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At the Crossroads of Data Justice and Data Capitalism: How Generative AI in Healthcare Mobilises Its Assemblages

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ABSTRACT

Algorithmic technologies such as machine learning, generative artificial intelligence (GenAI) and automated decision-making have become one of the frontiers of contemporary technoscientific innovation in healthcare. However, algorithmic technologies can never be seen in isolation from the networks in which they are embedded. Not only are they woven into situated socio-technical assemblages of human and nonhuman entities—tools, objects and other technologies—but their entanglements also reach into regulatory institutions and markets. This paper conceptualises GenAI in healthcare 'in the making' at the rapidly changing intersection of three spheres: regulatory, market and healthcare delivery. Our study, conducted in conjunction with two nongovernmental social justice organisations, explores how this intersection is currently 'motored' by data justice concerns on the one hand and data capitalist objectives on the other. We draw health sociologists' attention to the technopolitics and market interests that lie behind AI promissories and implementations in healthcare. More importantly, we contribute to collective thinking around how we may steer this dynamic towards the empowerment of civic society, dynamic regulation and a push for public value—rather than enrichment of the few.

1 | Introduction

Ireland's new children's hospital, scheduled to open its doors in 2026, is announced to be the country's first 'digital hospital'; its 'digital first' strategy encompasses digital technologies ranging from automated back-office processes to self-service kiosks to electronic health records to cybersecurity and automated guided vehicles delivering goods. Much of this technology will be powered in one way or another by artificial intelligence (AI), owned and overseen by several large private firms, including Telefonica Tech, a multinational 'digital transformation specialist' (www.telefonicatech.com).[1]

The adoption of AI technologies in healthcare has been accompanied by promissories of transformation: overcoming some of the greatest access bottlenecks in healthcare, enhancing informed decision-making, improving the integration of care and better resource allocation (WHO 2021; Wieczorek et al. 2025). As the case of Ireland's new 'digital first' children's hospital suggests, healthcare providers and policymakers are currently busy building 'hospitals of the future' on the basis of these promissories and often rely extensively on private technology firms to realise their digital ambitions. Beyond promissories, these technologies have already taken hold in many healthcare sites and fields, including radiology, cancer and psychiatry (Hesjedal et al. 2024; Lombi and Rossero 2023; Watson and Wozniak-O'Connor 2024). One focal technology is generative AI (GenAI), a subsection of AI centred around large language models, with rapidly broadening use cases in healthcare, including the ability to identify patterns and produce new content from historical training data (Gartner 2023). As these technologies are currently evolving at a scale and speed that

escapes the comprehension of many, scrutiny is essential to analyse the commercial entanglements and politics shaped in and through these technological promissories (Birch and Bronson 2022; Stevens et al. 2024; Taylor et al. 2025). Given that AI technologies are still very much 'in the making' (Scott and Orlikowski 2025), scrutiny is even more vital in pinpointing who and what drives these technopolitics and in which direction these dynamics are headed.

Although discussions of algorithmic technologies, including GenAI, currently feature large in the healthcare literature, much of the research focuses on the technology's 'proximate' interactions with human and nonhuman entities, including other algorithms (Mello and Guha 2024; Olawade et al. 2024; Saraswat et al. 2022). Algorithms' broader entanglements and the politics that these entanglements foster, however, are often less well understood and more difficult to trace—including those with markets for data (Geiger and Gross 2021; Zuboff 2019). Bringing together perspectives from science and technology studies on data capitalism in healthcare (e.g., Rikap 2023; Geiger 2020) with critical data studies (e.g., Sharon 2021; Taylor 2017; Taylor et al. 2025), our study explores GenAI's sociotechnical entanglements across the spheres of healthcare delivery, markets and regulation. We focus particularly on who and what drives these assemblages' technopolitics: Who provides their momentum and to what ends are they directed?

Sociomaterial or sociotechnical assemblages (STAs, for short), as conceptualised in actor-network theory,[2] are heterogeneous networks that are made up of human and nonhuman, material and immaterial, physical and textual elements, all of which interact with one another (Callon 2021; Lamprou 2017; Scott and Orlikowski 2025). Each actor's roles and interactions shape sociotechnical realities and practices with broad ripple effects across the entire STA—and into the broader spheres that are entangled with or affected by these STAs. We explore these ripple effects through the 'ontology of movement' perspective that Harrison et al. (2023) elaborated in a hospital setting. Harrison and colleagues do not see the hospital as a unitary, static 'site'. Instead, they argue that the hospital is characterised by 'movement, becoming and flow' (Harrison et al. 2023, 3), whereby materials, spaces, bodies, technologies and politics come to form sites of social control but also spaces that overflow their social and material boundaries and become contested as a consequence.

Our contribution is both descriptive and prescriptive: Bringing this ontology of movement together with our interest in tracing sociotechnical assemblages across markets, institutions and care delivery, we shine a sociological light on GenAI and its assemblages being 'on the move' and creating ripple effects. We explore this movement as currently being motored by two often opposing 'concerns' (Geiger et al. 2014): data justice and data capitalism. Data justice concerns emerge when digital technologies, algorithms and data in health and medicine put the already marginalised in society at a further disadvantage (Gross 2024; Leslie et al. 2022; Taylor et al. 2025). Data capitalism, on the other hand (Birch and Bronson 2022; Zuboff 2019), describes the current modus operandi of many Big Tech firms, where data—including personal health data—are transformed into assets and monetised (Geiger and Gross 2021), following an exclusionary logic and further embedding lockouts and inequalities in healthcare.

Our ultimate aim is to ascertain how GenAI's movements may be 'motored' more vigorously by data justice concerns through the collective efforts of academics, civil society and regulators, rather than by private tech firms' data capitalist motives. We propose three pathways to strengthen the data justice 'motor': empowering citizens and civil society; bringing greater velocity into regulation; and safeguarding public value. Ultimately, by revealing GenAI's politics, we also encourage social scientists to become involved in these assemblages to change them.

2 | GenAI's Entanglement With Healthcare Delivery, Market and Regulation

Algorithmic technologies have become a default mode for contemporary sociotechnical innovation, including in healthcare: Many healthcare delivery practices have come to depend on Big Tech's computing power, systems and infrastructures, data repositories and market ecosystem (Kak et al. 2023). Most of these technologies are either directly owned by Big Tech companies or rely on their foundational models; Microsoft, for instance, is involved with OpenAI and Google owns Gemini but also Med-PaLM2, a large language model for the medical domain (Google 2024).[3] Once deployed, these technologies not only shape the lives of patients and doctors, but they can also exert authority on entire healthcare systems (Schwennesen 2019).

To balance the interests between powerful technology companies and the needs of citizens, the European Union has launched several regulations in recent years. For instance, the 2024 EU AI Act limits the use of biometric identification systems by law enforcement, banning social scoring and the use of AI to manipulate or exploit user vulnerabilities (European Parliament 2024). The Act also acknowledges that the right to privacy and the protection of personal data are threatened by certain types of AI (Cabrera 2024). Although the EU AI Act has been described as a 'landmark law' (European Parliament 2024), commentators highlight its significant shortcomings for healthcare (Pham and Davies 2024; van Kolfschooten and Van Oirschoot 2024). To illustrate: The Act classifies any GenAI system in healthcare used as a medical device as 'high risk', yet neither are all technology providers required to complete a fundamental assessment, nor will all have to register in a public EU database for AI systems (which tracks information about intended use and the type of data the AI uses). Many GenAI systems will thus escape regulation put in place to minimise the risks posed by these technologies (Gross et al. 2025). Another regulation that influences how the use of GenAI in healthcare unfolds in practice is the 2025 European Health Data Space (EHDS). The EHDS sets out rules, standards and practices for accessing and sharing health data within the EU, aiming to empower individuals and facilitate research, innovation and policymaking (European Union 2022). Despite being another landmark agreement, the EHDS may erode rather than increase the public value generated through health data sharing (Marelli et al. 2023).

Large technology firms are quick to deploy their economic and political muscle to influence these regulatory processes (Prainsack 2023). Although Europe is often seen at the forefront of discussions about how to rein in Big Tech's power (Dencik et al. 2016; Dencik et al. 2019; Vick 2022), not all regulations have proven to be equally successful. For instance, many tech firms have managed to circumvent GDPR's 'legitimate interest' clause through deceptive designs (Kyi et al. 2023). And even though GDPR enforcement is ramping up—2245 fines were issued, amounting to a cumulative sum of €5.65 billion as of 1 March 2025 (CMS 2025)—the political will to issue fines remains weak (Schenker 2024), and any fines issued remain modest compared to Big Tech's profits (Koch 2024). Also, GenAI systems such as ChatGPT have already been found to be violating GDPR, yet it is unlikely that any significant consequences will arise anytime soon (Lomas 2024).

3 | Framing GenAI as a Sociotechnical Assemblage

Given the technological and regulatory power dynamics outlined above, it is vital to more thoroughly examine GenAI's technopolitics in the context of healthcare delivery. Researchers have previously postulated that with the increasing adoption of digital technologies such as GenAI in healthcare, three separate 'spheres' of action—market, regulatory and healthcare delivery—are brought into ever-closer contact and that this contact may cause issues for social justice (Sharon 2021; Taylor et al. 2025). This work has considered how values, power and logics may travel from one 'sphere' to another—for instance, the logic of profitability from market to healthcare delivery or the value of privacy from the regulatory sphere to the market one. Yet, Big Tech's expansion into healthcare has not simply caused sphere transgressions by imposing agendas, such as 'techno-solutionism' and the private interests of tech oligarchs (Sharon 2021). Digital technologies, such as AI, arguably connect these spheres in a different way: materially—conceived in one sphere, deployed in another and regulated by yet another—and, through this entangled materiality, crucially also at the level of practice. Thus, digital technologies are like an 'overlay (or underlay) that permeates all of society, cutting across spheres', rather than transgressing from one sphere to another (Stevens et al. 2024, 2591). Exposing the politics of this underlay is even more crucial given these infrastructural qualities of AI's STAs. Like other infrastructures, algorithmic STAs—including those in which AI technologies are currently embedded—often become 'invisible' to the user, even as they shape those users' actions and become one with the tasks in which they are involved (Dal Molin 2024).

Emanating from different streams of actor-network theorising (ANT), notions such as sociomaterial or sociotechnical assemblage (STA; see Callon 2021) have proven useful to highlight the infrastructural connectivity that algorithmic technologies create. Although differing in some aspects, for instance, how much agency nonhuman actors are seen to possess (Lamprou 2017), ANT approaches see social, material and technological building blocks of society as intrinsically connected. They underline that the capacity to act resides not with individual 'nodes' but within the network itself. Given this perspective of agency as residing within the network, STAs are brought together and shaped to accomplish certain tasks, often by those who have the power to form and hold them together. Applying this perspective to market settings, Callon (2021) has argued that market STAs are shaped to enable economic transactions. Similarly, regulatory STAs (consisting of policymakers, texts, databases, statistics, legal code etc.) constitute and perform regulatory actions (Kuch 2015). The same goes for healthcare delivery STAs—often also called therapeutic assemblages (Arribas-Ayllon 2024)—which include a multitude of professionals, surveillance systems, pharmacopoeias, manuals and machines that together enact 'the hospital' (Harrison et al. 2023). If GenAI, as a digital underlay, creates STAs that cut across (or rather, underneath) 'spheres', this then has significant implications for action and agency across these domains.

Following this logic, if a hospital site becomes 'digital first', this means that algorithmic technologies are playing a central part in constituting the healthcare delivery STA. Importantly, however, as part of a healthcare delivery STA, algorithmic technologies do not simply unlock a capacity to act—they also shape this capacity. To give an example, by enrolling healthcare professionals in interactions around the diagnosis of illnesses, GenAI models not only become more central to the diagnostic process, but they also shape completely new ways of 'doing' medicine, which subsequently cannot take place without the (privately owned and marketed) technology—the practice and the technology have fused in one and the same STA. Moreover, of direct relevance to this paper, the algorithmic STA acts not only as a healthcare delivery assemblage—it also radiates in from and back out to the market sphere through ongoing data exchanges, feedback loops from training materials and further commercialisation. And, as with any healthcare technology assemblage, it is also deeply entangled with the regulatory sphere, with evolving regulations shaping these STAs often in real time. Thus, if an algorithmic STA is shaped in any one of these spheres, ripple effects will be felt throughout the adjacent spheres too, and their practices adjusted as a matter of course.

A shift towards seeing the world in terms of STAs not only requires a commitment to a relational ontology, in which the capacity to act lies in the relations rather than in the actors themselves. It is also a commitment to bringing a pragmatic notion of justice into the political and moral reflections around GenAI: a capacity to act always also entails the power to act—and, correspondingly, to shape others' actions. Rather than seeing healthcare delivery, regulation and markets in AI as separate 'spheres' that may or may not contaminate each other, following STAs across spheres poses the question of how they shape and transform practice and capacities to act across these spheres—and, crucially, in whose interests. As Taylor et al. (2025, 1) put it, AI 'adds new layers of actors and interests, offers new ways of structuring the power and financial benefits of data and, by doing so, aggregates and shapes the power to intervene'. In short, they create and shape new technopolitics across the spheres of healthcare delivery, regulation and markets.

4 | AI-Driven Data Capitalism and Data Justice Concerns

One of the core tenets of actor-network-influenced assemblage thinking is that STAs are continually in flux and that movement can both be directed and exploited by those actors who manage to influence the assemblage's movements (Ong and Collier 2005). This fluidity is particularly pronounced in the case of GenAI, a technology that is as diverse as it is 'persistently provisional' (Scott and Orlikowski 2025)—and involved in assemblages that are continuously undergoing reconfiguration. As highly unstable but often 'invisible' actors, GenAI STAs create continuous ripple effects across all three of the focal spheres they touch—healthcare delivery, regulation and tech markets—destabilising and moving other actors as a result. This opens up ample possibilities for powerful actors to influence the directionality of this movement.

One of the directions in which many healthcare STAs have been moved over the last 2 decades is towards a data capitalist configuration. As mentioned above, Big Tech giants have established far-reaching data ecosystems, which have allowed them to stake proprietary claims on many markets (Langley and Leyshon 2017; Geiger and Gross 2021). These companies aggressively acquire personal, behavioural and biometric data, which are transformed into assets that generate recurring earnings (Martineau and Folco 2023). They have also assembled a formidable R&D capability, including in the AI space, forming an 'intellectual monopoly' that is used to expand aggressively into healthcare, among other focal sectors (Rikap 2023). Big Tech's data capitalist hegemony has clear ethical, social and political implications: For instance, surveillance has the biggest impact on the already marginalised in society, as they are an easy target, generally under-represented, lack digital literacy skills or access and are already disempowered by existing structures and boundaries (Leslie et al. 2022; Zuboff 2019). Taylor et al. (2025, 2) speak of a whole 'new level of infrastructural power and dominance that is shaping the global landscape of technology', including in healthcare.

Although data capitalists may pull healthcare STAs in one direction, some regulatory, healthcare and civil society actors seek to provide a counterweight and momentum in another direction: data justice. Data justice is the endeavour to 'think about how to govern data in line with social justice' (Taylor et al. 2025, 2). Data justice moves conceptually beyond the traditionally binary focus on data efficiency and technical security on one hand and the protection of privacy and data on the other (Dencik et al. 2019). Data justice focuses on 'democratic procedures, the entrenchment and introduction of inequalities, discrimination and exclusion of certain groups, deteriorating working conditions, or the dehumanisation of decision-making and interaction around sensitive issues' (Dencik et al. 2019, 874). Accordingly, Taylor's (2017) data justice framework focuses on three axes: visibility of representation and privacy; fair engagement with technology; and nondiscrimination. Updating this original framework to take account of advances in AI, Taylor and colleagues (Taylor et al. 2025) urge for 'just' AI governance to include four hallmarks: (a) preserving and strengthening public infrastructures and public goods; (b) inclusiveness; (c) contestability and accountability; and (d) global responsibility. Data justice is particularly important in healthcare delivery, which is often already implicated in systems of inequality. New norms will need to be developed to include structurally marginalised communities, tackle oppressions faced by communities and influence institutions responsible for governing participation (Shaw and Sekalala 2023).

In summary, we argue that through its increasingly central role in healthcare delivery, GenAI brings three focal spheres—market, regulation and healthcare delivery—not only in closer contact but also into continual cross-contamination at the level of action. Furthermore, it brings higher degrees of momentum across these spheres, with ripple effects that are not fully predictable. From the literature, we identified two potential 'motors' of this movement: data capitalism and data justice. In the remainder of this paper, we seek to establish how civil society, academia and regulators may work together to direct AI's movements towards social justice and the common good rather than that of the enrichment of the few.

5 | Analytical Approach

Seeking to understand GenAI STAs through a relational ontology practice entails three major empirical challenges. First, as Harrison et al. (2023) highlight, contouring an assemblage's boundaries involves continuous work of tracing the movements of actors within these networks. One of the difficulties in pursuing such an ontology empirically is that although separate market and nonmarket spheres may be contoured at the level of logics and values (Stevens et al. 2024), STAs do not have such ready-made boundaries—there is no place where researching these STAs naturally 'stops'. Thus, we are aware that any tracing of STAs—and particularly those that are continuously on the move—will necessarily be partial.

Second, compounding this epistemological difficulty is an empirical one when it comes to tracing AI's assemblages: It is likely that it will be difficult to discern 'where' the actor that is AI is. As mentioned, not only does this actor shape-shift constantly, but it is also hidden deep within many ordinary health technology infrastructures. Although we sought to approach and 'capture' our object of interest—healthcare GenAI—through multiple sources and from multiple angles, we acknowledge the necessary incompleteness of our endeavours, hoping that other enquiries will complement ours in forming an empirical mosaic of how algorithmic technologies such as GenAI act and are enacted in healthcare settings.

Third, committing to a relational ontology also means that tracing STAs 'in the making' cannot happen from a neutral observer stance. Instead, our researcher roles become part of the assemblages we are studying (Gherardi and Laasch 2022). Accordingly, we lay open our own positionality as siding with those concerned about strengthening the data justice 'motor'. The resultant 'response-ability' (Gherardi and Laasch 2022) enabled our study in new ways: by partnering with several nongovernmental organisations that are active in the realm of healthcare and social justice. One of them, Health Action International (https://haiweb.org/), has been a longstanding advocate for health equity and access to medicines; the other (our main research partner), the Dublin City Community Co-Op, is an alliance of 12 Irish-based

grassroots community development organisations that operate in disadvantaged areas and deliver social, economic and cultural services to marginalised communities (https://dublincitycommunitycoop.ie). In collaboration with the Co-Op, we received funding through the Irish Research Council under their New Foundations scheme, and we received full ethical approval from the National College of Ireland.

With these caveats in mind, we present our investigation of GenAI STAs as situated within the current regulatory and technological context of the EU. Although EU-level regulations were an important backdrop for tracing the regulatory STAs, we also 'zoomed' into one particular country to analyse how the opposing motors of data justice and data capitalism are shaping politics in practice: Ireland. Ireland has tech-friendly policies attracting major tech firms (European Business Review 2023) and lenient data privacy enforcement (Lomas 2024), and as the controller of European users' data, Ireland's approach to AI and privacy regulation enforcement is seen as a bellwether for other national regulators (Lomas 2024). Stakeholders supporting the data justice motor tend to see Ireland as a geographic 'lynchpin' in their struggles.

Our data collection relied on four sources (Table 1). First, we conducted a literature review using academic journals, grey literature and policy documents. Keywords such as 'artificial intelligence', 'AI' or 'GenAI' in 'health' or 'healthcare' helped us narrow down our research, as did keywords such as 'data justice', 'digital justice', 'AI ethics', 'data/digital capitalism', 'assetization' and 'surveillance'. Second, we conducted 18 stakeholder interviews. Our stakeholders were selected because of their deep knowledge of local social justice issues; insights into policymaking at the European level; expertise with digital and civil rights; and/or knowledge of GenAI, particularly in the medical field. All stakeholders were invited by email for an interview, provided with a detailed information sheet and, upon signing an informed consent form, interviewed online for 35–60 min. All interviews were recorded and transcribed. Third, we attended nine events connected with our field of interest as participant observers, and all notes taken at the events were transcribed too. Fourth, we engaged in the analysis of the terms and conditions and privacy policies of five prominent generative AI tools (Table 1).

Our analytical approach centred on exploring GenAI's assemblages, their intersections and their 'ontologies of movement'. Practically, we uploaded all de-identified interview data and event transcriptions into QSR Nvivo 14, where we read them repeatedly, seeking to understand how the different cogs in the focal STAs work together and how they are moved by the two 'motors' we had theorised in advance. We discussed our emergent insights with each other and with others often, and we kept

TABLE 1 | Data collection sources.

Source	Details
68 academic journals, 54 grey literature and 27 policy documents	• Forbes, Fortune, McKinsey, Crunchbase, Investopedia, or Statista • Policies relating to the EU AI Act, Digital Services Act, European Health Data Space, and GDPR • Policies and reports launched by the GPAI, UN or WHO • Information on Ireland's digital policy, AI strategy and health data
18 stakeholder interviews (January/February 2024)	• 9 interviews with members of an Irish grassroots organisation dealing with social justice issues (coded as GRO1-9) • 4 interviews with European-based NGOs (coded as NGO1–4) • 2 interviews with digital and civil rights experts (coded as DRCR1 or DRCR2) • 3 interviews with AI experts (including one medical doctor) (coded as AIE1-3)
9 participant observations at events (June 2023–March 2024; 7 online and 2 offline)	• AI, race and racism • AI and political disruption • AI, regulation and law • AI's impact on human rights, democracy and accountability • Improving national healthcare outcomes through AI • AI innovation and revolutionising healthcare • Digital inclusion of citizens in AI • AI for pharma R&D (coded as EVE1-9)
165 pages of GenAI tools T&Cs and privacy policies	• Google Gemini, ChatGPT, Grok AI, Meta AI, and Copilot

reading technology updates and news about our focal points of interest throughout our data analysis. We finally related the findings back to the academic literature to arrive at credible and trustworthy insights on how healthcare AI mobilises its assemblages.

6 | GenAI's Assemblages at the Crossroads of Data Justice and Data Capitalism

The following sections discuss our emergent findings against the theoretical backdrop laid out earlier: the performativity of GenAI's promissories across STAs; GenAI's invisible and unstable nature and its effects on data justice issues; and the powerful nature of the data capitalism motor. We then lay out what concerned actors can do to create stability and buffer data justice.

6.1 | The Performativity of GenAI's Promissories Across STAs

Big Tech's imaginary of the 'digital transformation of health' or indeed 'starting the disruption' is an often-encountered trope at industry events (EVE5; EVE9). The digitisation, datafication and AI-fication of health is a well-documented process (Hoeyer et al. 2019; Ruckenstein and Schüll 2017), and Europe's digital strategy—a €250bn investment and an objective to have all public services and health records digitalised by 2030 (European Commission 2024)—is set to accelerate this process further. GenAI's promissories have filtered deeply into healthcare delivery and regulatory STAs. Our participants agree that 'big tech companies are already in health...that's the reality' (DRCR1) and that GenAI technologies allow Big Tech to embed themselves further into public health 'little by little' (GRO6). These entanglements are heavily supported by the EU Commission and Parliament's 'clear pro-business perspective', whereby 'commercial strategies are being promoted and have exploded in a way that it seems okay' (NGO1). Europe's digital strategy (European Commission 2024) also broadens these connections, as does the European Health Data Space, which promotes the flow of health data across Europe, though these are often captured through commercial interests (Marelli et al. 2023). Yet, the intersection created by GenAI's STAs is also not easy to regulate, as discourses around the recent EU AI Act show (Gross et al. 2025; Prainsack 2023). GenAI is further heralded to transform healthcare at a population level (GRO2; EVE9), as population health intelligence can be gathered from multiple sources and analysed to monitor epidemiology, common health conditions and risk factors. Finally, GenAI promises to control chronic illnesses and steer public education campaigns too (Shaban-Nejad et al. 2018).

Attracted by these promissories, EU and national innovation mandates and health delivery policies have unlocked the doors to creating digital infrastructures with wide-ranging impacts in virtually all areas of healthcare. Ireland's National Children's Hospital, our opening illustration, will use GenAI for applications such as documentation, tailored communication with the patient, summarising charts and automating actions (EVE4). GenAI is also being trialled in Ireland in specialist fields, such as radiology and cardiology, to assist clinicians with the real-time interpretation of data and provide decision support (Shannon 2024). Indeed, firms currently advertise multiple use cases for generative AI in healthcare, including processing and abstracting complex medical data, making objective diagnoses, extracting invisible relationships between disease factors, increasing efficiency, reducing errors and costs, allowing for more patient-centred care and making clinical decisions more ethical (EVE4; EVE5; EVE7; DRCR1). Clearly, promissories have created tangible movement towards an encompassing AI infrastructure in healthcare.

6.2 | GenAI as an Invisible and Unstable Actor Causing Data Justice Issues

Against the backdrop of GenAI's transformative promissories, the reality is that Big Tech companies 'have already launched (GenAI) products on the (healthcare) market that are unregulated and problematic' (EVE2). Although these technologies promise to 'supercharge' fields such as healthcare, they are an unstable actor too, as 'even the most advanced AI still has many failure modes that are unpredictable, not widely appreciated, not easily fixed, not explainable, and capable of leading to unintended consequences' (Stanford 2025). Our research participants were concerned about GenAI's problems with biases and hallucinations, issues with consent and data privacy and the capability to undermine visibility and autonomy. For instance, GenAI systems are suspected to 'digitise and automate racism' (EVE1), exclude people with disabilities (DRCR2) and harbour gender biases (GRO2): 'there is almost no oversight in how the AI is trained' (AIE2). Although GenAI systems, algorithms and feedback loops change with extreme speed and velocity, how they do so remains largely opaque to outside actors, powered by algorithms that are protected as trade secrets (Bagchi 2023).

One of our respondents, GRO2, told us of her direct experience of gender bias: Her daughter's 'symptoms were fed into an AI tool', which then came back with 'a (wrong) diagnosis of anxiety', mainly because she was a young woman. Another respondent (NGO2), a person living with disabilities and a disability advocate, told us that people like him were featured as 'outliers' by AI. Many people are set to be further excluded culturally, socially, ethnically or religiously speaking from AI systems (GRO2), as 'AI is biased against marginalised communities' (EVE8). This is particularly problematic for healthcare delivery STAs, as 'we have a large amount of biased data and we make decisions based on them, which means more threats to human rights' (EVE3). Although there is 'a lot of rubbish out there and misinformation... it has real effects' (GRO5) because in healthcare, 'you could kill someone with the wrong advice' (AIE1). Yet, Big Tech 'tends to hide the risks of the technology' (EVE2).

Additionally, people often have no choice but to engage with the technology—'we sometimes are not given alternatives—we can't choose' (NGO2). Cookies, terms and conditions, service agreements or privacy policies are often also 'impossible to object to' (NGO2). Clearly, GenAI is invisible and becoming near-unavoidable, yet it continues to be laden with data justice issues

(Gross 2024). There is a sense that if these data justice concerns are not rectified in relatively 'simple' GenAI applications, the rapid move towards more complex ones, compounded by the invisibility of this technological actor, will make correcting them later on impossible.

6.3 | Data Capitalism as a Powerful and Persistent Motor

The data capitalism motor drives GenAI's entanglements with healthcare delivery, market and regulatory STAs, providing directionality to the movement and creating continuous ripple effects across all STAs. Critics of surveillance capitalism and advocates of data justice have long stated that AI systems are set to extract even more data from people (Kalluri et al. 2023). GenAI systems allow tech companies to move from 'surveillance capitalism which curates' to 'surveillance capitalism which creates' (Jacobs 2023, n.p.), meaning that no user is truly safe from being monitored or influenced by these technologies.

Our analysis of the terms and conditions, privacy policies and other documents from ChatGPT, Google Gemini, Meta AI, Grok and Copilot demonstrates how powerful the data capitalism motor really is. The documents reveal that all personal, usage, tracking, cookies and device data will be used for 'behavioural remarketing' (Copilot 2022), to 'personalise yor experiences and ads' (Meta AI 2026) and 'to develop and market the new and current products and services' (Grok AI 2023). Data will also be transferred to 'vendors and service providers' or 'affiliates' for 'business transfers' (OpenAI 2024). Evidently, 'GenAI is geared towards commercial not public benefits' (EVE9), and as further AI technologies become adopted and integrated into the healthcare delivery sphere, Big Tech's market logics and value-extractive practices are set to expand further. Given that, the notion of healthcare as a public good is increasingly slipping out of the grasp of concerned stakeholders (patients, citizens, healthcare professionals or advocacy groups).

With the data capitalist motor feeding a powerful dynamic, the question arises whether regulatory moves can tame or control this movement. Commentators understand that 'these huge companies corner the market, so there is less competition, and they can charge what they like, and they're able to dictate how everything works' (AIE2). Market scale gives Big Tech power and political clout: 'those companies have a bigger GDP than some of those countries in Europe' (AIE3). Europe is now seen to be in a situation whereby 'big corporations have access to huge datasets, use these algorithms in a way that we are not aware of, and they don't have to show how they use them' (NGO1), and this weakens the data justice motor even further. Not only do large tech firms control essential healthcare infrastructures such as electronic health records (EHRs; DRCR2), but 'they have massive power in terms of influencing legislation at the EU level or the national level—we have seen that with the EU AI Act and with the DSA' (NGO2). Big Tech has lobbied members of the European Parliament directly (NGO4) but reportedly also targeted small to medium enterprises to help water down the EU AI Act (NGO3). And even when regulations are put in place, tech players seem adept at overstepping these. One advocacy group recalled an industry actor stating during a GDPR meeting: 'We don't care, we get around that every day' (NGO2). Although some of our respondents believe that 'markets will say stop if it (surveillance capitalism) goes too far', others state clearly that 'power is the problem' (EVE2), and further market regulation is needed (NGO4). However, although there have been 'plenty of attempts to regulate and tame the digressions of big tech' (EVE2), there are also plenty of infringements to the 'freedom of association and freedom of expression, in addition to all the privacy issues that come with GenAI as well' (DRCR2) as well as issues related to 'sustainability, privacy, autonomy and equity' (NGO1).

Recent regulations, such as the EU AI Act, DSA and EHDS, point towards Europe's attempt to balance 'the power of the state vis-à-vis the power of corporations' (GRO2) and change how healthcare delivery and market STAs interact with each other. Yet, as long as 'neoliberal capitalist policies' remain dominant (GRO1), commentators doubt that power will be dislodged from market players (AIE2; DRCR1). Consequently, healthcare delivery STAs remain highly vulnerable to further incursions of GenAI logics and power into healthcare—in the words of an OECD report (2024, 1), they are harbouring 'huge potential, huge risks'.

Thus, current deployment of GenAI applications, coupled with regulatory attempts that do not reach far enough, creates infrastructural facts that keep the data capitalist business model underlying these technologies uncontested. Transformative and fast-evolving GenAI technologies in the hands of powerful actors such as Big Tech accelerate a dynamic that breaks the barriers between public and private goods down even further. That given, how may civil society, involved academics and regulators work together to strengthen the social justice motor and direct GenAI towards the common good?

7 | Boosting the Data Justice Motor and Directing GenAI Back Towards the Common Good

So far, we have argued that healthcare delivery, market and regulatory spheres have not only become more deeply intertwined, but that the 'always provisional' nature of GenAI-powered STAs has ripple effects across all of these spheres, with policy playing 'catch-up' with fast-evolving technology and healthcare delivery platforms deploying these STAs. We also argued that the longer-term consequences of these decisions may not yet be fully evident. Our data laid open some of the often-hidden politics of GenAI in healthcare: Data capitalism is bolstered by Big Tech actors who are currently driving rapid technological advances. These actors are now using GenAI technologies to influence the directionality of the assemblage's movements, accelerating the data capitalist momentum and undermining the value GenAI could deliver in healthcare practice. Yet, we claim that these technopolitics can still be reversed. To bolster data justice and direct AI in health (back) towards the common good, our data analysis shines a light on three pathways: to empower civic society, hone dynamic regulation and push for public value accountability.

7.1 | Empowering Civic Society and Safeguarding the Most Vulnerable in Society

The empowerment of civic society is a critical counterpart to current capitalist dynamics and helps to 'motor' data justice concerns. Big Tech's market and lobbying power has traditionally worked to subdue public engagement at a national level (NGO4). In fact, in many parts of Europe, civil society is struggling to build communities that are willing to get involved in activism and push against Big Tech (NGO3). Although significant social movements continue to be active in healthcare (NGO4), this is not necessarily the same case for GenAI. As GenAI is still emerging and some of the EU regulations are also fairly new, data justice issues are still unfolding. Thus, they are often less visible than other ostensibly more pressing health justice issues. National and EU policymakers will need to pay keen attention to opposition from civil society, be that from academics, NGOs or other civil society groups. Policymakers also need to be open to working together with civil society on building healthcare equity and supporting the most vulnerable in society beyond the means of technology (GRO1-9; NGO4), for instance, through targeted initiatives fostering digital/health literacy and skills building (EVE8).

Alongside the empowerment of civil society, patient and public education to foster AI literacy is vital, as is citizen oversight on the deployment of GenAI in public health infrastructures. AI literacy is the cornerstone of data justice, including in healthcare. In particular, given the emergence of 'digital' hospitals, it is vital that people are fully informed about when GenAI technologies are used in their healthcare interactions and can choose not to have their data processed in this manner. Although the invisibility of GenAI in many STAs may be a challenge, citizens should have clear and transparent options to opt out of digitalised services, automation and surveillance. Importantly, they should also have easy, accessible and human-driven healthcare service alternatives left open to them. There are simple and relatively low-cost means to foster these aspects. A recent citizen jury on healthcare AI took place in Ireland, in which one of us acted as an expert commentator (Citizens Jury 2025). This jury demonstrated not only that ordinary citizens are well capable of grasping the complexities and consequences of the use of AI in healthcare, but it also made important recommendations to the Irish government. These included recommendations around the ethical application of AI as well as the establishment of an independent body to oversee the use of AI in healthcare (Citizens Jury 2025). Such grassroots citizen education and involvement initiatives could easily be replicated in other countries.

7.2 | Moving Towards Dynamic and Precautionary Regulation

Regulation needs to be made more responsive to changing technological dynamics. Although the EU AI Act, DSA and GDPR are concerted and commendable efforts to balance out data capitalism with the data justice motor, commentators highlight that many elements of these regulations remain fuzzy and enforcement is fragmented (NGO1–4). What is more, Europe's innovation-focused economic policies, common digital strategies and the EHDS work to undermine data justice efforts in favour of data capitalism. The 'state has a big role to play in determining policy for AI and health' (EVE7), especially when it comes to curbing data capitalism, given that the tech industry cannot be trusted to self-regulate (GRO1). Further regulation is needed to curtail surveillance in healthcare (NGO4), particularly when it comes to vulnerable people and marginalised communities (GRO1–7; NGO2). Taylor et al. (2025) state clearly that inclusiveness, contestability and accountability need to be regulated for—they will not magically emerge. This is also important for safeguarding 'sustainability, privacy, autonomy and equity' (NGO1) and upholding human rights law (EVE3). In terms of technology itself, disinformation, dark patterns, addictive designs, algorithmic features (including biases, errors, and discrimination) and user profiling need further regulation to create transparency and human-centricity, to hold tech companies accountable, to reduce harm, and to ensure data justice (NGO3). More incisive regulation is also needed to clearly define what areas GenAI should never be used for in healthcare (EVE5), for instance, for palliative care or assisted suicide (NGO4).

Given GenAI's velocity, to create more dynamic, impactful regulation, the EU needs 'mediators, negotiation and ball-breakers' (GRO2), that is, policymakers and state activists who are willing to contest the data capitalist momentum as it happens. Commentators understand that their task is made more difficult by the fact that the European Commission has no remit for healthcare—it 'only provides a coordinating facility' (DRCR1). To curb the data capitalism motor with lasting effects, regulatory institutions will need to be strengthened further—perhaps even at a global level, for instance, through a healthcare AI compact at the World Trade Organization. In addition, crucial technological expertise needs to be kept in the public realm rather than outsourced to Big Tech. And if AI technology indeed moves too fast for regulation to 'catch up', then principle-based regulation may need to be enacted, which would provide stability and predictability for those reliant on algorithmic technologies to be ethical and just (Johnson 2022). The precautionary principle has, for instance, been applied to environmental technologies that are involved in unstable assemblages and not easily captured through risk-based regulation (Finch et al. 2017); it is not too late to adapt this principle to healthcare AI contexts too.

7.3 | Pushing for Public Value Accountability

GenAI in healthcare needs to be measured and evaluated in terms of public value (Wilson et al. 2020). At a minimum, the entanglement between healthcare and market STAs should 'not disproportionately reward private interests' (Bradley et al. 2022, 2). Better, public value should become the central measure for evaluating STA dynamics in terms of preserving and strengthening public infrastructures and public goods (Taylor et al. 2025). Public value is created when 'public sector institutions further their democratically established goals or improve the lives of citizens' (Wilson et al. 2020, 4). Value sharing, public–private partnerships or other 'mixed arrangements' (NGO4) should be purposefully set up to 'promote public health' (DRCR1) and 'social innovation' (NGO1). That said, public value needs to be

contractually built in from the get-go (Wilson et al. 2020) and made 'visible' through a mapping of financial and social value flows (Gross and Geiger 2023). For instance, initiatives such as revenue sharing, equity or profit from data; joint investments in digital and health literacy; open sharing of data or at least joint data ownership; or launching broad educational and individual data empowerment should be strongly encouraged or mandated when public data get entangled into market STAs. A solidarity-based data governance model, as suggested by El-Sayed et al. (2025), can work here as a template for assessing public value gains against potential data harms. EU regulators need to urgently make their support of GenAI technologies in healthcare dependent on the demonstrable net public value gains these technologies can bring relative to their risks.

8 | Concluding Remarks

Scott and Orlikowski (2025) have recently warned against a temptation to reify AI as a 'thing', interpreting it much rather like 'phenomena in the making' (with a deliberate plural). We have taken up their invitation to study GenAI in healthcare through a relational ontology that seeks to establish what forces, actors and interests currently 'make up' GenAI. We have shown that the multiple connections and entanglements between healthcare delivery, market and regulatory spheres created by GenAI form a multidimensional space in which agency and power structures are shaped and enacted—a veritable technopolitics (Schwennesen 2019). This assemblage intersection is highly dynamic, moved through ever-evolving technologies—an unstable actor that, through its connections, destabilises other actors in these assemblages. Our paper has drawn attention to this intersection to highlight how Big Tech actors' deployment of GenAI technologies into healthcare markets is shaped to satisfy their 'existential hunger for data' (Taylor et al. 2025, 13) and how it further consolidates the irreplaceability of their infrastructures. Against this 'totalising influence' (Scott and Orlikowski 2025), we argue that we are at an important inflection point where healthcare delivery STAs shaped by AI can still be directed towards data justice rather than data capitalism (Taylor 2017; Taylor et al. 2025), in the interest of the collective good rather than enrichment of the few.

Our paper has provided three suggestions to guide this process: empowering civic society, honing regulation and making public value the metric that 'counts' at AI's intersection with healthcare, regulatory and market STAs. Urgent action and political will are now required to change the directionality of the assemblage's movements away from data capitalist dynamics and towards data justice-oriented healthcare. We encourage healthcare providers, EU and global regulators, but also civic society and tech companies to come together in reimagining how AI technologies can truly create lasting public value for healthcare. We also encourage fellow sociologists of health to continue probing the technopolitics of GenAI and similar algorithmic STAs: It is through such probing that these often invisible actors and the political and power entanglements can be laid open and critiqued—and ultimately the 'power to intervene' in GenAI's assemblages (Taylor et al. 2025) can be reclaimed.

Author Contributions

Nicole Gross: conceptualization, funding acquisition, project management, investigation, methodology, data analysis, writing – original draft, writing – review and editing. **Susi Geiger:** conceptualization, data analysis, writing – original draft, writing – review and editing.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available upon request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Endnotes

[1] See https://www.childrenshealthireland.ie/about-us/new-childrens-hospital/.

[2] Assemblage thinking in the sociology of health and illness is often associated with the work of Deleuze and Guattari (e.g., Arribas-Ayllon 2024). We acknowledge this tradition but refer in our paper more specifically to the actor-network traditions that deploy the notion of assemblage and similar terms such as agencements to account for the multiple socioeconomic and material entanglements of technical and scientific devices (Callon 2021). In what follows, we use this sense of the term assemblage and the shorthand STA interchangeably.

[3] See Supporting Information S1 for specific GenAI applications in healthcare.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.

Supporting Information S1: shil70150-sup-0001-suppl-data.docx.