



The Affordances of Pragmatism for a Postdigital Citizen Social Science

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Abstract

In efforts to inform a postdigital citizen social science, this paper argues that the traditions of pragmatism are a rich resource for enacting a postdigital citizen social science's commitment to dialogue and collaboration. Claims as to the value of pragmatism for informing a postdigital citizen social science are rehearsed and assessed through an extension of the Human Data Interaction framework to an engagement with the 'small' data and associated regimes that constitute a global governing complex in education. A datafication of education policy and practice offers an unprecedented challenge and opportunity for a postdigital citizen social science, to not only contend and reconfigure the forms and functions of data regimes but also seek to (re)open a neglected epistemological terrain for exploring how data could and should be used to inform education policy and practice. It is asserted that an encounter between pragmatism and a postdigital citizen social science practice, affirms and enriches efforts to enact dialogue with diverse publics, with the aim of generating actionable insights, where what works is itself, a question open to scrutiny and revision.

Keywords Human data interaction · Datafication · Small data · Data regimes · International large-scale assessments · Postdigital

Introduction

If the strongest accounts of Dataism were to be realised (Harayi 2017; Lohr 2015), then discussions regarding the nature of science, never mind the social sciences or a citizen social science, are likely to become, if not redundant, then at least tangential to forms of inquiry within a postdigital condition (Anderson 2008). From this position, data and algorithms become the new authority, prophecies without prophets

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(Gransche 2016), with claims to know us and our systems better than ourselves. Not only do hypotheses and theories appear to become surplus to requirements, but the place of publics within this new regime of science becomes clear (Mayer-Schönberger and Cukier 2013; Steadman 2013). Citizens are no longer invited to be part of discrete scientific endeavours. Instead, citizens inherently constitute this alleged new form of data-driven empiricism, ceaselessly and relentlessly producing data with clusters of advanced computational power and machine learning, ensuring the authority of this regime of data. As has been well rehearsed, the desirability, feasibility, and viability of a new empiricism have been critiqued from a diverse number of positions and will continue to be subject to debate (Baack 2015; Balazka and Rodighiero 2020; Boyd and Crawford 2012; Hekler et al. 2019; Kitchin 2014; Schrock and Shaffer 2017; Wang and Shepherd 2020; Williamson et al. 2020). For the purposes of this paper, such a prospect is raised, as it highlights the context within which discussions of what could and should constitute a postdigital citizen social science are taking place. Within such a context, and in response to a strong version of Dataism, it is understandable how one may choose to double down on a defence of ‘small paradigm’ science (Hekler et al. 2019). However, rather than add another ingredient to a paradigmatic soup (Buchanan and Bryman 2007), it is argued that this is an opportune time to revisit how the traditions of pragmatism can be used in efforts to inform a postdigital citizen science (Büchner 2023; Jandrić et al. 2023a, b, 2024) and a postdigital citizen social science in particular (Thomas et al. 2021).

Definitions of citizen, science, citizen science, and postdigital continue to be vital and contested (Haklay et al. 2021; Hayes et al. 2024; Hsu and Nourbakhsh 2020; Jopling et al. 2024; Knox 2019; Tolbert et al. 2024). Similarly, pragmatism can be characterised as exhibiting several variants (Addams 1910/1990, 1994; Baert 2005; Bernstein 2010; Biesta 2009a, 2010; Brandom 2011; Dewey 1916, 1938a; Heldke 2017; James 1907; Kolb 2003; Ormerod 2006; Pierce 1903, 1905; Rorty 1979, 1982, 1989). Rather than seek to halt debates or elide the meanings of postdigital citizen social science, in this paper, the emphasis is on articulating an encounter between what is described as the traditions of pragmatism (Holmwood 2014) and a form of postdigital citizen social science that Tolbert et al. (2024) have categorised as a postdigital citizen science for diverse publics and community action. The use of the term *social* is included, not just to denote the practices of what are taken to be social sciences but to foreground the presence, position, and agency of humans in scientific endeavours and data practices.

Informed by, and seeking to contribute to, an ongoing dialogue regarding the meaning and practical bearings of the postdigital (Jandrić et al. 2018, 2023a; Jopling et al. 2024), it is argued that pragmatism affords a vital resource for formulating forms of inquiry that are diligent, flexible, and adaptable for attending to the concrete, contested, and contingent diversity of experience. Pragmatism’s heralding of the need to cultivate the conditions where it is possible to reflect on our dispositions to the world can be seen as a foreshadowing of the concerns of a postdigital citizen social science (Thomas et al. 2021). The aim is not to add an adjective or qualifier to the term postdigital but to include within a posited genealogy of postdigital research (Jandrić et al. 2024), what is asserted to be the prefigurative practices of pragmatism. Even if not accepted as part of a history of the postdigital (Fuller and Jandrić

2019), it is argued that the insights from pragmatism can, do and should be, part of the future of postdigital research practices (Jandrić et al. 2023a, b, 2024) and as signalled in this paper, conceptions of a postdigital citizen social science.

Dismissing an architectural metaphor, the aim is not to establish the foundations on which a belief in pragmatism is to be based, but to ask instead, invoking a journey metaphor, where would a willingness to believe pragmatism take us? As such, in the spirit of pragmatism, the aim is to put pragmatism to work and work through the practical bearings of a pragmatic position for a postdigital citizen social science. To this end, the article responds to two questions asked by Jandrić et al. (2023c). What is a citizen science within and for a postdigital condition, or more specifically, what does pragmatism have to offer a postdigital citizen social science? And how to conduct a citizen science within and for a postdigital condition, or yet again, more specifically, how can pragmatism inform the conduct a postdigital citizen social science? The assertion as to the value of pragmatism for a postdigital citizen social science is rehearsed and assessed through an extension of the Human Data Interaction (HDI) framework (Hayes et al. 2023) to an engagement with ‘small’ data and concomitant data regimes (Dorwart 2019) that constitute a global governing complex in education (Sorensen et al. 2021).

What Does Pragmatism Have to Offer a Postdigital Citizen Social Science?

Without wanting to overly elide the distinct variations, the different traditions of pragmatism can be considered to share a commitment to efforts to enact the assumption that our attempts to understand the world are inseparable from our agency within it (Legg and Hookway 2021; Morgan 2014), where knowledge does not precede action but is exercised within it (Wills and Lake 2021). As such, a pragmatic postdigital citizen social science is not only construed as a form of inquiry that requires the relinquishment of the quest for certainty (Dewey 1929) but also considers an absence of certitude an asset (Wills and Lake 2021).

Departing from a line of thinking that suggests that the purpose of inquiry is to attempt to copy reality, pragmatism instead attends to the performative power of thinking (Rorty 1979/2009), a response to circumscribed circumstances, where its value is also subject to the same contingencies. Research, rather than a project for disclosing truth, becomes a projection, an ongoing opening and reconfiguring of the world (Morgan 2014). Knowledge accrues value because of what knowledge enables people to do and get done in the world—what pays by way of belief? (Wills and Lake 2021).

Rather than pursue absolute truth (Dewey 1938a/1939), pragmatism attends to the contingencies of a situated inquiry, where the acquisition of knowledge is an ongoing fabrication rather than a revelation (James 1907/2000; Ormerod 2006). Rejecting dogmatism and the pursuit of the immutable (Brandom 2011; Dewey 1920; Menand 2011), pragmatism asserts an epistemological fallibilism that requires attentiveness and reflexivity on the part of the inquirer (Morgan 2014). Pragmatism makes use of and seeks to develop and share warranted assertions—ideas that can be

tested in practice, but subject to challenge and revision (Dewey 1938a/1939). Warranted assertions are put to the test, not in the form of pre-test and post-test protocols but through an iterative and emergent process. That is, what difference will it make, at this time, at this place and for whom, if this warranted assertion is to be adopted and enacted (James 1907/2000)? This is not to say that knowledge cannot have value beyond any given situation but instead to acknowledge that its deployment and enactment should be both judicious, reflective, and attend to questions of adequacy and power (Harney et al 2016; James 1907/2000; Rogers 2009). Having posited what is hoped is a warranted assertion as to the nature and purpose of knowledge, attention now turns as to how a pragmatist informed postdigital citizen social science may proceed.

How Can Pragmatism Inform the Conduct a Postdigital Citizen Social Science?

Pragmatic inquiry is designed to be useful (Wills and Lake 2021). A pragmatic inquiry is constituted by working with publics to surface, rehearse, and review how to make sense of issues and enact relations and practices that are of value to those concerned (Villadsen 2022). Whilst containing several variants, arguably the traditions of pragmatism share an aspiration for a form of inquiry that enacts a contingent and practical form of praxis that seeks to clarify the contested problems, risks, and possibilities we choose to address. Relinquishing a priori assumptions as to what constitutes a ‘social problem’ (Dewey 1927/1954), a pragmatic inquiry starts by attending to the positions of situated publics (Villadsen 2022), where the impetus for a pragmatic inquiry is a particular doubt, or what Dewey (1929) described as a problematic situation. When existing positions are no longer deemed up to the task, pragmatic inquiry seeks to surface, reflect, and realise the collective capacity to work with and address problematic situations (Wills and Lake 2021). In this regard, pragmatism affirms a form of postdigital citizen social science that is not construed as a set of activities that publics are invited to join but rather where publics are inherent to the conduct of a postdigital citizen social science (Herzog and Lepenies 2022). This is vital given critiques over the nature, degree, and value of participation in citizen social sciences to date (Eleta et al. 2019; Jandrić et al. 2023a, b; Jopling et al. 2024; Pelacho et al. 2021).

Claims as to the value of pragmatism for a postdigital citizen social science are rehearsed and assessed through an extension of the Human Data Interaction (HDI) framework (Hayes et al. 2023) to an engagement with the ‘small’ data (Hekler et al. 2019) and associated regimes that constitute a global governing complex in education (Sorensen et al. 2021). Long-running concerns over a quantification of education can be seen as being extended, accelerated, and intensified when combined with an alleged datafication of education policy and practice (Boyd and Crawford 2012; Williamson et al. 2020). However, it is also argued that a datafication of education policy and practice offers an unprecedented challenge and opportunity for a postdigital citizen social science, to not only contend and reconfigure the forms and functions of particular data regimes, but also seek to (re)open a neglected

epistemological terrain for exploring how data could and should be used to inform the education policy and practice (Hayes et al. 2022). The question of what constitutes data may well be long-running and contested, but it is argued that such a question has gained increased import within the conditions that constitute a postdigital society. Subsequently, what we think of as ‘data’ is a crucial part of understanding the nature and form that citizen social science could and should take in and for a postdigital condition. For the purposes of this paper, it is the ‘small’ data that is systematically collected and organized to represent some aspect of education that is of interest (Schildkamp et al. 2013; Schildkamp 2019).

Small Data on a Global Stage

International Large-Scale Assessments (ILSAs) represent regular and systematic assessments of learning that can then be used to categorise, rate, and rank the performance of educational systems, policies, and practices (Hernández-Torrano and Courtney 2021). ILSAs include assessment data that is used not to inform the development of individuals directly but to drive the performance of institutional, regional, national, and global education systems, through the identification and sharing of best practices, and an enhancement of the accountability of educators, leaders, and policy makers. ILSAs in education have emerged as a vital resource and tool, used by a range of global, national, and local institutions for seeking to establish and enhance preferred policy positions (see Cooley and Snyder 2015). Notable examples include the Programme for International Student Assessment (PISA), the Teaching and Learning International Survey (TALIS), the Progress in International Reading Literacy Study (PIRLS), the Trends in International Mathematics and Science Study (TIMSS), the Programme for International Assessment of Adult Competencies (PIAAC), and the International Computer and Information Literacy Study (ICILS).

The presence and prominence of ILSAs in educational debates on governing policy and practice have prompted debates about their validity and application (Malito et al. 2018). Technical, methodological, ethical, political, and philosophical critiques have been levelled at the datafication of education, i.e., the increased availability and capacity of data and corresponding algorithms to cast social life in numbers (Grek 2009; Jarke and Breiter 2019; van Dijk 2014, 2020; Williamson 2017). However, from a pragmatic perspective, the concern is not so much whether ILSAs correspond with posited reality, but the practical bearings arising from the use of such indicators, and if and how can data regimes be mobilised to address the goals and ambitions of a diverse set of constituencies and settings? There are strong claims that ILSAs have shaped education systems (Chung 2019; Kamens and McNeely 2010; Moutsios 2009; Takayama 2008). Teodoro (2022) highlights how ILSAs such as PISA, enable organisations, such as the OECD, to manifest priorities, such as what Meyer and Benavot (2013) have described as efforts to align educational systems with an economic imperative.

The role of ILSAs in agenda setting has a direct relevance to questions posed by and vital to a postdigital citizen social science. A postdigital citizen social science perspective that draws attention to how people are both the subjects and object of

research (Tolbert et al. 2024), and that knowledge does not precede action but is exercised within it (Wills and Lake 2021), are well positioned to examine the co-constitutive nature of human data interactions. This includes addressing how developing data systems, and data regimes, including discrete forms of inquiry, envisage the role of individuals and how could and should individuals encounter, respond to, or create opportunities to generate and make sense of data? Whether this concerns digital trace data, the frequently cited black box of algorithms and machine learning that constitutes Artificial Intelligence (AI) decision making, or the more relatively circumscribed small data projects of the governmental, third sector, and commercial agencies, it is claimed that in a range of forms, data is indivisible from and vital to modes of governance (Williamson 2017; Williamson et al. 2020). Put simply, what opportunities are there for a pragmatic informed postdigital citizen social science to enact change in, through, and beyond existing data regimes? As noted above, the problematic situations that a postdigital citizen social science is to address are to be derived in situ. To assist such a process, a placeholder and a tentative agenda for dialogue is the framework provided by HDI (Hayes et al. 2023).

Enacting a Human Data Interaction (HDI) Framework

In the absence of a commitment to a particular methodology, Morgan (2014), Wills and Lake (2021), and Dewey (1920/1957) are notable examples of efforts to provide a framework to guide pragmatic inquiry. In the context of a postdigital citizen social science that engages with the datafication of education, for the purposes of this paper, it is the HDI framework that is suggested a point of orientation for enquiry.

The relatively new field of HDI has been proposed to open and extend a dialogue amongst the agents and stakeholders of data ecosystems (Mortier et al. 2014). What is argued is an inherently pragmatic project, an ambition for HDI was to provide a framework for ‘designers’ for considering the human dimension of data intensive systems (Vicarelli et al. 2020). It is argued that as processes of datafication are deepened and intensified, HDI can be extended as a framework for understanding how a pragmatic citizen social science in and for the postdigital condition can be enacted. For the purposes of this paper, a modified form of the HDI framework, as envisaged by Hayes et al. (2023), that includes resistance, alongside legibility, agency, and negotiability, is used to explore the enactment of a pragmatic postdigital citizen social science.

Legibility

Efforts to Enhance the Comprehensibility of Data About People and Data-Driven Systems

Legibility includes efforts to illuminate and examine how data is collected and processed. To reveal what data is marshalled and to examine how inferences and decisions derived from and driven by data are used. It can be challenging to begin to understand if and how data is shaping our lives, and the challenge is increased if

the task is to demonstrate the actual impact of data on our lives. However, one step that can be taken is to become aware of the rationale and approaches of the existing data regimes enacted by agencies. This can be described as both seeing and seeing like the data regimes (Sorensen et al. 2021). Just as the growth and reach of national jurisdictions have long been linked to and enabled by efforts to categorise and quantify populations, such data regimes have been extended as part of efforts to make educational systems legible at a global level (Sharman 2012) and subject to a global governing complex (Desrosières 2002; Sorensen et al. 2021).

This long-running development of quantification and an increased interest in the use of indicators as a tool of governance (Merry et al. 2015) does not in itself explain the recent growth and extension of ILSAs at a global level. Globalization, increased demands for accountability, and changes in the capacity and availability of data technologies (Cooley and Snyder 2015; Kelley and Simmons 2019; Martens and Jakobi 2010) have enabled what Grek (2009) describes as governing by numbers. A range of stakeholders have realised the potential of ILSAs to establish and (re)define global standards, cultivate competition, and instigate action in response to what has been deemed as quality in education (Jacobsen and Young 2013; Kelley and Simmons 2019). Concomitant with neoliberal reforms (Pollitt and Bouckaert 2000) and the growth of an audit and compliance culture (Apple 2005), ILSAs help ensure that the performance of educational policies are assessed with regard to the degree they align and compared to targets of outcome data-driven accountability systems and competing institutions and systems (Anagnostopoulos et al. 2013; Behn 2003; Jarke and Breiter 2019).

Efforts to make legible how ILSAs currently construct what counts as a ‘good’ education should not be seen as an inherent endorsement of such ways of seeing. That is, how performance data, ratings, and rankings can be used to exert normative pressures on education systems to promote change and improve the performance of policies and practices. Neither should such a project lead to an inherent rejection of efforts to use data to secure system improvement. Rather, it is argued that a postdigital citizen social science has a critical role to play in increasing the legibility of ILSAs, as part of efforts towards demystifying the work of data regimes and global governing complexes in education (Desrosières 2002; Grek 2009; Rose 2001; Sorensen et al. 2021).

Agency

Efforts to Empower Publics to Anticipate and Respond to Actions and Decisions Made Using Their Personal Data

The issue of agency is challenging, not just in efforts to increase the capacity requiring consent for others to use data, but also in efforts to monitor and dispute the inferences drawn from data and the decisions that are being enacted by the regime making use of the data. In this regard, it is not just about questions regarding privacy, anonymity, and the right to be forgotten, but attending to the practical bearings that follow from the actionable insights arising from data analysis that can extend far beyond the site of data

processing. At this point, the different positions that can be adopted regarding ILSAs can be revisited (Hayes 2021). For example, the claim that data can lead to increased accountability, transparency, and deliberative participation with the aim of improving the performance of education systems can be contrasted with the assertion that the very same data regimes pose a threat to privacy, promise increased surveillance, and possess the potential to deepen digital, social, and economic divides (e.g., Anagnostopoulos et al. 2013; Eynon 2013; Jarke and Breiter 2019; Selwyn 2011; Livingstone and Sefton-Green 2016; Lupton and Williamson 2017; van Dijck 2020).

Following Bloch (1995), ILSAs can be considered Janus faced, where there will be tendencies that will seek to perpetuate a particular way of being, but also latent elements that can disrupt and un-conceal diverse ways of being. With respect to a pragmatic informed form of postdigital citizen social science that seeks to engage with ILSAs, one approach to creating capacity for agency, is to locate and act on the contradictions within ILSAs. No additional data is required. Attention is paid to existing ILSA data and the claims making and causal chains that link data to preferred and prescribed policies and practices (Komatsu and Rappleye 2021: 247). An extension of a data led approach to critique is to match and/or augment ILSA data with 'local' data. ILSAs are not the only show in town. Data collected at a national, regional, or local level can be used in conjunction with ILSA data to illuminate, deepen, extend, challenge, or even overturn the ILSA-informed insights driving policy and practice prescriptions. Consequently, it is not enough for a critique to unmask, demystify, and subsequently dismiss the artefact for its role in perpetuating prevailing tendencies. It is also necessary to take the artefact seriously, to look again, to seek the surpluses, and to attend to the affordances to un-conceal and extend the latent elements and processes that offer not only different readings but also different directions of travel. A call to recognise but not be haunted or determined by our inheritance and its appeal.

The appeal of such an internal critique is that, initially at least the working assumptions and goals of those sponsoring ILSAs are not brought into question, but the validity, reliability, and logic that constitutes the prevailing claims are subject to scrutiny. Efforts to ensure the rigour of the existing data regimes practices, not only help increase the accountability of those seeking to hold others to account, but also has the potential to identify new evidence-based prescriptions within the existing data regimes. What does become evident, is where legitimate alternatives, informed by the assumptions, and fashioned by the tools of the existing data regime, are not entertained, it is fair to conclude that decision making, and persuasion are no longer a question of data, evidence, and argument.

Negotiability

Efforts to Influence Others' Use Of One's Data and Developing The Capacity Of The Subjects Of Data to Be Able to Negotiate The Processes for Governing The Value and Exchange Of Data

Data, particularly in the form of ILSAs, can be construed as results of, and conditions for, active value contestation (Kelley and Simmons 2019; Kogan 1986). There

may not be a demand, and it may not be considered feasible, for all people, in all instances, to negotiate the value and management of their data, but the instances where such negotiation are not deemed necessary should be made visible and subject to review. For example, regarding the aggregation of anonymised test scores that constitute ILSAs, in addition to potential objections to the collection of data per se, there are also a series of potentially technical and ethical objections to the processes and material consequences for those that are governed. It is here that attention moves beyond the legibility and agency of ‘personal’ data, to the wider rationale and operation of data regimes, and crucially, the array of metrics and indicators that come to represent what counts as a good education, policy, and practice. Put another way, negotiability goes beyond recognising and responding to data regimes, as they currently exist (Eynon 2013; Parks 2014), and brings into question the work to which data can be put when driving or informing decision making.

Therefore, the task is not to just reveal and demystify power relations but to also open spaces and develop the capacity to negotiate and re-negotiate existing relations and practices of power (Ormerod 2006) and contribute to what Flyvbjerg (2001) describes as society’s practical rationality. Eschewing the production of abstract knowledge, the value of pragmatic inquiry is in its capacity to discern, inform, and rehearse, from a diverse set of positions, where it is we want to go, and surface and shape debates as to what is good (Biesta 2009b; Dewey 1919/1993; Flyvbjerg 2001). This is done, not through abstract claims, but through an iterative, emergent and self-adjustment process of intelligent doings (Brandom 2009) and experimentation that draws from and informing our positioned and collective experiences (Wills and Lake 2021).

In this regard, a pragmatic form of inquiry problematises the distinction that is drawn between knowledge production and utilization (Bernstein 1992, 2010; Hayes et al. 2024; Wills and Lake 2021). A postdigital citizen social science may consider how all instances of data collection are imbued with prevailing notions of use, that may be left implicit or made explicit. However, this is not to say that the data collected is then determined by the intended use notion. Pragmatism’s commitment to deliberative experimentation and collective intelligence and problem solving (Dewey 1927/1954) poses a direct challenge to handed down intended use notions and as such is of value to a postdigital citizen social science. None of this is to deny the value and potential of existing scholarship on ILSAs. However, a pragmatic inquiry is driven by a questioning of the existing guides for action, and by extension, the monopoly and alleged superiority of technocratic and critical experts for establishing what is known and what is to be done. In this regard, a postdigital citizen social science reflects and realises the inherently positioned and partial perspectives of all forms of expertise and that the products of all forms of knowing, irrespective of their original intent, possess affordances that enable fresh intent and repurposing.

One may not have any choice but to start from the inherited and established position, but no intent, no claim to knowledge and no assumption, is to be free from scrutiny, above criticism, or beyond revision. For example, following Komatsu and Rappleye (2021), it is assumed that in the short to medium term at least, ILSAs, in one form or another, are likely to continue to be a significant aspect of a global governing complex in education (Sorensen et al. 2021). Given this assumption, it is

argued that what is vital is that the capacity to undertake productive, creative, and generative means of working with and beyond ILSA is increased.

However, under what conditions can such a capacity be increased, and in what circumstances would existing data regimes be open to negotiation? Given the emphasis placed on practical bearings, it is asserted that those seeking to develop a pragmatic citizen social science need to be mindful of the existing insights of if and how knowledge can impact on policy and practice (Connor 2013; Kingdon 1995). So, with respect to a postdigital citizen social science, the form and criteria for negotiations as to what should be done and what counts as good should not be assumed but considered within and through the contingencies of situated projects and practices.

Resistance

Efforts to Draw Attention to and Increase the Capacity of Site-Specific Struggles to Reject and Move Beyond Existing Data Regimes

When considering how to encounter and respond to data regimes, and the formulation of a pragmatic postdigital citizen social science, reflections on the theory of change or more accurately the theory of power being enacted are crucial. Notably, this resistance, when understood within asymmetrical relations, is not exclusive to any one party. Just as individuals, communities, and agencies may seek to resist the advances of repressive practices and policies, so too can authorities seek to resist demands for change. For example, Cooley and Snyder (2015) draw a distinction between rationalist and socially driven approaches, for understanding the operation of ILSAs and anticipating the response of institutions to such data. Within a rationalist approach, where an anticipated rating or ranking is expected to have material implications, a strong response on the part of those being assessed is expected. However, the nature of this response is varied. Positive results may be met with acclaim, adding legitimacy to existing policies, and, in some instances, provide a positive platform and momentum for more innovation and new initiatives. Conversely, negative reports may be met with a *mea culpa* and a project for reform but may also be met with a scepticism, if not outright hostility towards the credibility of the agency, a critique of the methodology, and a questioning of the validity of the results.

As the cycle of assessments continues, the leaders, institutions and systems being assessed may develop a strategy of ‘teaching to the test’. In place of wider reforms, indicators become substitutes for the phenomena being assessed. This can take the form of marshalling resources, to ensure the meeting of targets, but as has been documented for some time, can spill over into gaming and distortion of the system (Campbell 1979). Notably, responses are informed by the perceived legitimacy of the ILSA and the degree to which the perceived status of the system being assessed are impacted by the commendation or criticism derived from the exercise.

With reference to socially driven responses to ILSAs, what is notable is the claim that inherent to the operation of ILSAs are attempts to address, if not exploit, the concerns of the leaders and institutions regarding their status and legitimacy. As

a social construct, an institution cannot credibly affirm their own reputation, but ILSAs can confer a status. ILSAs, through the pressure they can exert on reputations, real or imagined (Arndt 2008; Arndt and Oman 2006; Kelley and Simmons 2019), have the potential to have repercussions on people's beliefs about the success or otherwise of institutions and as such represent a technology of power. The comparisons and judgement that are enabled by ILSAs appeal to competitive tendencies and feed into reputational concerns, making the deployment of this form of data potentially powerful. In this regard, the affordances of ILSAs enable and exemplify how data can be used by national and transnational authorities, and third-sector organisations as part of contemporary information politics (Kelley and Simmons 2019: 491).

As the presence of ILSAs has grown, various actors have sought to use the periodic release of data and rankings, as windows of opportunity (Kingdon 1995) to mobilize and advocate positions (Kelley and Simmons 2019). In responsive political systems, pressure from such calls for change may lead to change (Carpenter 2007), because, if it is assumed that institutions will seek to cultivate status and legitimacy as a form of strategic capital (Honig and Weaver 2019), threats to reputations, can prove a pivotal leverage for change (Kelley and Simmons 2019). At this point, a boundary and relationship to be reviewed is that between the work of a pragmatic postdigital citizen social science and a broader political economy. A range of positions exists as to what could and should constitute the relationship between knowledge, politics, and power (Markland 2021). Once again, the intention of this paper is not to offer a prescription but to reiterate that pragmatically informed postdigital citizen social science practice should be characterised by dialogue, and a willingness and capacity to ability to choose the scope, strategies, and tools that are to be deployed within a particular situation, where what works is itself a question open to scrutiny and revision.

However, it needs to be recognised that although efforts to create the conditions for dialogue may be laudable, notwithstanding the very real challenges of sustaining a constructive dialogue with willing stakeholders, the question of what happens when authorities are not willing or open to negotiation needs to be considered (Fioramonti 2013). In such instances, one line of resistance is for data subjects to claim the power to name, to contest categories or to blur and redraw boundaries (Churchman 1968/1979). This can be work that operates within the interstitial spaces of existing regimes, repurposing or rearticulating existing data or include efforts to sustain shadow or alternative data regimes that by their very existence may question what counts as a legitimate governance practice and provide exemplars for how futures could or should be shaped.

Yes, But How Exactly Can We Make This Happen?

Although Pragmatism is not defined by adherence to a particular method (Lake 2014), when seeking to establish how pragmatism could inform the conduct of a postdigital citizen social science, exemplars can be found not only in a range of action-oriented, participatory, and collaborative forms of research (Hammond

2013; MacKenzie 2024) but also drawn from the natural sciences, engineering, humanities, computing, social science, arts, and design-based research (Jandrić et al. 2024). For insights into the challenges and opportunities of collaborative projects that it is argued constitute a postdigital citizen social science, it is possible to draw from the rich tapestry of avowed and ascribed forms of pragmatic and participatory inquiry. Ranging from Jane Addams' forms of cooperative action (Addams 1910/1990) and those who have sought to emulate Addams's emphasis on the role of dialogic exchange in producing new knowledge, identities, capabilities, and practices (DeSesto 2022; Heldke 2017; Holden et al. 2013; Lake 2014; Prasad 2018; Rosiek and Pratt 2013; Villadsen 2022; Whipps 2018), through to the development and use of range of tools and approaches within collaborative projects that seek change in a range of personal, community, institutional, national, and global settings and levels (Camarrota and Fine 2008; Carvalho et al. 2024; Fals-Borda 1987; MacKenzie 2024; Tolbert et al. 2024).

Within the enactment of the HDI framework; critical incident techniques (Bott and Tourish 2016; Chell 2004; Richter and Allert 2023); futures design processes (Ollenburger 2018); ethnographic experiential futures (Candy and Kornet 2019); participatory foresight and futures methods (Popp 2013; Ramos 2017) and the use of rich pictures (Barbrook-Johnson and Penn 2022; Berg 2013; Berg and Pooley 2013; Bell and Morse 2013a, b, 2016; Checkland and Haynes 1994; Conte and Davidson 2020; Cristancho 2015; Gisby et al. 2023) can all be used as part of a postdigital citizen social science to increase legibility, agency, negotiability, and resistance to data regimes. Once again though, in the use of such tools, what is vital is that a critical and pluralistic approach is taken to making sense of data. This is an embracing of the notion that there is always more than one intent, reading and implication, and therefore, the role of a postdigital citizen social science is not to isolate a single explanation but instead surface a range of voices as to what is happening and most crucially, generate actual insights as to what could be done (Shaked and Schechter 2019).

This magpie approach to methods (Carter 2013) is open to critique, particularly if seen as an attempt to sidestep questions of rigour or neglect and erase the theoretical underpinnings of distinct approaches. A blank page or a blanket response can also create consternation, particularly when responding to enquiries as to how to conduct citizen social science. However, an apparent deferral of questions of method is not intended to frustrate or prevaricate but is considered an open invitation to create the approach that is warranted within the contingencies of a situation. This is because the criteria and outcome of a pragmatically informed postdigital citizen social science are not gleaned from a narrow methodological prescription, but rather it is enacted in and through dialogue with widening publics and a focus on action and warranted assertions as to what works (DeSesto 2022).

Conclusion

The claim asserted in this paper is that the traditions of pragmatism have much to offer the conduct of a postdigital citizen social science. The extension of a particular way of being in the world, a postdigital citizen social science seeks to deepen

a sometimes neglected, and unlearned, appetite and capacity for trial and error (Dewey 1938b/2015; Wills and Lake 2021). The attention and value that successive generations of pragmatists have placed on a participatory, positioned, and reflexive approach to inquiry offer a rich resource for those seeking to develop a contemporary form of postdigital citizen social science (Rosiek and Pratt 2013). This is a form of postdigital citizen social science prefigured by pragmatic accounts that casts inquiry as being constituted by a diverse plurality of flesh and blood individuals engaged in an experimental form of problem-solving (Ormerod 2006). Put another way, imagine a situation where people are not invited to participate in forms of professional inquiry but instead professionals are invited to participate with and help enact, deepen, and extend people's inquiries. Pragmatic inquiry realises and reflects the way in which individuals, communities, and institutions, in specific situations, address the limits of their knowledge, and negotiate futures through the surfacing and rehearsing of new directions and forms of action (Wills and Lake 2021).

In the context of a form of postdigital citizen social science that seeks to engage with and make use of existing data sets such as ILSAs, the HDI framework has been used to outline the range of projects that can be undertaken. Data or more accurately data regimes shape behaviours and can determine opportunities and as such, have the potential to shape our lives. A postdigital citizen social science, working with a Human-Data Interaction (HDI) framework, not only echoes the traditions of pragmatism, by seeking to place publics at the centre of data systems, but also works to ensure the practical bearing of such projects by enhancing the legibility of data processes, and increasing the capacity for publics to act, negotiate and resist the operation of data regimes. Given that those in education are likely to be subject to increased and extended forms of datafication, there will be a plethora of opportunities and motivations for learners at all levels to engage in such projects.

The focus on position, plurality, and practice afforded by a postdigital citizen social science, not only provides the necessary conditions for extending the horizons of what can be done but also realises pragmatism's efforts to draw attention to how our attempts to understand the world, are inseparable from our agency within it (Legg and Hookway 2021; Morgan 2014), where knowledge does not precede action but is exercised within it (Wills and Lake 2021). In the context of a datafied education system, it is vital that a myriad of approaches that seek to unconceal how our actions, the data our actions generate and 'algorithms' understood in its widest sense as the set of commands and criteria to be followed when performing calculations, solving problems and making decisions are increasingly shaping our lives (Mortier et al. 2020). Such work is considered vital because it is anticipated that data or more specifically data regimes have the potential to transform the way education systems are understood and enacted (Jarke and Breiter 2019). However, what is to be done, how it is to be done and who is to be involved are all questions that need to be worked through and within the initial contingencies of the situation in which the work is sited (Dewey 1920/1957). It is asserted that an encounter between pragmatism and a postdigital citizen social science practice affirms and enriches efforts to enact dialogue with diverse publics, with the aims of generating actionable insights, where what works is itself, a question open to scrutiny and revision.

Data Availability This paper does not analyse or generate any datasets, because the work proceeds within a theoretical approach.

Declarations

Conflict of Interest The author declares no competing interests.

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