

## Deceptive Stories About Scale: Digital Technology, Public Services, and the Promise of Efficiency

ALISON B. POWELL

London School of Economics and Political Science, United Kingdom

“Blitzscaling”—the language and practice of rapidly scaling technology companies—can have significant consequences when pursued in public service delivery. From 2016 until it went bankrupt in 2023, health-tech start-up Babylon Health introduced discourses and practices of scaling to the United Kingdom’s National Health Service (NHS). While the company promised that its software and Artificial Intelligence (AI) would create efficiency, automated diagnosis, and faster access to service for increasing numbers of people, its integration into the service undermined central organizing features of the NHS, including equity of care and the epistemic authority of clinicians. A focus on working at speed also led to obfuscation of the nature of the company’s AI and software products to evade regulatory responsibility and to Babylon accessing and enclosing public data. Recommendations for continued commitments to principles of public service, including attention to relationships and multiple forms of knowledge, could benefit other public services contending with promised technological transformations.

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On September 5, 2023, Babylon Health, the “unicorn start-up” data-driven primary health-care app, filed for bankruptcy after a decade of advancing its data- and AI-driven products within the United Kingdom’s National Health Service, a free-at-point-of-use system. The founder of Babylon Health framed his intentions as being parallel to those held by other data-driven technologies “to do with health care what Google did with information” (Zolfagharifard, 2019, para. 1). The company was celebrated as a contributor to a more efficient, data-driven NHS (UK Department of Health and Social Care, 2022). Babylon’s founder was relentlessly focused on “scaling up” the company through a business strategy called blitzscaling—which assumes that software holds inherent capacities to create efficiency through speed—and which focuses on increasing measurable indicators such as numbers of employees or customers. The promotion and public discussion of Babylon’s products also leveraged assumptions about technology—specifically artificial intelligence (AI)—and its capacity to speed up the delivery of health care. Billboards in public transit stations promised that we could “see the doctor NOW” or “Get Well NOW,” while smaller ads showed smiling faces on smartphones next to text reading “See an NHS doctor 24/7.” Babylon launched an online service called GP at Hand in 2017, along with several software-based symptom checkers marketed as “AI.” Over the next five years, Babylon Health presented a media narrative that highlighted the increases in numbers of patients

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Alison B. Powell: a.powell@lse.ac.uk

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the software was able to support, and the speed of service and efficiency of the "AI" as compared to doctors. These claims were presented at a time when the dominant narratives discussing the NHS were beginning to focus on the system being "under stress" or "in crisis."

Discourses about technological progress frame, structure, and underpin organizational and regulatory realities as well as ethical and epistemic outcomes. Babylon Health, one of the many start-up technology companies promising to help the NHS out of crisis, told a compelling story about the benefits of technology that was also a story about addressing inefficiencies by scaling up technologies and practices. This discourse of scaling embeds and activates assumptions about the capacity for digital technology to do the same things faster with less resources, including how software is understood to work. Software is often used to create easily reproducible systems that can be applied across multiple contexts, making software companies attractive to venture capital investors looking for exponential returns on investment. When the language and practices of scaling used by software start-ups pitching for investment are shifted to complex public sector settings like the NHS, ethical and epistemic consequences emerge. For example, scaling can be directed toward optimizing resources and reducing waste. In a public service context, the resources being optimized could include clinician time and expertise, and the waste being minimized might include time spent with patients. The application of this discourse of scaling challenges some of the principles underpinning the NHS as specified in its Constitution (UK Department of Health and Social Care, 2012). These principles focus on patient-centered care along with clinician involvement in decision making and support for clinical staff. Other ethical issues might include inequitable care resulting from the automation of clinical processes. Epistemic issues could include the transformation of the clinical relationship as a result of the availability of software-based symptom checkers and decision-support systems, which can generate errors or biases that intersect with other forms of inequality to create epistemic injustices for some groups of people whose experiences or knowledge are not taken seriously or experience unequal treatment because of assumptions about their credibility (Anderson, 2012). For a service whose ethics include patient-centeredness and equity of care, free at the point of use, these ethical and epistemic issues influence the capacity of the service to achieve its outcomes.

This study investigates the influence of technology industry framings of scaling on the function of public health systems, asking: How do discourses of "blitzscaling" influence the organization and experience of health care? Specifically, how are discursive frames employed by start-up technology companies mirrored in health operations, and with what ethical and epistemic implications?

These questions have implications for many public service contexts contending with narratives of technical progress, including promises about AI. Following a short summary of how scale and progress have been associated with efficiency and the digitization of public services, I describe the method used to develop the case and provide background on the digitization and platformization of the NHS before outlining features of the discourse and its consequences.

### **Scale and Progress**

Paradigms of progress and change are articulated with imagined technical function. The way that scaling and efficiency now influence progress has been shaped by the capacities associated with software.

"Accuracy, speed and scalability are ideological features of management that extend from software to people" (Irani, 2015, p. 15). Scale, scaling, and the discourse of "scaling up" structure processes of technological innovation such that they align with processes of business development that anticipate the achievement of specific measurable outcomes as indications of success: "the discourse of progress as continuous development and technological solutionism pervade the field [of AI]" (Denton, Hanna, Amironesei, Smart, & Nicole, 2021). This solutionism is attached to business models that leverage processes and potentiality associated with software-based scaling to shape business models. These assumptions about software generating linear or even exponential improvement in system function shape the expectations associated with automations in the public sector, including AI.

The assumption that scaling is both natural and desirable for technology-driven projects is based on observations of network effects associated with adoption of ICT, where these technologies become more beneficial to more people when they are widely adopted (Mas & Radcliffe, 2011). The desirability of scaling is also sometimes associated with the qualities of software and AI in relation to scale and efficiency. For example, in the design of AI Large Language Models, designers have observed "remarkable scaling effects" that suggest that simply applying more computational power will improve systems more than better training or other modification (Gupta et al., 2024).

Scaling has temporal and political aspects. Doreen Massey (1999) identifies the "power geometries" underpinning the differential experiences of geographic spaces, including the differential capacities of actors to move between scales, and the power associated with this. The control of temporality can also be an exercise of power, creating what Sarah Sharma refers to as "chrono-politics" (Sharma, 2014)—uneven experiences of time with political consequences. Carr and Lempert (2016) write,

Scaling, it turns out, may organize not only spatial relations but spatiotemporal ones as well. Indeed, when one tries to apprehend things and their qualities, a present moment may be linked to and authorized by a moment figured far back or projected forward in time. (p. 2)

The language of software-driven efficiency is part of broader processes of digitization and datafication in public service delivery (Petropoulos, Marcus, Moës, & Bergamini, 2019). Automation of public services can be directed at reducing waste (Schneider, 2024) or becoming more efficient and using fewer resources (Taylor, 2021). Automation transforms the nature of the welfare state with a focus on surveillance, predictability, and objectivity (Dencik & Kaun, 2020; Gandy, 2010; Powell, 2025). While data-driven developments occur differently in different contexts (Milan & Treré, 2019), the digital welfare state in the United Kingdom has been particularly marked by "an actuarial logic based on personalized risk and the individualization of social problems" along with "an economic model that perpetuates the circulation of data accumulation" (Dencik, 2022, p. 145). This has been accompanied by a drive toward both automation and predictive analytics within the UK public sector.

These dynamics create conditions beneficial to the interests of technology companies, as the historic welfare state shifts to a public service provision model based on contracts with private companies. To the overall dynamic of datafication, with its ideological attachments to the legitimacy and veracity of

quantified information (van Dijck, 2014), are added the competing incentives of the public and private sectors. Welfare states evolved from an assumed responsibility for providing minimum protections to citizens; contemporary public services such as the United Kingdom's NHS are bound by constitutions specifying rights and responsibilities. By contrast, contemporary business models for the technology sector are predicated on a leveraging of actual and perceived capital (which could include assets such as data) for future expansion. The discourses of "blitzscaling" or "hyperscaling" are features of start-up technology companies, foregrounding fast growth using language drawn from descriptions of computational models and applied to business practices, leading to investments in the increase of numbers of employees, customers, contracts, or data sets, and a focus on speed and efficiency within descriptions of the business and its products. The increasing pressure on welfare states to provide services rather than support citizens, and to provide "best value for taxpayers' money" (UK Department of Health and Social Care, 2012, Principle 6), has created conditions where discourses and practices of scaling influence the experience of health care, with ethical and epistemic consequences for clinician labor and equity of care.

### Methods

Using thematic and discourse analysis to support a case study of Babylon Health's engagement with the NHS, I analyse how technology start-up discourses of scaling shape possible institutional choices and how practices associated with these possibilities impact the service. I understand discourse as "an interrelated set of 'story-lines' [that] become deeply embedded in societal institutions, agendas and knowledge claims" (Hannigan, 2006, p. 13). I focus on how the mutual production of discourse and practice generates institutional realities that become sites of struggle (Peña Gangadharan & Niklas, 2019).

To build the case study, I identified the components of blitzscaling that Babylon Health mobilized as part of their expansion into the United Kingdom beginning in 2016. I drew from three features of the concept developed by Reid Hoffmann and advocated by Babylon CEO Ali Parsa: growth, speed, and efficiency. Then, I examined how Babylon mobilized these aspects in its UK development, drawing on Kampmann's (2024) and Mansfield Advisors' (Herbert, 2024) case studies of Babylon, and on the company's internal documentation, as well as on secondary literature from NHS Care Quality Commission, independent assessment reports, and the medical press. I thematically coded newspaper and magazine coverage of Babylon Health's engagement with the NHS to develop a broader social view of this discourse (Braun & Clarke, 2021) selecting coverage in *The Lancet*, the *British Medical Journal*, *Wired*, *Forbes*, the *Financial Times*, and the BBC, as well as other UK newspapers indexed by Lexis, in a date range from 2016 to 2023. Using the thematically coded material, I connected publicly presented narratives associated with the features of blitzscaling to the documented consequences.

### Babylon Blitzscaling in the NHS

In the early 2010s, technology entrepreneur Reid Hoffmann outlined three aspects of blitzscaling that he associated with software-driven, venture-backed start-up businesses. These were growth, speed, and efficiency (see Sullivan, 2016). Growth, sometimes flippantly described as "number go up" within start-up jargon, refers to observable increases in measurable indicators such as investment, revenue, or contract numbers. It also comprises increases in employees—what Hoffman calls an organization's scale. In an

interview, Hoffman makes explicit references to scale focus mainly on these aspects of growth, while other aspects of fast growth are linked with ideas about software. Hoffmann's specific characterization of speed associates it with the use and expansion of technology: "the integration of networks and software at a global level have created global loops that move more and more quickly" (cited in Sullivan, 2016, para. 4).

The third aspect, efficiency, is also specifically recast in relation to software and a platform-based business model. Hoffmann describes it this way: "the marginal costs of serving any size market are virtually zero" when software is used (Sullivan, 2016, para. 4). Babylon Health leveraged this in two ways: first, that their software-based products could be reused and repurposed in many different settings from triage to diagnosis to community health integration, and second, that access to increasing amounts of data would result in inevitable improvements to its software, which could create new and expanding markets. A core aim of a blitzscaling or hyperscaling business strategy is to generate investor interest in a company between rounds of fundraising, with each round raising greater amounts of capital that is then spent to repeat the process (Kampmann, 2024; Narayan & Shestakofsky, 2024). Start-up businesses operating in this mode are often created with the expectation that they will be purchased or absorbed by other companies within a few years.

The promise of growth, speed, and efficiency through software articulated to a particular set of political and technical conditions in the NHS. The tax-funded health service is guided by the principle of a "comprehensive service, available to all" (UK Department of Health and Social Care, 2012, Article 1), yet decades of cuts to core funding have eroded the system's functionality. The marketization of care that began in the 1980s has intensified calls to respond to crisis by making investments that fulfil a "triple aim" of improving the experience of care, increasing population health, and reducing costs (Institute for Healthcare Improvement, 2024). These aims create fertile ground for narratives and practices of scaling that foreground speed and efficiency.

System-level strategies for fulfilling the "triple aim" include a move toward platformization of the NHS (Faulkner-Gurstein & Wyatt, 2023) that centrally position digital technology as part of a construction of value (van Dijck, Poell, & de Waal, 2018) and consider NHS as an intermediary in different networks (Nieborg & Poell, 2018). Platformization is also a discursive and ideological formation, restructuring work around a gig economy and health care around personalization. A new NHS department called NHSX was established in 2019 to "drive the digital transformation of the NHS and social care" (Gould, 2022, para. 2) through creating an API platform facilitating the direct integration of third-party software products into NHS systems, allowing competition between multiple apps providing similar services and creating an NHS Datastore that could broker contracts for health software with access to the health data of the UK population—a valuable resource for any company developing software needing training data (Powles & Hodson, 2017).

### ***Babylon's Promise***

In contrast to other technology companies engaging with "platform NHS," Babylon Health directed its software products toward multiple parts of the service, including the provision of GP services, triage service, and hospital services. GP services, which provide referrals to hospitals or specialists, are the first

points of contacts for patients not needing emergency care and are historically organized locally so that they provide service to patients in a specific geographic area. Every person in the United Kingdom is expected to have registered with a GP practice, which receives a flat rate payment per patient per year (approximately £180 in 2021). GP practices are independent businesses, but their funding comes from regional bodies that are responsible for health care for their local population. The flat rate of funding is meant to amortize care costs to permit GPs to provide care appropriate to the level of need. Historically, GPs have responded to financial pressures not only through reducing clinical staff but by acquiring specialized software including online booking or recordkeeping. In the past 10 years, access to GP and hospital care across the NHS has been declining, with waits of several days for primary care appointments a common occurrence. Technology, including the use of specialized software for online booking and recordkeeping, has been framed as a solution to this decline for several years (Salisbury, Murphy, & Duncan, 2020).

Babylon Health was established in 2013 and registered to provide NHS services in 2014. The company's first NHS contract was to participate in a pilot test of possible software systems to automate an existing telephone triage system, called 111 (Turnbull et al., 2023). The triage pilot contract occurred just after the company acquired its first round of venture capital funding. It also launched in Rwanda in the same year, and in Saudi Arabia and Canada in 2018 (Herbert, 2024). Despite claiming in the media that it was "powering 111 with AI" (Heather, 2017), Babylon Health was not awarded the final contract for the triage system. The company quickly began developing and promoting the concept of a diagnostic chatbot or "robot doctor." The chatbot formed part of an online consultation service called GP at Hand that was introduced in 2016 as a fee-for-service standalone product. In mid-2017, GP at Hand became a GP practice with a registered address in the London Borough of Hammersmith and Fulham, meaning it was funded by that region's commissioning body and would historically have served Hammersmith and Fulham residents. However, the rules for geographic limitations on GP registrations had recently been relaxed, and taking advantage of this, GP at Hand registered patients from across London. Patients could access video appointments with clinicians located anywhere, breaking the link between locality and GP registration and attracting mostly patients with better-than-average health, leaving other GP practices with both lower budgets and a higher proportion of patients needing extensive care. By 2019, GP at Hand had a patient list of over 51,000 people. Hammersmith and Fulham's local government, responsible for funding the NHS trusts, experienced a £22 million budget shortfall in part because of the increase in payments to GP at Hand. Meanwhile, Babylon Health was beginning to sell a similar product to private insurers in the United Kingdom.

From 2019 to 2021 Babylon Health was awarded contracts to provide a range of different services to several hospital trusts, including a widely publicized partnership with a hospital trust in the city of Wolverhampton for the headline-grabbing number of 300,000 people. This partnership promised digital services to manage the integration between GP and hospital care, in the form of an app that would permit individual health monitoring as well as create a personal health record. Only 5,000 patients signed up (Say, 2020). By early 2022, the company was attempting to leave many of its UK contracts as it pursued an expansion of personalized health care backed by insurance companies in the United States (Seeking Alpha, 2022)—an expansion that ultimately failed, because the blitzscale strategy of acquiring more and larger contracts as well as greater numbers of staff led to overspending not matched by increases in investment. The company also developed products for 14 other markets, including a partnership with Prudential Insurance to develop digital health care across Asia. Babylon Health failed to generate expected revenue on

its last round of capital raising, and its costs overtook its revenue in 2023. The company filed for bankruptcy in September 2023, selling its GP at Hand and related service to eMed.

The integration and subsequent exit of Babylon Health from the NHS did not occur seamlessly. The framing and integration of the company's technologies within the platformed health service exacerbated impacts on the delivery of equitable care as well as the epistemic authority of both clinicians and patients. It is possible to trace these impacts by tracing aspects of the blitzscaling strategy as it underpinned Babylon's communication with the UK public, highlighting the consequences for service delivery and knowledge, and drawing out the relationship between the content and framing of specific ideas about innovation within a specific institutional setting (Mansell, 2012). Below, I detail how the "speed, growth, and efficiency" of blitzscaling unfolded, beginning with the discourse of a "robot doctor" or AI presented as working faster and more effectively than humans, and then describing how Babylon's pursuit of "number go up" growth established conditions that led to regulatory evasion and ethical and epistemic harms. The story of its rise and fall illustrates the power and consequence of discourses framed to the benefit of venture-backed technology companies.

### **Discourses of Blitzscaling**

#### ***The Robot Doctor***

Beginning with the contribution to the pilot of the triage system, Babylon Health aggressively promoted its products in the national press, which contributed to amplifying a narrative of powerful AI that could simultaneously transform multiple aspects of the NHS. In the early years of its engagement with the NHS, Babylon Health leveraged two aspects of the fetishization of AI to address the perceived failings of the NHS. First, the capacity that many headlines referred to as a "robot doctor" to work more quickly than health care workers within the NHS, and second, the ability for AI to work effectively across multiple settings. Across the sources I considered, there was no specific or consistent description of what AI comprised in this context. Babylon's internal material and media coverage sometimes referred to decision tree software like the triage bot, and at other times appeared to describe any automated system.

Press coverage of its participation in the triage system pilot announced that it was "replacing" or "powering" the 111 system with an "AI triage bot" (Heather, 2017), even though the company's software was not selected for the pilot (O'Hear, 2017). Once established, this media narrative continued, circulating vague but compelling claims about the role of robots in health care: more than half of the newspaper articles I gathered for this case referred to robots. A typical headline reads: "Patients to be Diagnosed by Robots Under New NHS Scheme" (Donnelly, 2017), with the article positioning the introduction of software-based triage systems against the backdrop of "unprecedented demand" for health care services and ineffectual telephone and in-person systems, and naming Babylon Health.

When GP at Hand launched as an app in 2016, journalists who had been offered trial subscriptions described the ease and speed of the app while maintaining focus on the fragility of the NHS system, citing "the problem of access to primary care—those lengthy GP appointment waiting times that keep hitting the headlines" (Sigeer, 2016, para. 3). A *Wired* magazine profile read, "If the company is able to reach a scale

where it operates across the UK, it could fundamentally change the way the NHS is structured and how it operates" (Burgess, 2019, para. 20). Overall, the press focused on the transformative capacity of software and AI, especially the novel qualities that software-driven innovation could bring to the NHS, which was positioned as a weak and dysfunctional institution in need of rescue using modern or efficient methods.

In 2017 the *Financial Times* wrote,

[Babylon] is trying to create a robot doctor that can triage, diagnose, and even treat people over their phones. It plans to use machine learning algorithms to analyse an individual's health profile and suggest possible future illnesses, before they even have symptoms. Once the machine comes up with its own diagnosis, it can share this with human doctors. "This means they [humans] can see more patients or spend more time with you . . ." [Babylon founder Ali] Parsa said, "we can cut the time to get to diagnosis by 50%, if we give the machine diagnosis to the doctor up front." (Murgia, 2017, para. 13)

This focus on diagnosis, reiterated through press coverage and internal documentation, leverages broader discourses of automation in public services through datafication (Taylor, 2021). The narrative focuses on increases in numbers and speed, suggesting that the "scale-free" efficiencies of software allow the NHS to do "more with less" or to achieve some of the triple aims by allowing Babylon software to generate efficiencies by accessing and using its data to train its "AI doctors."

### **"Number Go Up"**

Another significant discourse foregrounded patient, employee, and contract "numbers going up"—leveraging the language of "democratization" of health care through personalized services provided by software. Babylon Health described its corporate vision in a video promoting Babylon's use of Amazon Web Services as being "to put accessible and affordable health care into the hands of everyone on earth . . . whether they are in a country as financially challenged as Rwanda or a country as rich and prosperous as UK" (Amazon Web Services, 2018, 0:05–0:17). This discourse of democratization and personalization of health hinges on the idea that digital software systems like symptom checkers can be reproduced across multiple contexts, allowing for rapid increases in the numbers of people using them. Daniel Kampmann (2024) describes this as a:

simple yet effective narrative of how a symptom checker chatbot could automate clinical labour of triaging and diagnosing in primary care at scale in combination with a platform-mediated telemedicine service that patients would access via smartphones to reduce consultation costs by keeping patients tied to their phones and out of physical clinics. (p. 10)

This narrative was sustained by a focus on rapid increases in numbers of customers and employees. "We've been spending money like there is no tomorrow" (Zolfagharifard, 2019) was how Ali Parsa described his company's approach to rapidly increasing their workforce and pace of work. Mansfield Advisors collected and analysed postings describing Babylon's internal culture drawn from the employment site Glassdoor,

detailing how the blitzscale strategy placed pressure on software developers to create prototype technologies rapidly, without consideration for whether these met medical standards (Herbert, 2024).

*Wired* magazine interviewed Babylon employees who described chaotic processes of recruitment and app design, featuring symptom checkers designed around decision trees that were “not very complex” (Browne, 2023, para. 11; including diagnostic processes that focused on separate areas of the body).<sup>1</sup> One designer reported that a user experience specialist slept in the office the night before a BBC interview, rapidly building a functional demo version of a symptom checker. Other journalists reported on a corporate culture generally at odds with the norms of medical research (Hsu, 2019). Anecdotes about rapidly commissioned, poorly specified work done to reach an external metric are common in technology start-ups, where the creation of prototypes for funders or the public results in intense bursts of work (Irani, 2015; Powell, Ustek-Spilda, Lehedé, & Shklovski, 2022). However, in the context of medical devices, the testing of devices is usually subjected to double-blind testing before being released to market; a focus on quickly creating a prototype raises tensions with established knowledge, practice, and standards.

### ***Automated Efficiencies***

Babylon’s efficiency narrative assumed not only that software could permit greater numbers of people to use services without increases in cost but that it could speed up processes by removing human participation (Iacobucci, 2019). This created a fetishization of the imagined capacities of AI (Kampmann, 2024) in ways that impacted clinical relationships. In 2018, Babylon announced that its software had performed better than GPs on a major medical exam and immediately received delighted coverage from the BBC (Copestake, 2018) and *Forbes*, whose headline read, “This AI Just Beat Human Doctors On A Clinical Exam” (Olson, 2018). Impressed by the claims, researchers examined the function of Babylon’s software against the epistemic norms of medical diagnosis, reporting that Babylon’s internal study had asked doctors, rather than patients, to input descriptions of symptoms, and had included less than a third of the medical exam questions (Fraser, Coiera, & Wong, 2018). It had also allowed the software three attempts to answer each question, rather than the single attempt made by doctors. Because only seven doctors participated, small variations in how doctors took the test might have skewed the result, and the statistical analysis that might have prevented this. Babylon’s own scientific team published a rebuttal in 2020 (Baker et al., 2020).

From 2018 onward, David Watkins, an NHS consultant oncologist, posted increasingly public critiques of the symptom checker, first anonymously on Twitter/X, then at a public lecture where he revealed his identity, and finally in an extensive debate on *Newsnight*, an agenda-setting BBC television news program (Caruso, 2020). Watkins interrogated what he saw as dangerous biases in the software, such as the way it provided different suggestions to male and female patients with identical-reported chest pain symptoms—advising the male patient to go to the emergency department while suggesting the female

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<sup>1</sup> A decision-tree learning system creates relationships between different features, in this case, different body parts, symptoms, and diagnoses gathered from data points used to train the system. They depend on the application of learned rules inferred from the data provided. The stronger the relationship between the different data points in relation to the rules, the higher the potential for a particular outcome. Decision trees are not dynamic and may not be able to represent complex intersections of factors.

patient attend the GP, after providing information on panic attacks (Iacobucci, 2020). On Newsnight, a doctor who had previously worked as head of regulatory affairs at Babylon stated "that no one has assessed how well the app works" (Caruso, 2020, para. 4). At that point in time, no one was required to: the MHRA regulatory frameworks for software symptom checkers were updated in 2020 after Babylon's software was already in use (Medicines and Health Regulatory Agency, 2020). The vague way that Babylon Health referred to its own products created ample opportunities for fetishization of the capacities of its different systems, conflation between them, or ambiguity about their regulatory status. Combined with a focus on the speed of business development, this left researchers, regulators, and critics at a temporal disadvantage. The consequences for the delivery of service and the experience of clinical care accumulated as Babylon Health leveraged its NHS contracts to acquire further venture capital and expand in the United States.

### **Consequences**

#### ***Speed for Whom?***

Babylon Health's encounters with the NHS generated consequences for the equitable provision of health services, along with an intensification of clinician labor, including a shift towards casualization and platformization.

An investigation of the GP at Hand practice in 2019 reported that the users of Babylon services, despite being younger and in better health than other users of primary care, used the service "more than would be expected" (Salisbury, Ipsos MORI, & York Health Economics Consortium, 2019, p. ii). The service was "not used by large numbers of older people" or "patients with more complex health needs" (Salisbury et al., 2019, p. iii). The United Kingdom's health care regulator reported in 2019 that GP at Hand needed improvement in assuring that its patients received timely vaccinations, cancer screenings, and screenings for other chronic conditions (Ladds et al., 2023). Neither did the symptom checker reduce GP labor: GP at Hand users in 2017 and 2018 used urgent care and hospital services more than expected, and although 55% of them used the GP at Hand symptom checker, they did not think it replaced the need for consultation (Iacobucci, 2019).

"Speeding up" displaces labor toward efforts that sustain the appearance of things moving faster. In other words, the production of speed necessitates investments of time (Sharma, 2014). Rather than speeding up waits at GP clinics, the GP at Hand app doubled up clinician labor as people followed up online meetings with in-person ones. Babylon Health's efforts at digitally intermediating GP provision also contributed to shifts toward a platformization of clinician labor. Babylon Health and other providers of remote consultations benefited from shifts in practice during and following the COVID-19 pandemic. At the launch of Babylon Health, the company was careful to specify that its clinical staff were doctors who also worked in other NHS practices, but by 2018, their labor force had shifted. "Digital-first" primary care now employs on-demand labor practices for clinicians. Providers employ staff with UK medical degrees to work remotely. Wages are low by UK standards and sometimes structured as pay-per-appointment. This "speeded up" and "data-driven" version of general practice mirrors the promise of the AI doctor, framed as an efficient replacement for time-consuming conversations and in-person practice visits. This temporality promises efficiency and reproducibility of the patient (or "end-user") experience, while embedding the clinician into

an increasingly common norm of offering labor on-demand—often more than is compensated, since systematic reviews reveal that digital-first care does not reduce clinician labor (Salisbury et al., 2020).

Babylon Health also unsettled the epistemic relations underpinning clinical care, repositioning diagnosis as a mechanical process whose effectiveness could be judged in relation to its efficiency—even when it made significant and substantial errors. These errors frequently included misdiagnosing women (for example, a 66-year-old woman with breast pain being asked to indicate if she was pregnant, after which the software still did not suggest breast cancer as a diagnosis). Critiques of Babylon Health systems remained focused on aspects of the software’s functionality rather than on the legitimacy of automating diagnostic work. Efforts to ensure that the company complied with relevant legislation before launching products failed, allowing the automation of diagnosis to become normalized. This reinforced the legitimacy of the discourses foregrounding the value of speed and efficiency rather than the limitations of software. Tellingly, David Watkins was accused of trolling the company when identifying these limitations in diagnostic capacity.

### ***Evasion of Regulation***

The unclear boundaries between Babylon Health’s different iterations of software generated another benefit for the company and another set of consequences for the public, as the company launched and promoted different software products before the application of relevant regulations.

In 2018, Babylon described the symptom checker components of its service as being considered a class 1 medical device. The updated guidance for these devices specifies that “for devices intended to be used by lay users, provision of an indicative diagnosis may be enough to imply that the device is allowing direct diagnosis” (Medicines and Health Regulatory Agency, 2020, p. 1). The triage system that it originally built for the NHS 111 pilot project would have had to be regulated separately and to a more demanding level. The claims from Babylon to be “powering the 111 system,” or providing an AI doctor, as cited in media coverage, certainly create this implication. In 2020, when its guidance was updated, the MRHA announced that Babylon’s devices would be reclassified (Iacobucci, 2020) and that it was investigating the overall governance of the organization, including the capacity to respond to patient safety complaints (Lomas, 2021).

Mazur and Serafin (2023) identify similar strategies through which platform companies stall regulatory actions, allowing them to increase revenue and therefore generate platform power. They identify how access to large amounts of venture capital allows these companies to slow down regulatory actions: “Stalling creates time for technological lock-in to set in, which increases the economic costs of switching to a different platform or going off platform altogether. It also creates time for institutional deepening, enabling the platform to establish legitimacy” (Mazur & Serafin, 2023, para. 15). Babylon Health’s stalling processes allowed the company to continue developing its products without regulatory oversight and to benefit from the legitimacy associated with the provision of NHS contracts. This regulatory obfuscation also created the opportunity for other companies developing symptom checkers to benefit from the regulatory vacuum. This created a perception that all kinds of personalized digital diagnostic tools were safe and valid, even though

some of them had been demonstrated to be incorrect. With the expansion of large language model tools such as ChatGPT in regular use, this regulatory gap may be reemerging.

Babylon Health developed platform power through the consolidation of data resources extracted from NHS systems. Using public data to train proprietary systems that are then marketed back to the public entity drives a circuit of dependency that rests on an assumption that the commercial tools are more objective (Morley, 2023), incentivizing public services to continue to contract for them. Data-driven systems of this type have risks, however. They can overrepresent certain populations in the data and create mismatches between the practices of clinicians and the functionality of the devices, meaning that marginalized people's own accounts of their bodily experiences may be dismissed if they run counter to the data-driven result—a diminishment of epistemic authority for the clinician and a risk of epistemic injustice for the patients. Equally, results of online searches for symptoms or results of symptom checkers can become objects of epistemic dispute that clinicians must navigate in their engagement with patients. Diagnosis depends on a clinician's experience of a context within which patients are presenting certain symptoms (Morley, 2023) and data-driven systems can generate biases not only when training data generate results that do not represent the patient (such as the mismatched diagnostics from Babylon Health) but also because the patients who need the most complex care are least likely to generate data present in automated systems.

As data-driven systems expand, so does the platform power of technology companies. Babylon's efforts to acquire NHS data to train its systems parallel efforts by other companies such as Palantir, better known for data processing associated with human rights violations by the U.S. Immigration Control Enforcement. Palantir won a contract for the standardization and processing of NHS data in 2020, despite substantial public opposition. This contract results in Palantir's technology being permanently part of the NHS data ecosystem (Foxglove & Doctors' Association, 2023) and the company being responsible for the standards and techniques used for data storage and sharing. The structural openness of the API model and its prioritization of private sector apps also shifts the power balance between the public system and the technology companies: it makes it easy to access NHS data to train proprietary systems. The benefit of the training data accrues to the private company, whether or not the promised project is delivered. This was almost certainly the case for Babylon Health's Wolverhampton project, which may well have employed UK health data to train systems later sold into other markets. The ironies of these arrangements represent some of the other consequences of embedding technology start-up logics in public systems.

### **Discussion and Recommendations**

The language used by start-ups shifts how public services are imagined and discussed, encouraging a vision of software-based technology as a speedy, efficient, and scalable solution to consistent underfunding of public services over time. More than this, the material means of organization of labor, time, and resources (including health data) are impacted by language about crisis, risk, efficiency, and speed. These shape institutional decisions and processes. When start-up technology is inserted into public institutions, organizational and epistemic conflict results, with potential damage over the long term.

Babylon Health's claims about, and failure to generate efficiency is an example of the "ironies of automation" (Bainbridge, 1983, p. 775) where expectations associated with technology produce new

problems, sometimes because of a focus on narrow aspects of a broader complex system. They come from claims about the efficiency of data-driven diagnosis or the speediness of clinical visits. Such ironies are based on misapprehensions about the labor, knowledge, and values at stake—for example, in the maintenance of the UK health system. Imposing efficiency-driven scaling mechanisms to rationalize aspects of a complex system depends on the assumption that software will improve services by making processes reproducible. This case study illustrates that instead, the equity and epistemic justice aspects of these systems can be negatively impacted, and thus, the quality of care. Beyond these specific risks, systemic risks could include the erosion of resilience within the health system, resulting from the reduction of connections between different aspects of the system, or from attempts to reduce the number of ways to address a problem (Centeno, Nag, Patterson, Shaver, & Windawi, 2015).

As the United Kingdom's current government promises to deliver broad-scale efficiency across the public sector through the application of AI, the risks of adopting discourses of blitzscaling include a sidelining of forms of knowledge that are contextually specific or not amenable to reproduction at scale through software, including knowledge that provides alternative ways to solving problems or operating within complex systems. A specific risk is that software or AI might be described as able to replace workers (in the way Babylon's software was described as able to perform diagnostics better than clinicians). This dismisses what experiential or relational knowledge people possess (see Collins & Evans, 2007). Relationships between clinicians and patients are central to the NHS constitution. Foregrounding relationships in care could increase quality by integrating and translating between training, knowledge, expertise, and embodied experience of patients and clinical practitioners (Bryson & Deery, 2010; Held, 2006; MacLellan, 2014). Furthermore, appropriation of public data and the encouragement of platform companies to preempt regulations introduces further risks of longer-term harm.

Based on the analysis in this study, I provide the following recommendations for future integrations of AI software systems into public sector health and care settings. First, assess promises associated with technology-driven improvements against stated public values such as the NHS constitution. Second, foreground relationship quality rather than speed in clinical engagements. Third, embed resilience in institutional design by recognizing and integrating tacit knowledge. The first recommendation addresses the influence of promises about technology, which are often interpreted as if they apply to all contexts. In this case, the promises of transformation not only contradict the principles underpinning the NHS but also introduce new expectations about efficiency that contributed to shaping decisions within clinical commissioning. The second recommendation addresses the potential for epistemic harm resulting from decisions based on technological promise. Retaining focus on the quality of the clinical relationship centers human capacity in a way that can frame the introduction of technology as something that supports, rather than replaces, expertise. The third recommendation builds from this, suggesting the potential for integrating knowledge and practice into new sociotechnical systems. This is one of the principles that has guided the field of participatory design for the past thirty years (Bødker, Dindler, Iversen, & Smith, 2022). The history of this field suggests that it is possible to construct alternative infrastructure based on the social norms and practices within institutions.

These recommendations reorient institutional decisions away from conceptions of efficiency drawn from technology industry paradigms and their discourses, which contribute to broader processes of

financialization and speculation. These paradigms and discourses can undermine existing institutional practices as well as cause epistemic harm. It is possible to counter these by attending to and valorizing existing institutional requirements, epistemic relationships, and forms of knowledge.

### Conclusion

The influence of Babylon Health's discourse of blitzscaling in the NHS included:

- Marketing technology based on speed and ease of access, undermining the equity of health provision and clinical working conditions;
- Advancing a hyperbolic narrative about the capacity of AI, featuring misleading claims and obfuscation of the regulatory status of the products;
- Accessing and enclosing public data within software products that interfered with the epistemic authority of clinical staff while worsening clinical working conditions.

This study reveals the material—organizational and institutional—consequence of the circulation and appropriation of discourses of scaling innovation drawn from the technology industry. The salience of discursive frames drawn from the technology industry is part of the moral economy of technology (Cegłowski, 2016; Powell, 2018). As this case has shown, this moral economy creates tensions with, and potential damage to, the epistemic value of health care as a public service. The overdominant influence of frames oriented to speed, scale, and innovation evading regulation led to the dismissal of other epistemic positions. This made the story of the benefit of software-driven “blitzscaling” deceptive. To address this, careful attention needs to be paid to developing discourses that foreground the value and significance of expertise within public sector settings and to establishing practices that sustain these. This includes shifting narratives away from the continual evocation of crisis and instead foregrounding existing expertise. This allows the introduction of new technology to draw on rather than diminish or strain existing practice. Following through on the recommendations in this study can contribute to the protection of the ethical and epistemic principles that guide the maintenance of public services.

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