupt power imbalances and/or influence policy.

In the next article, another angle is taken, this time from the point of view of Human Computer Interaction (HCI), where the empowering of communities towards a more sustainable approach is emphasized:

Conventionally, scientists and decision-makers apply top-down approaches to lead research activities that engage lay people in facilitating sustainability, such as saving energy. We introduce an alternative framework, Community Citizen Science (CCS), to closely connect research and social issues by empowering communities to produce scientific knowledge, represent their needs, address their concerns, and advocate for impact. CCS advances the current science-oriented concept to a deeper level that aims to sustain community engagement when researchers are no longer involved after the intervention of interactive systems. (Hsu & Nourbakhsh, 2020)

This rather different trajectory discussed in *When Human-Computer Interaction Meets Community Citizen Science* makes a small linguistic change to place the word ‘community’ in front of ‘citizen science’, in order to emphasise the importance of participatory democracy and community co-design in a bottom-up grassroots approach. They argue that ‘Community Citizen Science (CCS) is especially beneficial too ‘when lay perspectives contradict professional ones, and thus activism is needed to inform decision-makers about the perceptions of community concerns. In this way, CCS promotes ongoing political discourse around local concerns to improve the conditions of society.’ (Hsu & Nourbakhsh, 2020).

A third perspective can be observed through the lens of the humanities. Citizen science is discussed as comprising ‘natural sciences, such as biology, chemistry, and physics, whilst citizen humanities, which is the term for citizen ‘science’ in the humanities (Heinisch et al., 2021, p. 98), encompasses fields such as languages, literature, history, philosophy, and art. We would suggest though that such distinctions require firstly, a broader, critical consideration of the range of disciplines we understand as ‘sciences’ or ‘the humanities’, bearing in mind that this is primarily an English language distinction which is much less clear-cut in other languages and cultures. Secondly, we recognise the ‘rise and fall of disciplinarity’ and discussions of a new ‘postdisciplinarity’ that is closely linked to emancipation and social change (Jandrić, 2016, p. 169). Thirdly, there is a ‘hybrid identity’ to research methodologies which calls for an openness not only to postdisciplinarity and the hybrid relationships between technologies and human beings, but also to connections between politics and emancipation (Jandrić, 2016, p. 177). Finally, we highlight the importance of cross-sector collaborations between those inside and outside of academia to strengthen the opportunities for citizen participatory research in very diverse locations, particularly given the ubiquity of human data interactions in postdigital society (Hayes et al., 2023). For example, ‘geographic citizen science is approached from different angles, and it has the potential to have a massive impact on science, society, social innovation, public awareness and even participants’ well-being’ (Skarlatidou & Haklay, 2020, p. 4). Here it is argued that the interfaces that support volunteers to collect, analyse and disseminate their contributions need to be user friendly and consider end-user needs as well as the local cultural and environmental conditions of contributor contexts. This is necessary to avoid leaving significant proportions of the population behind, particularly those who are less privileged citizens but who may benefit from the issues being addressed. Therefore, such different perspectives on citizen science and its enactment in relation to disciplines and communities causes us to reflect on how the metaphors of an acquisition of data from citizens might dialectically intertwine with a more participatory metaphor for democratic community co-design and power re-balance. Uche Ogwude points to the issue that a significant proportion of the world’s population currently does not have effective access to digital data (ITU 2017) despite its pervasiveness in today’s world. He argues that:

As the social fabric of today’s society is increasingly held together and operationalised by digital data, this lack of access has social, economic, and even physiological ramifications for those who are excluded in ‘postdigital-bidigital’ society (Peters, Jandrić, and Hayes 2021). Convergences between what is human and what is digital or informational are complex and intertwined, bringing many challenges in relation to the legibility of data within wider societal agendas for digital inclusion (Ogwude 2023, p. 3)

It is here at this complex convergence of acquisition and participation, privilege, and inequity, that we perceive a strength in examining citizen science and humanities through the lens of postdigital society and inviting a broad, critically reflexive and inclusive networked learning dialogue on the enacting of a postdigital citizen science and humanities.

Postdigital citizen science and humanities

Networked Learning and Postdigital Science and Education have developed in the same *Zeitgeist*, with their variable histories resulting in different, yet often overlapping theories, research approaches, and ethos (Jandrić & Hayes, 2023, p. 38). They could be described as corresponding communities, given that both have maintained a preoccupation with convergences in society, including the interconnections between biology, information, and society and how such changes affect the individual positionality of each one of us in postdigital society (Hayes, 2021). In an article that examines ‘the heart’ of science education and honours the work of Paolo Freire, Frausto Aceves, Torres-Olave, and Tolbert (2022, p. 217) argue for a heart-centred science education that ‘forges solidarity with human and more-than-human others and exploits pockets of resistance in the name of more socially and ecologically just present futures’. Despite the machinery of commodified academic work, the McPolicy of measuring excellence to the extent of a ‘linguistic lockdown’ in educational policy, even before the pandemic enforced physical movement (Hayes, 2021, p. 2), there are spaces for hopeful dialogue and forms of liberating communion:

‘Human beings in communion liberate each other’ (Freire, 1970, p. 129), therefore being in communion with each other allows us to feel a kind of collective vibration, across and through our diverse positionalities and contexts, reverberating in other corners of the world. There are a growing number of us in science education who understand science and education as inseparable from the sociopolitical, economic, or environmental dimensions of life (Tolbert & Bazzul, 2017)—who see the Academy’s most radical potential as residing within both pockets of resistance in the Academy (hooks, 1994) as well as within fugitive spaces of the undercommons (Meyerhoff, 2019). (Frausto Aceves, Torres-Olave, & Tolbert, 2022, p. 218)

It strikes us that these reflections not only pick up the ‘tone’ of networked learning and postdigital dialogues, they also appear to be in communion with Community Citizen Science (CCS) as discussed by Hsu & Nourbakhsh (2020). There are many postdigital challenges to be addressed through citizen science and citizen humanities for which relational, cross-sector research in the community is essential, especially if we are to advocate for the vulnerable and digitally excluded (Hayes et al., 2023). The values of knowledge socialism, peer production, collegiality, collaboration, and collective intelligence (Peters et al., 2020) can extend across all aspects of the research and learning process. This requires an openness to a participatory democracy from the outset, with facilitation from those inside and outside of academia to enable community co-design, data collection and collective publications.

Within postdigital citizen science and humanities there is also greater scope to appreciate that citizen participants may well identify their own roles in different and varied meaningful language. Some citizens may be working to collect data, test prototypes, design solutions or help to make archives more accessible. Wherever these, often socially motivated activities may sit from a disciplinary or organisational point of view, it is important that participatory research and learning opportunities do not only benefit already privileged citizens. Sustainability aspects of projects may focus on the embedding of activities and interventions in communities, but less on the area of what has been learned about citizen participation itself in postdigital society. The problem of reaching the end of a period of research funding and the momentum to cease is not exclusive to either science or humanities, but a shared interdisciplinary and cross-sector community concern. There are potentially unexplored learning opportunities that sit across projects that could concern enthusiasm, examples of good collaborations, recognition of contributions and conflicting interests. A conventional method where scientists and decision-makers apply top-down approaches to lead research activities that engage lay people is not going to yield empowering and sustainable change for communities or policy. This requires an ongoing ‘dialogue’ on postdigital society (Jandrić et al., 2019), as both acquisition and participation, that continually crosses boundaries and bridges gaps but also acknowledges that we can never cover or unify entire fields.

Conclusions

There is a strength therefore in both the ongoing work at the ‘pockets of resistance’ in our diverse contexts and coming together in ‘communion’ periodically (Frausto Aceves, Torres-Olave, & Tolbert 2022, p. 218), as the networked learning community has done for more than two decades (NLEC 2021) to share and grow dialogue. As we develop networked learning dialogues on postdigital citizen science and humanities, we need not only an openness to postdisciplinarity and the hybrid relationships between technologies and human beings, but also to connections between politics and emancipation (Jandrić, 2016, p. 177). This calls also for a ‘hybrid identity’ to

postdigital research methodologies (Jandrić, MacKenzie, & Knox, 2023) that includes both praxis and a new approach towards vulnerability, given ‘the mess and uncertainty that are central to the postdigital context, education and education research’. This ‘moves vulnerability away from its neoliberal associations with demonising and stigmatising the individual towards a more open, “in between” condition, both universal and individual, to be integrated into research’ (Jopling, 2023, p. 155). Our dialogue can be strengthened too through cross-sector collaborations between those inside and outside of academia, to grow the opportunities for citizen participatory research in very diverse locations, particularly given the ubiquity and blurring of human data interactions in postdigital society (Hayes et al., 2023). Here Weich and Macgilchrist (2023, p. 5) differentiate between participation as (1) taking part in something and (2) having a (more-or-less decisive) say in decision-making processes. Yet whilst participation gaps can be closed, we are cognizant of how differently this process may be enacted across diverse cultures and contexts.

Here the networked learning community relational model of dialogue is valuable to explore the complex convergence of acquisition and participation, privilege, and inequity, that meets citizen science and citizen humanities as they work within different communities. Through the lens of postdigital society, we therefore warmly invite a broad, critically reflexive and inclusive networked learning dialogue on the challenges and opportunities of enacting a postdigital citizen science and humanities.

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