Creating a city for all of us: a role for the Fediverse in archiving civic urban memory

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Abstract

This paper is devoted to discussion concerning being and belonging in the human liveable city emerging from considerations of cultural and urban heritage relating to civic urban memory. The paper conceptualizes the creation of a civic digital archive to record and retain urban memory for posterity, offering an overview of the potential for utilising the decentralised network model of the Fediverse by using interoperable smartphone apps in a federated social network of civic instance repositories. To make the case for such a civic memory archive repository reasoning is provided on a number of issues concerning cities, urban belonging, memory, the nature of archives and who has claim to urban memory data and content. Debate draws on a range of disciplines and reflects on human-centred urban living, cultures and lost histories, systems thinking, datafied processes and lives lived in modern smart future city spaces, considered in light of developing a digital urban memory archive. Mindful of recent increasing interest in the Fediverse to support individual and organisational social media in open decentralised ways, we propose the Fediverse as a natural framework by which to create civic memory archives within public ownership and civic curation, with full digital interoperability for a true civic urban memory archive that all citizens can interact with and contribute to.

Keywords

Archives, civic, fediverse, memory, smart cities, urbanism

1. Introduction

Debate concerning the promotion of democratic values and a sense of belonging through communication and cultural content creation demonstrates how engaging communities in their own local areas with initiatives or events can foster a 'community spirit' and sense of value in self and location, e.g. Brady et al., (2020). Dinler (2021) argues that cultural and urban heritage "can play a bigger role in re-imagining more democratic cities", noting that urban heritage is now more integrated in UN International Development Agenda frameworks (Bandarin, 2020), and that cultural heritage is framed "as a shared resource, raising awareness of common history and values, and reinforcing a sense of belonging to a common European cultural and political space" by the European Framework for Action (European Commission. Directorate General for Education, Youth, Sport and Culture., 2019).

This paper attempts to contribute to these discussions by conceptualizing a civic urban memory archive supported by the decentralized network model of the Fediverse[1]. Here we briefly introduce examples of why such an archive could be a useful addition for how local and national governments or organisations can support urban communities to promote urban

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[1] The Fediverse https://en.wikipedia.org/wiki/Fediverse

belonging and an engaged citizenship. We follow with short descriptions of key areas before then discussing the context of the various considerations involved in civic urban memory archives. We go on to propose the development of a decentralised social network for a civic urban memory archive using Mastodon[2] as an example, summarising core technical challenges of caching and storing posts, geocoding and identifying posts by place name, and the findability of location-based posts.

1.1. A possible archive of urban memory

Numerous examples from a variety of sources can be found of existing initiatives in urban belonging and civic memory, consisting of city projects, social media and online image repositories. These range from the 'Los Angeles Civic Memory Working Group[3]', 'Civic Memory in a Radical Bristol[4]', groups or pages on Facebook such as 'Flashback British Social History'[5], 'Old Photos of Essex Kent & London',[6] 'HULL: A City Through Time'[7], or the collection of historical urban life galleries of Peter Marshall on Flickr.[8] As seen in these examples, citizen content of place can often be found in social media, image or video repositories and demonstrates the vast, rich contributions that citizens make to their knowledge content of urban places. People seem to *like* making digital content about places, and their reflections or memories of those places. Much of this content may reflect on belonging in those places in the past, or family members having lived in particular places, or curiosity about what it's like for others to belong to those places. The question arises of why we are not creating more lasting repositories of this citizen content. Further, if we were to preserve this citizen content, who should the custodians be for this citizen archive of urban memory.

The recent project, 'Hidden Cities'[9], part of 'PUblic REnaissance: Urban Cultures of Public Space between Early Modern Europe and the Present'[10] (2019-2022), provides a useful and relevant example of history-in-urban-places mediated by smartphone apps. Five participating cities in the Netherlands, Germany, Spain, Italy and the UK provided smartphone apps to enable citizens to access historical content related to specific places while traversing the streets of each city. In relation to this paper's topic, the Hidden Cities example offers a thought provoking glimpse of what a smarter city could provide to its current and future citizens, if technological infrastructure enabled access to creating, consuming and interacting with a civic archive of citizen urban memory (Hetherington, 2013).

Situating debate within contextual related literature terrains of the smart future city, this paper discusses the potential merit of creating and supporting civic digital archives of user-generated content media and social communications relating to citizen experiences or memories of urban places. We reflect on how citizens might create and interact with these civic digital archives, posing the questions of who has claim to the memory of the urban

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[2] Mastodon https://en.wikipedia.org/wiki/Mastodon_(social_network)

[3] Los Angeles Civic Memory Working Group http://civicmemory.la

[4] Civic Memory in a Radical Bristol https://www.aaihs.org/civic-memory-in-a-radical-bristol-edward-colston-and-black-lives-matter/

[5] Flashback British Social History https://www.facebook.com/groups/792394660775654

[6] Old Photos of Essex Kent & London https://www.facebook.com/Oldphotos1

[7] HULL: A City Through Time https://www.facebook.com/groups/535001484700861

[8] Peter Marshall https://www.flickr.com/photos/petermarshall/albums

[9] Hidden Cities https://hiddencities.eu

[10] PURE, funded by the Humanities in European Research Area (HERA), through the 'Joint Research Programme', Public Spaces: Culture and Integration in Europe https://heranet.info/projects/public-spaces-culture-and-integration-in-europe

environment, and who might own, host and curate digital civic archives of urban citizen memory. We further consider the adoption of a 'Fediverse model' for a publicly owned, decentralised, fully interoperable social network to build and host a citizen urban archive for posterity.

2. Defining Areas

Brief descriptions are provided here to support understanding of areas discussed in the context of this paper.

2.1. Urban Belonging

Youkhana notes conceptions of belonging as a range from "a personal feeling, the sense of belonging to a certain group, place, or social location, to the understanding of belonging as a resource that can be used to draw social demarcations and establish border regimes, the so-called politics of belonging" (Youkhana, 2015, p. 11). Citing Anthias (2006, 2008), belonging is situated at the interface between the local and the global, to 'dissolve the binary semantic of spatial dimensions'. Anthias introduced the term 'translocational positionalities' to "contest the inherent spatialities of concepts of belonging and identity … the spatial reference… reflects the importance of place-based interaction on the one hand, and movement on the other" (Youkhana, 2015, p. 12). Bauder (2016) reflects on territorial belonging, citing Purcell (2013, p. 142) that "it is the everyday experience of inhabiting the city that entitles one to a right to the city, rather than one's nation-state citizenship" (Bauder, 2016, p. 255). Youkhana further notes that "Creative Activism is used to produce urban belonging beyond notions of social containers or imposed collective identities" (Youkhana, 2014, p. 173). The shifting multiplexities of personal lifeworld experience in digital hybridity that may be encountered in place further complicate notions of place and belonging. These multilayered spaces of being in place, previously defined by Lefebvre (1974) as imbued with social, cultural and political meaning, are according to Bross now "concerned more with global connectivity than *place*" (Bross' emphasis) (2018). Citing Castells, the "space of flows" is not the end of place itself, but the phenomenon "links up distant locales around shared functions and meanings on the basis of electronic circuits and fast transportation corridors, while *isolating and subduing* the logic of experience embodied in the space of places." Bross summarises Castells with "(t)he global city is not a place, but a process", Castells (2001), in Bross (2018). For the purposes of this paper, these form some assumptions of what it may mean to be in places, in digitally augmented varying states of belonging.

2.2. Urban Digital Lifeworlds

It is useful to suggest that part of urban belonging consists of a digitally augmented sense of 'lifeworld'. In this context, the digital lifeworld can be introduced to the ways we see and experience technological systems mediating every day experiences, both individual and shared. The *digital lifeworld*, referred to by Jordan (2021) as postdigital, has increasingly been adopted as a way of acknowledging our ubiquitously infused technological daily reality. For example, Risse (2021) describes a digital lifeworld that "connect(s) humans, sophisticated machines and abundant data in the elaborate ways that now shape our reality". Susskind (2018) imagines a digital lifeworld as a "dense and teeming system that links human beings, powerful machines, and abundant data in a web of great delicacy and complexity". A digital lifeworld can therefore be defined beyond the phenomenological interpretation of 'lifeworld', from the German '*Lebenswelt*', defined by Susskind as all the immediate experiences, activities, and contacts that make up individual and collective worlds (2018, p. 29). A 'lifeworld' (Cudjoe, 2023) is a term usually associated with phenomenological fields of inquiry or reflection, and concerns the lived experience of the

participants who are the object of research. (Sandberg, 2005) provides us with a useful summary:

> *"The notion of lived experience as the primary research object can be traced back to the phenomenological idea of life-world. It was first developed by Husserl (1936/1970) but has been further developed by other phenomenologists… The idea of lifeworld expresses that person and world are inextricably related through the person's lived experience of the world…"* (Sandberg, 2005, p. 47)

As citizens going about our daily lives, we may read or otherwise interact with digital content and communications from other citizens in the context of our mutual local urban spaces that impact our experience of being in those places, and our feelings of belonging to them, or being alienated from them. We may ourselves be contributing to this rich milieu with our own digital creations or conversations. Streets, public transport and public buildings are filled with digital or electronically mediated markers of identity, ownership and gate keeping of territories that signify rules and expectations of who is welcome and who is not, affecting both the physical surfaces of these spaces (Bross, 2018), and of belonging in them. Likewise our social media digital pathways reflect a similar sense of whether we are part of what is going on, or that we are characterised as outsiders. The digital (or postdigital) lifeworld may be a way of describing the urban digitally augmented sense of being and belonging, and be of some significance to situate urban lifeworld memory within its digital context. Civic urban memory archives, which in all likelihood would be digital repositories, capture moments of this urban digitised life, mediating the 'experiences, activities, and contacts that make up our individual and collective worlds'.

2.3.   *Ways of seeing cities*

Cities can be defined and conceptualised from distinct and sometimes conflicting perspectives. For example, we can think about cities as networks, literally and figuratively. City streets reflect the routing topologies of a printed circuit board (Zhang et al., 2022), but also *look like circuit boards* visually in their representational design, e.g. the Chernobylizer (McKendrick & Drage, 2020), or Heiko Hellwig's Silicon Cities (Malonee, 2018). The patterns of a digital network's nodes and edges reflect in the forms of road and city networks, with strong and weak ties, intersectional crossroads and the flow of connections that change according to time, place and nature of city area. Data analysis for intelligent traffic flow by node and edge weight can determine improvements for city transport infrastructure and management, e.g. (Latif et al., 2018; Moore et al., 2013; Zhang et al., 2022) demonstrating the city as a networked system. However, we note elsewhere in a future paper by the authors (in preparation) that literature offers multiple creative descriptions of cities: a happenstance of metaphors (MacFarlane, 2005), an unknowable labyrinth (Coverley, 2006), a memory machine (Sheringham, 2010) and a drama in time (Geddes, 2004).These descriptions illustrate the broad landscape of how we think about cities in direct contrast to when we think of cities as distributed, pervasive technological infusions in a networked built environment. Cities arguably become poetic, group imaginational landscapes rather than systems and machines to provide services and solve technical problems. These contrasting perceptions of cities indicate how differently cities can be thought about, and the mixtures of conceptual positions. There is no fixed specific single definition of a city but how we think about the nature of a city may have remarkable power as to how it manifests in real world activity and liveability (Dobson, 2018, p. 115).

Following sections now consider the nature and purpose of civic urban memory archives.

3. Urban futures, Urban Pasts

Rochet (2018) and others (Calzada, 2021; Townsend, 2013) take the reader through guided tours of how cities have come to be, what caused them to evolve in certain directions and where they may go next. Rochet begins with the medieval cities 'without architects' that grew from a need for mutual problem solving and conflict resolution, giving rise to concepts of a 'civic religion of the common good', citing Mumford who observed that this consensus was so complete that 'the variations in detail only confirmed the pattern' (Mumford, 1961, p. 348). Rochet contrasts this with the 'projection of an ideal city', from the 1516 socialist utopia of Thomas More (More, 1949) to the later concept proposed by Howard's Garden City (Howard, 1902). The city as systems based on function originates in the post war period of reconstruction (Rochet, 2018, p. 73), adopting the principle of machines for living (residential) and machines for making (industrial), subsequently forming the urban sprawl that Geddes observed as 'vast and growing' conurbations (Geddes, 1915, p. 41). Rochet refers to Batty (2013), stating we must "reform a definition and a dynamic of cities which allows us to escape the fatality of oil-slick growth" and "return to an urbanism which strives to have life in the city in all of its components and which does not only optimize a few parameters, and not just those of promoters" (Rochet, 2018, p. 73). Under the evocative heading 'Sprawling Giantism', Mumford dismisses endless expansion of production, putting one in mind of the datafied citizenship economies of the smart city in battle with the human-centred living memory of its citizens:

> *"By fashion and built-in obsolescence the economies of machine production, instead of producing leisure and durable wealth, are duly cancelled out by mandatory consumption on an ever larger scale. By the same token, the city itself becomes consumable, indeed expendable" … "The living memory of the city, which once bound together generations and centuries, disappears: its inhabitants live in a self-annihilating moment-to-moment continuum…" (Mumford, 1961, p. 545)*

Rochet declares '(a) city is an imbalanced system', "like biological organisms, rather than mechanical machines", and in this "complex living ecosystem of social relations, we will consider the intelligence of said city from interactions that residents can maintain among themselves…" (Rochet, 2018, pp. 79, 54). Meadows notes: "There's something within the human mind that is attracted to straight lines and not curves … to uniformity and not diversity, and to certainties and not mystery. But there is something else within us that has the opposite set of tendencies" (Meadows, 2008, p. 182). Observing that "(o)nly a part of us … that has emerged recently, designs buildings as boxes with uncompromising straight lines and flat surfaces", she remarks that "nature designs in fractals", further citing Leopold's (1949) land ethic: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise" (Leopold, 2008). Rochet cites Bettencourt, who "… insists on the importance of resisting the temptation to plan everything in great detail…" (Rochet, 2018, p. 53), permitting self organisation, the 'natural order' of hierarchies that Meadows emphasises, (Meadows, 2008, pp. 82–86, 159). Meadows extols that to see a system 'whole', we must embrace interdisciplinarity in a mode of learning and problem solving across perspective lenses, and 'expand the boundary of caring'. If moral reasons are not sufficient, "systems thinking provides the practical reasons to back up the moral ones" and "(a)s with everything else about systems, most people already know about the interconnections that make moral and practical rules turn out to be the same rules" (Meadows, 2008, p. 184). Perhaps Meadows' interconnected moral system and Rochet's 'intelligence from interactions that residents can maintain among themselves' (Rochet, 2018, p. 54) can be interpreted as participation in public creative arts, ad-hoc events and installations that enliven localities, and that these socialised experiences lead to greater

belonging. Reimagining our shared places and fostering a sense of harmony, engagement and civic co-ownership form part of belonging in the urban democratic space (Brady et al., 2020; Sayers, 2018; Wood et al., 2021).

While urban cybernetics systems of pervasively datafied *control loop* built environment infrastructure (Goodspeed, 2014) may still occupy a significant position in the mindset and conceptual grand plan of the smart city,[11] there is now an acknowledgement that urban citizens and their daily lives should inform desirable approaches for the design of urban community and public space (Townsend, 2013). Townsend wrote presciently that a "… backlash to corporate visions of smart cities (is) coming to light, as a radically different vision of how we might design and build them bubbles up from the street" (p. 9). His book examines the tensions between "the engineering conglomerates that grew to greatness building the systems that control our world" such as IBM, Cisco, Siemens or others, and the small "motley assortment of activists, entrepreneurs, and civic hackers" who "eschew efficiency, instead seeking to amplify and accelerate the natural sociability of city life", and "create digital interfaces for people to see, touch, and feel the city in completely new ways" (p. 9). In a following paragraph, Townsend evokes the Fediverse (Lutkevich, 2023), where "(i)nstead of proprietary monopolies'", this assortment of activists, entrepreneurs and civic hackers "build collaborative networks … (and) propose messy, decentralized, and democratic alternatives. It's only a matter of time before they come to blows" (Townsend, 2013, p. 9).

This David and Goliath battle for who owns the communication and digital content of the lives of urban dwelling citizens is more pertinent now than it may have been when Townsend wrote those words. Ample argument has since been provided to reconsider the role of big tech platform monopolies and their control of communication and informational data (Srnicek, 2017; Zuboff, 2019).

3.1.   An Urban Archivy

According to the Dictionary of Archives Terminology, 'Archivy' is the discipline of archives (Archivy, 2015) and serves here to describe the act of archiving in various contexts and for various purposes. Ketelaar (1999) reflects on two questions, why people and societies create and use archives, and whether a 'better understanding' of the ways people create archives enables more efficient and effective ways of creating records. Asserting that "(a)rchives are not neutral", he cites Munslow (1997), that 'even when straight from the dusty archive…the evidence always pre-exists within narrative structures and is freighted with cultural meanings - who put the archives together, why, and what did they include or exclude", (Ketelaar, 1999). Further citing Derrida (1996) Ketelaar reflects that archives are determined by 'socio-technology', eliciting different responses from the writer or recorder for the archival event in relation to medium, significance and time. The occasion made by the immediacy of a family photograph perhaps places on it a greater significance; and by not recording or occasioning events they simply disappear (Ketelaar, 1999, pp. 56–57). This signals that a digital archive would potentially be *sociomaterially different* to a conventional book archive, placing different emphasis on occasioned events.

Geddes declares "for the uplift of citizenship … no amount of past and present experience of cities can be too great" (Geddes, 1915, p. 161). This is as true today as in Geddes time, as examples such as The Urban Archive Web App[12], the California State University Urban

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Archives Collections[13] or the London Metropolitan Archives[14] attest, offering comprehensive urban archives curated by experts. It may be considered however, that while the types of content found in 'official' archive collections have a lot of variation related to urban places, the collection and curation of that content seems rather remote and inaccessible to the common citizen. It often originates from galleries, museums or academic initiatives, and the content itself is curated by official representatives, which may change its emphasis (Jansson, 2017). This does not mean it is any lesser for quality, authenticity or worthiness to be archived, but it is somewhat different from a *true* civic memory archive.

4. Remembering Our Selves

This paper reflects on creating a civic urban memory of place, contributing to the wider knowledge web of place through networked connectivity for related findability. Here, the merits of remembering and forgetting are considered in this context. A personal remembering of place and how we belong in it, how we co-constitute memories of places that are shared, celebrated, reinvented or challenged are methods of establishing our self-hood and togetherness in place. Bross (2018) reflects on Heidegger (1971), who implies that no built environment would exist without an innate human essence of being as 'dwelling'. Heidegger's argument is that to say "I am" is to say "I dwell" ('ich bin' in the old German is 'bauen', to which the 'bin' belongs, therefore 'ich bin', 'du bist' mean 'I dwell', 'you dwell', (1971, p. 145), and that dwelling is the knowing state of being human. This emphasis on dwelling is where meaning about space is derived. It may therefore not be unreasonable to assert that without living and spending time in a place, there is no meaning in that place and therefore no meaning of self and being. Without wishing to enter into further deep waters of philosophical reasoning (for sake of space), we can perhaps say: "we come to know ourselves and others through spending time in familiar places, together and alone". The making of meaning, creating feelings of belonging and identity of urban home are at the core of what it means to be and to belong. The authors will revisit the notion of dwelling and complexities of being and meaning making in future work.

Yet, space of home and being in place have changed as we have entered some time ago into the world of 'postdigitality'. Jordan (2021) cites Cascone (2000), who argued that a new era was emerging, one in which 'the revolutionary period of the digital information age has surely passed', writing almost 25 years ago. This is referred to by Bross as the 'Digital Revolution' (2018, p. 98), "concerned more with global connectivity than place", linking up distant locales around shared functions and meanings, and echoes Meyrowtz's 'glocality', where no sense of place (1985, 2005) becomes a multilayered sense of being in many places at one time. Traxler refers to this as absent presence, 'the erosion of physical place' by "multiple mobile virtual spaces of multiple conversational interactions" (2015). Perhaps we must adapt our notions of being and dwelling to a sense of home that may not be attached to physical place, just as "the truck driver is at home on the highway, but he does not have his shelter there" (Heidegger, 1971, p. 143). In the new normal of 'zoom generation' postdigitality, there is an assumed familiarity with a multiple hybridity-in-place incorporating socio-spatio-temporal home/displacement that is so pervasive it may go beyond Heidegger's intended meaning.

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[13] https://library.csun.edu/SCA/UrbanArchives
[14] https://www.cityoflondon.gov.uk/things-to-do/history-and-heritage/london-metropolitan-archives

4.1.   The importance of forgetting

Much has been written about the virtues of forgetting in the digital age, e.g. (Mayer-Schönberger, 2011). Of note is the ethical importance of forgetting, and the right to be forgotten. In the case of digital urban memory archives, we may also add to these virtues of forgetting the right to not be remembered for public knowledge consumption. Downes (2008, p. 92) reflects on what constitutes public and private knowledge in connected networks: "for private knowledge to become public knowledge, it must have some means of connecting with everything else that is considered public knowledge – through commonly understood utterances or actions" … "It must be interpreted as such … in the public domain. In order for this to happen, the set of utterances … must form a part of the communications, of the interactions, in the social network as a whole". In discussing ethical concerns of using 'life-log tools', Kitchen & Dodge (2011) cite Nietzsche's suggestions that "forgetting will save humans from history" (Ramadanovic, 2001), and that "no individual or collectivity can afford to remember everything" (Lowenthal, 1999). Kitchen & Dodge follow up with "(f)orgetting allows people to be fallible, to evolve their social identities, to live with their conscience, to deal with "their demons," to move on from their past and build new lives, to reconcile their own paradoxes and contradictions, and to be part of society" (2011, p. 253). However, it may not be as simple as deleting or digital content expiry dates, as all time(s) are potentially related to all other time(s).

4.1.1. Time horizons

Meadows (2008) states that in a 'strict system sense' time scales are nested within each other (p. 183), and that "(t) he time horizon of most families still extends … through the lifetimes of children or grandchildren…Native American cultures actively spoke of and considered in their decisions the effects on the seventh generation to come". She cites Boulding (1966) "(t)here is a great deal of historical evidence to suggest that a society which loses its identity with posterity and which loses its positive image of the future loses also its capacity to deal with present problems, and soon falls apart". Geddes (1915) knew the value of civic urban memory, but thought most people "had forgotten the history of their own city" (p. 18). He emphasises throughout his work the impact of the forgotten ideals of the 'civic drama' (p. 141), comparing the German attitude to civic memory with the British as "historic memories and associations are not, as with us, forgotten, or sneered at as sentimental if revived, but are known and valued as the spiritual heritage of the community" (p. 214). *Spiritual heritage of the community* implies a sense of identity, being and belonging that affordance and preservation of community memory provides. Geddes believed it was essential for citizens to not only remember and know their urban history, but their *social* past, in order to invent a better future (p. 396).

5. The role of the Fediverse in the urban archivy

It may be difficult to disentangle the smart personalised data of the urban-environment inhabiting citizen with that of the exponential expansion of surveillance data economies and digital interactions data farming by big tech monopolies, just as Townsend (2013) predicted. The ownership and trustful custodianship of data and digital content is already being contested (e.g. MatterMost adopted by CERN)[15], not only because of reliable maintainability of data in posterity, but also due to territorial data legislation requirements.[16] While it may be reasonable to assume that interactive civic urban memory archives would be digital,

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[15] https://web.archive.org/web/20221216160853/https://mattermost.com/customers/cern/
[16] https://edps.europa.eu/data-protection/our-work/publications/techdispatch/2022-07-26-techdispatch-12022-federated-social-media-platforms_en#:~:text=II.1%20Compliance,international%20data%20transfers.

accessible online via apps or web browsers, this poses challenges for ownership of the data, and perhaps this is where the open and decentralised Fediverse model comes in. It is therefore useful to define and briefly explain what the Fediverse is, Lutkevich (2023) provides a recent succinct summary:

> *"The fediverse is a collection of independently hosted interconnected servers. The term is a portmanteau of the words federated and universe. In social networking, the fediverse refers to a collection of independent social applications linked by a common protocol", (Lutkevich, 2023)*

He goes on to explain ActivityPub, "(o)ne of the most used protocols for social networking in the Fediverse", developed by the World Wide Web Consortium (W3C)[17] and "based on the ActivityStreams 2.0 data format" (Lutkevich, 2023). ActivityPub provides a client-to-server API[18] for creating, reading, updating and deleting content (CRUD)[19] and a server-to-server API for delivering notifications and content. There are other protocols and many federated social network applications that make up the Fediverse[1], the largest federated social network is the microblogging platform Mastodon[2]. It may be argued that the idea of decentralised social media only became visible to the wider public through the purchase of Twitter by Elon Musk, concluded in October 2022 (Dang & Roumeliotis, 2022). The rapid changes to the Twitter platform that ensued following his takeover led to a surge in new Mastodon users (Statista, 2023[20]), including large entity accounts, e.g. the EU Voice,[21] or the BBC (Ferne, 2023) and government organisations in Germany and the Netherlands, though German organisations had been on Mastodon for some time (Escritt, 2022; Hof, 2023; Ottenheimer, 2022). Other rapid changes and erratic behaviour followed,[22] leading to further unsettling the climate of social media big tech monopoly that had previously largely remained unchallenged. This has not only affected social media platform reliability of access and post maintainability uncertainty, but magnified the core issue of who hosts and owns data in the public realm. Combined with the imminent challenges of territorial boundary data processing and privacy requirements (Reimann, 2002) this has subsequently led to, perhaps most significantly, the stated intention of Meta's Threads to be 'compatible with interoperable networks'.[23] Other major players such as Jack Dorsey's Blue Sky[24] are now also heavily invested in building federated social apps.

6. A federated civic archive of memory

The changes outlined above lead to consideration of a decentralised interoperable network system being most suitable to support a true citizen memory archive. Being a civically owned, public-value orientated technical infrastructure aligns with the values that such an archive would embrace. A recent BBC statement made this clear:

> *"Federated social networks ... offer a model for future development that aligns with our own work to support a public service internet ... The principles of the Fediverse,*

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[17] The world-wide-web consortium (W3C). https://www.w3.org/
[18] API https://en.wikipedia.org/wiki/API
[19] CRUD https://en.wikipedia.org/wiki/Create,_read,_update_and_delete
[20] Statista estimated 10.4m users in March '23, up from 2.5m in Nov '22. https://www.statista.com/statistics/1376022/global-registered-mastodon-users
[21] EU Voice https://social.network.europa.eu/about
[22] E.g. temporary banning of external urls on Twitter posts (Substack, Mastodon); withdrawal of free or low cost access to the Twitter API https://techcrunch.com/2023/08/11/elon-musk-twitter-everything-you-need-to-know/
[23] Threads https://about.fb.com/news/2023/07/introducing-threads-new-app-text-sharing/
[24] BlueSky https://bsky.app/

> *with an emphasis on local control, quality content, and social value, are far more*
> *aligned with our public purposes than those of avowedly commercial networks like*
> *Threads or Twitter" (Ferne, 2023).*

Technically speaking, it may be possible for digital civic archives of individual and community histories to be captured via publicly owned federated interoperable social networks, compiled by citizens themselves in a decentralised urban archivy. Here, we briefly consider some challenges and possible solutions of such an approach. It is important to note the authors are not Fediverse app developers or server admins, however, from a layman's grasp of the core principles involved, three issues seem pertinent: a) how to geocode or place-name identify Fediverse app posts; b) how to push or pull identified place-named posts to instance(s) archives in relevant ways (geocode or place name); c) how to find place-based posts. Other functionality for sharing, commenting, boosting would already be available via usual app functions in all instances. These challenges are complex, and are likely solvable in multiple different ways. What follows here is a brief overview of possible solutions being currently discussed by those in the Fediverse development community. Whilst we acknowledge that Mastodon is not the only Fediverse project, it is used here to consider some challenges of building a civic memory federated archive in the Fediverse.

6.1.   *Mastodon post geocoding*

The Mastodon Github forum has several threads on topics related to place naming (geotagging or geocoding). Whilst identity, privacy and security remain considerable challenges for users (of any social media), there is a clear interest in posts being able to be sorted according to geocode, place name, place hashtag or country. Conversations in Mastodon Github that are discussing place names or geotagging[25] start as long ago as 2016, but appear to have renewed interest in recent months. According to a thread discussing place naming on the W3C ActivitypubRocks[26] Social Hub, the ActivityStream vocabulary for the place object[27] is "… intentionally flexible. It can, for instance, be used to identify a location simply by name (…) or, by longitude and latitude (…)". The thread participants discuss various ways to implement a place-name or geotag identifier, including Schema Place properties[28] for address. Perhaps it may be possible to offer a Fediverse instance user the feature of adding (automated) place name metadata from post location or identified verbose place name to their post(s), either at user account level or at instance server level through opt-in settings. Special interest instances such as Mapstodon[29] or other place-name opt-in servers may have features to pull content with user-labelled place name posts from other federated instances, as well as their own local users already posting content with place name metadata property attributes. This might be how civic archive server instances could be set up.

6.2.   *Identifying posts that have place names*

According to a Mastodon Github discussion post (Bauman, 2022), The InterPlanetary File System[30] (IPFS) may be a solution to overcoming the problem of pulling/pushing large amounts of data between instance servers. IPFS is "a peer-to-peer (P2P) distributed system for storing, accessing and sharing files, websites, applications and data" … " designed to

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[25] GPS Location in Toots (not linked to images) #8340; GeoTag toggle for post (Enhancement) #281; Explore Posts and Hashtags by Country #23838
[26] https://socialhub.activitypub.rocks/t/how-to-represent-places-in-an-event/413/6
[27] Activity Streams Place Object https://www.w3.org/TR/activitystreams-vocabulary/#places
[28] Schema Place property https://schema.org/Place
[29] Mapstodon https://mapstodon.space/explore
[30] IPFS https://en.wikipedia.org/wiki/InterPlanetary_File_System

establish a fully decentralized system capable of functioning across places as disconnected or as far apart as planets" (Shilina, 2023). IPFS may be relevant because it assigns content nodes with a unique Content Identifier (CID), thus enabling identification of specific posts across federated networks to pull that content, without said instances having to pull *all* posts from that other instance, that most of their local users would never see. This overcomes the 'caching problem' that ActivityPub/ActivityStream has, where significant volumes of data are already being shifted around the federated network.[31] It may be one way of pulling CID nominated data with specific hashtags, place names or geocoded identifiers into specific civic archive collections in federated instances of (in this case) Mastodon. IPFS is not the only solution to the problem of post unique identifiers and content caching being discussed in the thread, but here serves to indicate that the issue of pulling specific identified posts without having to pull everything to cache (and potentially store) is an on-going technical discussion.

6.3. Findability

Geo-location based content relatedness impacts findability in context of place for any user searching for information about locations, or wishing to contribute their own content to an archive of a specific place. The discovery of place named posts in an archive instance so as to be found in related searches is therefore another challenge for a civic memory archive of place. Fediverse app metadata properties, hashtags and CID identifiers may all play a part in configuring best ways to implement open discovery in the wider knowledge commons, perhaps utilising other Resource Description Framework in Attributes (RDFa)[32] based place-name properties such as Open Graph geotagging (Lister, 2018), in addition to human curation. Space does not permit further discussion of findability/discoverability but here we conclude with a recent comment from Daniel Supernaught (the creator of Pixelfed[33]): "Discovery is hard to get right, fancy algorithms can work with enough data, when you don't have enough data, basic signals such as like or comment counts can do the job, (but) nothing beats human curated discovery" (Dansup on Mastodon, August 2023)[34].

6.3.1. Limitations of this paper

It is only possible in this paper to offer a brief look at the idea of having a citizen memory civic archive as an interoperable decentralised social network. The technical aspects of the paper are provided in good faith as a layman's simplified assumption on some of what may be involved, with the proviso that fuller understanding may indicate further challenges to be overcome. Issues such as user permission to archive post content, funding models, user privacy, maintainability of archive records and civic models of ownership have not been covered in the paper. These and other issues will continue to be explored by the authors.

7. Conclusions

This paper has considered the merits of developing and supporting a citizen urban memory civic archive, utilising a Fediverse model of social networking. We have reflected on human belonging in urban spaces, organic self-organising systems of the city and the value of urban citizen memory to form a citizen created publicly owned civic archive. Positioning this as a decentralised citizen urban memory social network might form part of the different vision for designing and building the cities that Geddes wrote of in 1915 and Townsend wrote of a hundred years later, in 2013. The paper has explored further reasoning for utilising a

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[31] Mastodon thread about data transfer and object storage https://sunny.garden/@brook/110983310464796590
[32] RDFa https://en.wikipedia.org/wiki/RDFa
[33] Pixelfed https://en.wikipedia.org/wiki/Pixelfed
[34] Dansup on discoverabilitiy: https://mastodon.social/@dansup/110978201086108894

Fediverse model in the context of how smarter, more efficient and user-friendly technology can foster and sustain such a city, where every citizen might be able to contribute to the wider knowledge web of place through networked connectivity. Offering a layman's overview of some possible solutions to the technical challenges at hand for archiving and findability of citizen memory content and communications in place-based scenarios, we acknowledge this is only a glimpse of the technical terrain. We tentatively conclude that use of an interoperable platform and app agnostic content sharing means an open and perhaps truer citizen archive, available to all.

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