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The digital writing of human rights narratives: Failure, recognition, and the unruly inscriptions of database infrastructures

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Abstract
Drawing on empirical research, this article explores the possible sociopolitical effects of database infrastructures on the shaping and construction of human rights narratives. While it has become commonplace to theorise human rights through the lens of narrative, academic debates have largely ignored the technical infrastructures through which human rights narratives are constructed. The article responds to this gap by deploying and developing theoretical tools from software and infrastructure studies to consider database infrastructures as complex sociotechnical devices that engender sociopolitical consequences for narrative possibilities. Focusing on two key examples drawn from the empirical research, the article demonstrates the necessity of developing a critical attentiveness to the ways that human rights narratives are shaped by digital infrastructure. In doing so, the article develops and complicates infrastructure and software studies approaches whilst also demonstrating their value for other fields of research which do not ordinarily come within their purview.

Keywords
databases, digital sociology, human rights, infrastructure studies, postcolonial theory

Introduction
Drawing on empirical research conducted with organisations that make and use specialised human rights databases, this article develops a critical sociological analysis of the effects of database infrastructures on the shaping and construction of human rights narratives. Though there is a rich theoretical tradition of exploring human rights through the lens of narrative and storytelling (Feldman, 2004; Harlow, 1992; Schaffer & Smith,

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academic debates have largely ignored the technical infrastructures through which contemporary human rights narratives are constructed. This is perhaps surprising given that human rights work is increasingly subtended, in one way or another, by database technologies. Addressing this gap, the article deploys and develops social theories drawn from software and infrastructure studies to analyse database infrastructures not as neutral media for the storage and retrieval of stories, but as complex sociotechnical devices constituted by assumptions, norms and operative logics that have important sociopolitical consequences for narrative possibilities.

The article focuses on two key moments in the research process where the database infrastructure under investigation, a specialist human rights software platform called Uwazi, directly impinged on questions of narrative construction. I first analyse Uwazi’s unexpected difficulty with reading Arabic text as a problem of recognition in its broadest sense. I theorise this moment as an infrastructural failure which reinforces the already-existing postcolonial power relations that inhere within many human rights narratives. I then analyse Uwazi’s glitchy capacity to rewrite human rights texts through data migration processes. While such rewritings were often understood to be little more than an irritant, I examine a moment where Uwazi’s glitchy inscriptions harbour a generative potential to open up new possibilities for narrative construction. This part of the analysis thus develops a theoretical understanding of the glitch as a source of unruly but creative potential for the task of narration.

At a time when human rights work increasingly revolves around telling stories with data, my theoretical exploration of these examples demonstrates the necessity of developing a critical attentiveness to the ways that human rights narratives are shaped by digital infrastructure. Moreover, given that novel data infrastructures continue to proliferate across all areas of society, the analysis also gestures towards the growing relevance and value of both software and infrastructure studies for other areas of sociological enquiry which, like the narrativisation of human rights, have not ordinarily come within their purview. In this sense, it reinforces calls for greater computational literacy as a central aspect of the sociologist’s toolkit (Brooker, 2019; Orton-Johnson et al., 2015).

**Rights work as narration**

Over the last three decades, scholarship across sociology, law, literary theory and media studies has affirmed that the work of human rights is inextricably tied to narrative and narration (Bell, 2018; Frankenberg, 2014; Palacios, 2019; Slaughter, 1997). Indeed, despite overoptimistic predictions of metanarrative’s demise (Lyotard, 1984), human rights continue to imbricate with the purportedly universal (but suspiciously Western) narrative of human progress. This ‘romantic’ tale proliferates, undiluted, in triumphalist histories of human rights that chart an almost teleological progression from the French Revolution’s Rights of Man to the rise of human rights law as the moral doxa of post-Cold War globalisation (see, for example, Hunt, 2008; Morsink, 2009). Partly for this reason, narratological analyses have productively critiqued the human rights project as a now hegemonic formation ‘invested with huge amounts of material and symbolic power’ (Kaur Grewal, 2017, p. 4).
In his suggestion that human rights law enacts, and is fortified by, the narrative structure of the Western Bildungsroman, for instance, Joseph Slaughter (2007) clarifies and problematises the narratological assumptions undergirding the hegemonic human rights project as a story of maturation, socialisation and progress. At its sharpest, Slaughter’s analysis reveals that classed, raced and gendered aspects of the contemporary human rights movement’s ‘prejudicial normativity’ owe much to its interdependencies with a narrative form embedded in the bourgeois culture of Western capitalism. The result is a plot that often reinscribes the uneven power relations of postcolonial globalisation by positioning the Global South as either barbaric savages or helpless victims who require the maturing assistance of a Western Saviour (Mutua, 2001). The ‘Kony 2012’ campaign, which invited Western audiences to help find and capture Ugandan rebel leader, Joseph Kony, as well as the recent framing of human rights issues in both North Korea and Libya represent recent iterations of this neocolonial narrative grammar (Chazal & Pocrnic, 2016; Song, 2021; Xypolia, 2022).

But while human rights underwrite (and are underwritten by) a putative vision of human progress, they have also been embedded in the finer grain of everyday social and political practices ‘as a globally available vocabulary and narrative for scandalous abuses of power and miserable living conditions’ (Frankenberg, 2014, p. 36). As the human rights project has articulated a distinctive mode of activist practice mobilised largely through NGOs and activist-lawyers, the work of narrative and narration has also become operative at much smaller scales. Insofar as the primary mode of human rights activism has been that of ‘bearing witness’ to human rights violations, the work of NGOs is to “tell these stories” of violence and violation – to narrate human suffering (Slaughter, 2014, p. 47).

This observation has informed some interesting reflections on human rights work, particularly its collection and circulation of victim testimony, in relation to concepts of life story and biography (see Feldman, 2004; Hesford, 2004; Schaffer & Smith, 2004; Slaughter, 2017). Scholars such as Barbara Harlow (1992) and Ron Dudai (2006, p. 784) have described the archetypal document of the human rights NGO, the human rights report, as ‘a new literary form’ or ‘genre’ in the contemporary writing of the world. The weaving together of numerical data, first-hand accounts and other evidence into a purposeful, engaging and credible story is, as Dudai (2006, p. 791) insists, ‘what makes the genre’. Scholar-practitioners such as Leora Kahn and Anita Fábos (2017) valorise this notion of narrative-based activism when they suggest that human rights work necessarily entails the development of narrative strategies that lend credibility to the stories of victims. Credible stories, they contend, catalyse publics into action or ‘shame’ governments into behavioural change.

But narrative-based activism, as Kahn and Fábos themselves note, also raises ethical questions regarding representation and the power relations embedded in the act of narration. These concerns have been approached across biography and media studies (Boltanski, 2005; Kyriakidou, 2015; Meyers, 2018; McLagan, 2003), where discussions explore the postcolonial ethics of narrative ownership, dissemination and reception. Alongside these debates, scholars have also critiqued the related problems of omission, invisibility and exclusion within human rights narration (Miller, 2008). Serene Khader (2018) has argued that human rights narratives developed by NGOs, lawyers and
international institutions centre personal suffering in ways that obfuscate and exclude important structural and historical dynamics in accounts of violence. As narration, human rights have often reinforced the ideological individualism of late-capitalism by obscuring the structural dynamics of neoliberal globalisation as a cause of mass violence (Marks, 2011, 2013; Slaughter, 2018). Hence, contemporary human rights narratives may provide one mechanism through which late-capital’s ‘abstract operations are . . . posited as unconnected to or even incommensurable with material violence’ (Franklin, 2021, p. 10).

The arguments developed in this article owe much to these insights but approaches them from another angle. Noting that human rights work is increasingly undergirded by digital infrastructures made up of databases, data visualisation software, statistical tools and more, this analysis instead explores the role of database technologies in shaping human rights narratives with important sociocultural and political effects. Of course, the ever-growing role of digital technologies within the work of human rights NGOs and activists has already become a well-established focus of academic debates (see Gregory, 2010; Land & Aronson, 2018). But this emerging body of human rights scholarship has tended to emphasise functionality and largely focuses on evaluating the impact of new technologies in securing or harming human rights. Little consideration has been given to the ways such technologies shape the practice of human rights as narration, especially the altogether murkier problem of how digital infrastructure conditions narrative possibilities.

**Digital narrative: The grey work of database infrastructures**

To address this gap, the article assembles theoretical tools from both infrastructure and software studies to provide a more critically oriented exploration of the ways in which the operations of database infrastructures affect and impact narratives constructed by human rights groups. These fields have a long history of theorising the relations between database technologies and narration. Two decades ago, for instance, Lev Manovich (2001) suggested that new media transform narrative according to the logics of the databases that underpin them. Digital media, Manovich (2001, p. 227) argued, realise ‘interactive narrative’ or ‘hypernarrative’, understood as ‘the sum of multiple trajectories through a database’, which users navigate ‘following links between its records as established by the database’s creator’. Data are thus a kind of ‘text’ – a data text – whose narratives congeal in the interactions between database infrastructures and their navigation by users. N. Kathryn Hayles (2007, p. 1603) affirms this point, suggesting that ‘narrative and database are . . . natural symbionts’, insofar as narrative makes meaning from the relations that databases forge between data.

Within software studies, these arguments have led to calls for greater attentiveness to the ways different database forms – such as more structured relational or more flexible and dynamic NoSQL databases – materialy shape digital representations and narrative possibilities (Dourish, 2014; Dourish & Mazmanian, 2013). But even where narrative is not explicitly at issue, the value of both software and infrastructure studies is their refusal
to confuse what Mathew Fuller and Andrew Goffey (2012a, pp. 11–14) call the ‘greyness’ of computational media – their capacity to sink, imperceptibly, into the background – for unimportance. Nor do they read digital technologies simply ‘as a question of realized instrumentality’ (Fuller, 2008, p. 3). Instead, these fields share an understanding that digital infrastructures, as Bowker and Star (2000, p. 45) might argue, ‘do things’, in their role as the ‘scaffolding in the conduct of modern life’. Database mediations may be less visible but are no less important than, say, processes of emplotment and framing that define the human rights report as a ‘genre’ (Moon, 2012). The assumptions and the effects that are rendered operational in something as seemingly banal as a data model (Fuller & Goffey, 2012a; Ruppert, 2012) condition and constrain narrative forms.

A key issue is that database infrastructures intertwine deeply with knowledge production. Dourish and Mazmanian (2013) suggest the underlying structure of a database will ‘shape the questions that can be easily asked of it, the kinds of manipulations and analyses it supports’, and, beyond that, ‘how it can be used to understand the world’ (p. 100). But more than that, as Fuller and Goffey (2012b, p. 312) contend, the grey mediations of database forms ‘also give shape to fields of experience and the opportunities for action they embody’. The different ways that database infrastructures construct relations between different parts of the data create different fields of visibility and pose specific affordances. In an important sense, any database infrastructure both ‘models and . . . moulds reality’ (Kallinikos, 2009, p. 188).

As the invocation of both modelling and moulding implies, the social and technical reciprocally shape each other within database infrastructures. As Manovich (2008, p. 5) suggests, any analysis of a database must therefore ‘investigate both the role of software in forming contemporary culture, and cultural, social, and economic forces that are shaping development of software itself’. On the one hand, databases never provide a neutral or ‘objective’ replication of the realities they model. As Bowker (2014, pp. xii–xiii) contends, ‘social, cultural and political values are . . . built into the databases which are so much a part of our daily lives’. And even while these sociocultural assumptions can quickly submerge into the ‘technological unconscious’ (Thrift, 2004), they can also have important consequences as recent analyses of the racialised nature of computer technologies demonstrate (Beller, 2021; Benjamin, 2019).

At the same time, computation has its own technical logics and norms that, when embedded in software, can have important sociopolitical effects. Fundamentally, computation is an abstraction process that models complex, continuous and ‘analogue’ realities as discrete objects (Berry, 2011; Franklin, 2015; Galloway, 2012; Kallinikos, 2009). A relational database, for instance, involves the disaggregation of the real world into discrete, non-hierarchical entities made up of similarly discrete attributes, which are also treated as entities in their own right (Fuller & Goffey, 2012b). As with all computational abstractions, it can thus be important to ask what parts of reality have been elided or left behind; what forms of relation, ways of knowing and being are transformed or even rendered invisible through these abstraction processes.

It is exactly this capacity to illuminate the constellation of socioeconomic, cultural and technical norms and operative logics as they materialise in database infrastructures, that makes both infrastructure and software studies so valuable and generative for the analysis I develop here. The insights of both fields contribute to a theoretical lens that
helpfully draws out the multitude of ways that the ‘grey’, subterranean realm of software is brought to bear on, and thus shapes, the construction of human rights narratives in interesting and, sometimes, politically consequential ways. The next section explains in detail how I deploy this theoretical toolset to explore the empirical example of Uwazi, a database software which is currently being used by human rights organisations in a variety of contexts. As I clarify below, my analysis focuses particularly on moments of ‘glitch’, friction and failure, precisely because it is in these moments that the complex array of ‘grey’ problems raised by software and infrastructure studies, and their consequences for issues of narrative, are brought to the fore.

Engaging the digital substrates: Methods and approach

To make its analysis, this article draws on data collected during fieldwork with Huridocs, an organisation that specialises in developing database software for human rights groups, and Global Legal Action Network (GLAN), a human rights NGO and ‘partner’ of Huridocs which uses Uwazi, the latter’s flagship database software, to record human rights violations. Undertaken between 2019 and 2020, the data collection process began with a week of participant observation and semi-structured interviews with three Huridocs project managers based at their office in Geneva. This initial fieldwork was supplemented by online semi-structured interviews with a further project manager and three software developers, who all work remotely in disparate locations such as Spain, Kenya and the US as part of the organisation’s broader team.

Engaging with both the project managers and software developers at Huridocs provided a more holistic understanding of the organisation’s work. On the one hand, the software developers were more technically focused, primarily undertaking coding work on the technical ‘back-end’ of software such as Uwazi. As one software developer, Sim (pseudonym), suggested, their job was to ‘develop the app [Uwazi], and think and discuss new functionalities or . . . yeah, to implement an implementation that will help the users’. Conversely, project managers were usually ‘front-facing’, working as a point of contact between Huridocs and its partners, helping the latter to develop and maintain functional databases for their human rights work using Huridocs’s software. Project managers often saw their role as ‘the translator’, as Juno (pseudonym), a senior project manager, put it, mediating between ‘the technical possibilities and what [the software developers] think could solve the problem, and understanding what it is the human rights organisation truly wants to accomplish’. My research with Huridocs was therefore able to encompass not only the technical dimensions of the organisation’s work but also the ways this interacted with, and folded into, the more sociopolitical context of human rights work.

The initial intention for the project was to build on this first period of research through a similar period of participant observation with two project officers at GLAN who regularly used Uwazi to support their human rights work. But disruption caused by the Covid-19 pandemic made face-to-face research impossible. Consequently, research with GLAN relied on online semi-structured interviews with participants using screen-sharing to demonstrate the database’s functionality as well as their everyday experiences of working with it. The advantage of screen-sharing was that it transformed the fieldwork into a
kind of hybrid method encompassing both participant observation and semi-structured interviewing. As participants moved through the structures of the database, the assemblage of data objects, interfaces and linkages that composed it became a prompt for further discussions between researcher and participant. In this respect, the online interviews also had much in common with visual elicitation methods, which use objects and images to reveal participants’ ‘tacit knowledge’ and ‘enhance [their] ability to elaborate on their own conceptions of the world’ (Barton, 2015, p. 179; Pauwels, 2019).

Across both fieldwork sites, the research sought to understand how participants thought about, understood and worked with Uwazi’s database infrastructure as a means of recording, organising and representing human rights violations. Named after the Swahili word for ‘openness’, Uwazi is an open-source web app based on a ‘graph’ database design that stores and connects various digital media objects including text, video, images and audio. Echoing other participants based at the organisation, Juno suggested that this was a clear advance on earlier software developed by Huridocs, which was ‘basically a database of metadata’, storing only key information about human rights violations. In contrast, ‘Uwazi provides this important functionality of being able to preserve the evidence, or the source material, along with the metadata.’ Another important aspect of Uwazi is the greater flexibility it offers compared to their earlier database software. Indeed, Uwazi can be configured in several different ways and tailored to the specific projects that Huridocs partners are pursuing. In the words of Lenu (pseudonym), another project manager, this made Uwazi ‘a toolkit’ which ‘can support diverse and differing investigative and documentation approaches’.

Interestingly, and echoing the close relationship between narration and human rights work outlined above, Uwazi is advertised as a tool which helps human rights organisations to ‘tell stories’ that are ‘hidden’ within their documents (Huridocs, 2021). This perhaps helps to clarify the infrastructural qualities of database software like Uwazi as it relates to the writing of human rights narrative. Rather than doing the storytelling, Uwazi bears the slightly ‘submerged’ or ‘sunken’ quality of infrastructure (Star & Ruhleder, 1996), designed as it is to support and improve existing organisational practices that seek to construct narratives with data. This is particularly true when Uwazi is used as an internally facing database, invisibly subverting a human rights organisation’s work. But it should be stressed that Uwazi can also be embedded in a website as a public-facing archive, making, in Huridocs’s words, ‘the stories [hidden in data] more accessible and understandable to a wider audience’ (Huridocs, 2021). Here the database software scaffolds and structures human rights data as a public-facing media object, facilitating precisely what Manovich (2001) would call ‘hypernarrative’.

During the fieldwork, my observations and interviews threw up some of the more mundane ways that Uwazi could create ‘fields of experience’ (Fuller & Goffey, 2012b, p. 312) that were palpably felt by participants in the study. For Mackenzie (pseudonym), who had only recently begun using Uwazi at GLAN, navigating their way around the Uwazi database was oriented by a mental ‘map [. . .] of what’s happening behind what I’m looking at so I know where I want to navigate to and where I can go back to get things’. Through the map, Mackenzie suggested, Uwazi ‘looks like a level of Mario Kart [they laugh] with like little labyrinth rooms and corridors and pipes that connect things from one to the other and like it’s genuinely like a little map that I go left and right and
further back or further forward’. Mackenzie’s invocation of a mental map of the database here points to the sense in which they experienced Uwazi as a reasonably complex ‘code/space’ (Kitchin & Dodge, 2011) constituting a large field of possible action.

Nevertheless, my key interest across the project was in uncovering Uwazi’s capacity to enable and constrain possibilities for action or impose its own logic on the data in ways that pose questions that are not simply technical but might also be sociocultural, ethical and/or political. Accordingly, one of the fundamental challenges of the research was trying to move beyond the persistent tendency to gloss technical objects as tools, ‘something you do something with’ (Fuller, 2008, p. 3). Parsing software from this instrumentalist perspective can have the effect of side-lining a more socially and culturally oriented reading of software by emphasising issues of practical efficacy, transparency and control instead.

An instrumental view of software could often emerge in discussions with participants. For instance, Rowan (pseudonym), another, more experienced user of the Uwazi database at GLAN, emphasised the ways that the apparent transparency and efficacy of the software translated directly into the construction of credible legal narratives. For them, Uwazi’s capacity to bring together textual summaries of a rights violation with all the evidence pertaining to that incident, including videos, images and NGO reports, into a single screen was particularly valuable:

[B]eing able to look at an incident and addressing – like looking at all the evidence together is just so useful [. . .] and it does – it does change how you look at the incidents. [. . .] because the baseline issue with proving war crimes and violations of in international humanitarian law is that sometimes they’ll deny that an attack ever happened or that they were responsible so there’s that kind of very basic being able to prove what happened outside of it but then there’s the whole extra layer of being able to prove what they knew and whether they had the necessary intent and – and [Uwazi] is just really good for – for being able to kind of show all of those things at once.

Working in the context of Yemen, where a coalition led by Saudi Arabia regularly denies the existence of human rights violations resulting from their military operations, Rowan’s comments emphasise Uwazi’s capacity to arrange a field of visibility that punctures the surface of denial. Feeding into broader discussions about the value of digital technologies in human rights work, Uwazi’s value for Rowan seems to stem from its instrumental capacity ‘to question and dismantle the official narratives as much as to build new, alternative ones’ (Fuller & Weizman, 2021, p. 5).

To try to scratch beyond this surface of instrumental reason, the focus of my observations and my interviews was to identify moments of ‘glitchiness’, ‘friction’, breakdown or failure, where the database acted in unanticipated ways, where expectations were frustrated, or where things appeared to go wrong. As Olga Goriunova and Alexei Shulgin (2008, p. 111) contend, the notion of a glitch can be defined technically as errors in software such as syntax, logic, or exception errors. But it might be more broadly defined as simply ‘the revelation of an infrastructural failure’ (Berlant, 2016, p. 393), which could encompass not only technical error but also more sociocultural experiences of friction between user expectations and actual functionality.
Rather than a nuisance, however, glitchiness, failure and friction are important insofar as they can lay bare what would normally remain hidden. Their dysfunctionality ‘allows insight beyond the customary’, and reveals ‘the ghostly conventionality of the forms by which digital spaces are organized’ (Goriunova & Shulgin, 2008, p. 114) whether those conventions are rooted in social, cultural, economic or technical norms. Moreover, moments of infrastructural failure can also harbour new and creative possibilities for thought and action (Bodden & Ross, 2021) – a point I develop later. With this in mind, my own focus on the frictions, failures and glitchiness experienced by software developers, project managers and users of Uwazi was intended to open up opportunities to explore the confluence of sociocultural and technical assumptions embedded within the software.

As my fieldwork unfolded, moments of friction and breakdown did indeed surface the complex ways that the technical and sociocultural norms operative within database infrastructures could have important consequences for human rights narratives. In what follows, I zoom in on two moments where Uwazi’s infrastructure came to bear directly on questions of text and narrative. I first explore how Uwazi’s encounter with Arabic language texts exposed the ways that assumptions about natural language embedded in code can fold into longstanding issues regarding the human rights project’s colonial bifurcation of the narrating/narrated subject. The example demonstrates that database infrastructures can serve to impose politically consequential limits on how data are produced, organised and narrated. By contrast, the second example demonstrates not only the pitfalls but also the generative potential of erroneous inscriptions ‘marked’ on the data text through the process of migrating legacy data into Uwazi, which present opportunities to revisit omissions, rethink forgotten connections, and thus potentially develop more expansive narratives. Both examples thus highlight very different ways that human rights narratives can be shaped by the social, political and technical norms congealed in digital infrastructure.

Language matters: The non-universality of the universal human/user

Like much software that circulates today, Uwazi has not been built from scratch. It has instead largely been constructed by stitching together various pieces of pre-existing code found in open-source libraries and software repositories such as GitHub (Fuller et al., 2017). For instance, Uwazi’s user interface is built from code in the React JavaScript library, while other aspects are dependent on pre-packaged, open-source software such as MongoDB and Elasticsearch. Uwazi runs on top of this ‘stack’ of software such that the former’s functions and capacities are both enabled and constrained by the code that is laminated in the latter’s many layers.

For software developers and engineers, using pre-packaged code is intended to bring greater standardisation and bypasses the time-consuming task of building basic components from scratch. For Jan (pseudonym), a Huridocs developer, working in this way is preferable because libraries like React provide code frameworks which help to ensure developers are on the same page:
. . . if everyone is working with that framework and they understand how you do things in that framework, they will understand the code much faster. If in a month someone needs to change something I did, half of what I did they already understand it because it’s how you do things in the framework.

This was further emphasised by another software developer, Sal (pseudonym), who suggested that working with a coding framework is more than a question of choosing a language, it is ‘also about how you develop the software and how easy is it to maintain the software, even if another developer came in’. In this sense, standardisation is not simply a matter of efficiency but also connected to the organisational problem of maintaining the coherence of the project, especially as developers move across different pieces of code, or even in and out of the organisation altogether.

When code becomes standard in this way, however, it also presents issues of what Susan Leigh Star and Martha Lampland (2009, p. 9) call ‘generative entrenchment’, where the working assumptions and early decisions built into an infrastructural standard ‘ramify throughout the growth of the system’. But software accomplishes this entrenchment at potentially massive scales, since decisions ossify and reverberate in code used across hundreds, if not thousands, of applications. Hence, the practice of drawing from standardised repositories also poses interesting questions about the material consequences that unfold from both the technical and sociocultural assumptions that are built into this ‘borrowed’ code. These assumptions can be difficult to grasp since they are embedded in the opaque and technical layers of the stack and it can be only much later down the line that they can reveal themselves in glitches or infrastructural failures. As Jan pointed out, sometimes these glitchy revelations would only appear as old code interacted with new phenomena: ‘now I’m seeing the result of decisions that maybe we made two years ago. And okay, let’s not make this again [. . .] Sometimes it requires days of rethinking and reworking the thing.’

Such revelations can often provide much irritation, even when the problem seems relatively banal. I could certainly feel the frustration of Noor (pseudonym), a project manager working with several high-profile partners, as they recalled their own realisation that the code undergirding the public-facing end of a partner’s Uwazi database would foil any attempt to place a funder’s logo in the footer of the page. (In the end, Noor and the developers realised that placing the logo just above the footer provided an acceptable ‘workaround’.) Sometimes, however, bugs and glitches can also point toward the important sociopolitical consequences and effects of an assumption embedded in the infrastructure.

One of Uwazi’s important functionalities is its ability to automatically read and input text from scanned documents, making their contents both searchable and more readily useable. This functionality was based on OCR (optical character recognition) software which, as Sim explained, ‘transforms what the user inputs into some string of text that’s compatible with the database’. But during my time at Huridocs, ‘a bug’, as Sim described it, had revealed itself. Some partner organisations working with Arabic documents were unable to use the functionality as expected. Rather than a legible string of text, the database was instead filling up with clusters of dashes (‘-’), which made it impossible to search through the documents. This unexpected proliferation of dashes in the databases
of partners working with Arabic documents was a glitch which revealed a broader infrastructural failure in the stack.

The origin of the problem seemed not to lie in the OCR software itself, but instead, as Sim clarified, some of the ready-made database software elsewhere in Uwazi’s stack, which struggled with recognising and storing special characters. To overcome this problem a small algorithm was deployed to transform those characters as they were inputted into the database, ‘so if you have a word with a special character, that specific character will be a dash, and that will be stored that way in the database’. When the odd character in a large document is transformed into a dash this doesn’t pose a problem. But what became clear through the glitch was that in the case of Arabic, as Sim explained, ‘every character is a special character’, and so Uwazi ‘transformed every single of those characters into a dash [. . .] everything is turned into a dash’. ‘Maybe it’s obvious now,’ Sim lamented, ‘but it’s been a nightmare actually.’ Sim went on: ‘this small algorithm will affect a lot of stuff’, because solving the problem also means addressing ‘all these data in the database; we will need, when we implement the solution, to also change everything we have in the database’.

At the time of the research, Sim told me that Uwazi’s difficulty with Arabic text was an ongoing problem which the Huridocs team had yet to resolve:

. . . the technical problem is still there because we have a good workaround for the partners, because this is only affecting if your main language is one of those languages. So we told the partners that for now they need to use English or whatever other language worked well.5

While this was no doubt a satisfactory technical workaround, it also sheds light on some of the important sociopolitical issues that seemingly technical problems can raise: namely, the (neo)colonial assumptions and power relations that can be bound into the computational treatment of natural languages. As Mara Mills (2018, p. 3) suggests, the issue of what constitutes a standard character and a special character is already defined by a kind of ‘linguistic imperialism’. In much software development, standard or what Foucault (2004) might call ‘normal’ characters are largely the Anglo-American characters which are found on a Qwerty keyboard, while special characters are those which deviate from this norm (Pargman & Palme, 2009; Park, 2016). Though this can pose some problems for European languages that use accents or umlauts, the issue is much more problematic for languages such as Arabic and Mandarin that rely on an entirely different alphabet. When materialised in the algorithms supporting document and text processing, the division between normal and aberrant, between what is readily recognised and what is not, is therefore already bound up in a definitively postcolonial hierarchy of natural languages.

My contention is that the difficulties posed by Arabic text reveal the ways that a racialised figure of the user can all too easily, even if inadvertently, be embedded into software. As Adrian Mackenzie (2008, pp. 153, 156) has suggested, questions of the Other and otherness are rarely posed in software design because code is largely taken-for-granted as universal as is its idealised user: ‘“human beings”, free individuals who are normalized in important ways’. Implicit in Mackenzie’s argument but worth drawing out here is an understanding that the shaping of both code and user by white, Western
norms and ideals often goes largely uninterrogated. However, the friction created in the encounter between the algorithm and Arabic characters was, in a profound sense, a failure of recognition that crucially exposed, and now provides occasion to question, the non-universality of this universal user. Indeed, given that Uwazi is specifically designed for human rights organisations, the glitch foregrounds the resonances between software’s putatively ‘universal’ user and the similarly universalised figure of the human which is operative in human rights narrative. As Black feminist scholars (Weheliye, 2014; Wynter, 2003) have argued, though the latter lays a claim to universal humanity, its own unacknowledged heteropatriarchal and racialised character is similarly revealed in its encounters with racialised others.

This resonance is all the more compelling given that the non-recognition of Arabic characters concerns text and language recognition in their broadest sense. When embedded in human rights database software such as Uwazi, the postcolonial hierarchy of character recognition in software can ramify into an unequal distribution of which stories are seen and unseen, the visibility of particular perspectives from which such stories are told, as well as who is able to narrate and in what ways. If, as scholars have suggested, human rights narratives have often subordinated the South to the agency of a Western bourgeois narrator (Mutua, 2001; Slaughter, 2007), then the glitch with Arabic text calls attention to the ways this problem can, despite the best intentions of software developers, be opaquely reinscribed in the code infrastructures that subtend those narratives. The moment of failure demonstrates that norms and rules submerged in the grey infrastructures that scaffold human rights data have the potential to create a kind of bottleneck that allows dominant perspectives to be parsed more readily while making it more difficult and less likely for more marginal narratives to be heard.

The unruly inscriptions of database technologies

In a world now colonised by database infrastructures of various kinds, the constant churn of innovation and obsolescence poses the potential problem of leaving, as Geoffrey Bowker (2005, p. 174) argues, institutional memory forgotten as ‘legacy data [stuck] in legacy systems’. For Bowker, this is a potentially existential problem for data, as ‘it is often just not worth the effort of first massaging the data into a more contemporary classification and then migrating it across into a new format’. But the human rights context complicates Bowker’s arguments somewhat. Insofar as they capture and store information about human rights violations, human rights databases are often implicated not only in institutional memory but also broader questions of social and historical memory. This aspect was stressed by Lenu in their interview: ‘movement-owned technology has an interesting role in preserving memory, preserving accounts, and providing the foundation for telling how things went from perspectives that maybe wouldn’t make it on the official record’. Furthermore, because the preservation of memory is conditioned by the refrain ‘never again’ as a moral and social imperative to remember (Baer & Sznaider, 2016), efforts by human rights organisations to migrate data from legacy systems to new software become extremely important if not essential.

When Huridocs decides to partner with a human rights organisation and help them develop a database on Uwazi, the organisation often has existing data sitting within
legacy systems such as Excel spreadsheets, simple Access databases, or even Huridocs’s own obsolete software. The very existence of these data tended to engender the imperative to ensure they were not lost and remained part of the stories human rights organisations could tell. Contra Bowker, then, the necessity of porting old data from ‘legacy’ or outmoded data systems into Uwazi’s new data structures and new database systems is a recurring aspect of Huridocs’s work. Among other things, a data migration process will usually involve exporting the legacy data into a CSV (comma separated value file) and mobilising data migration scripts to move text from old data fields into the new Uwazi structure.

But data migration is far from straightforward. Sim explained that Huridocs were ‘doing the data model migration manually, because [. . .] every partner there has a different data structure, so they need to be translated into Uwazi’. Expanding on this point, Drew (pseudonym), a very dedicated project manager, suggested that a host of issues can plague data migration: there may be problems with whether the old and new data structures share enough in common and can sustain the migration; the sophistication of the old data structure can cause issues, especially if the new structure cannot handle the sophistication; when migration becomes complicated, coding work to make particular fixes or for special items can be time consuming.7 For these reasons, Drew described data migration as a fraught process.

It is perhaps unsurprising, then, that it was in the moments where legacy data entangled with the code embedded in the migration scripts and Uwazi that computational processes revealed their glitchy capacity to produce ‘phenomena which have not been envisioned by the author of the program’ (Ernst, 2021, p. 18). Indeed, while, as David Berry (2012, p. 380) insists, computer code and software normally perform processes through the forms of ‘agency delegated to them’, this prescribed or ‘secondary agency’ (Mackenzie, 2006) may nevertheless also ramify into something unruly and beyond the intentions of makers and users. In this case, the different layers of code involved in the migration process demonstrated an unruly capacity to produce sometimes quite surprising phenomena, even ‘exhibit[ing] some of the characteristics of “being alive”’ (Kitchin, 2011, p. 945).

For Huridocs, this unruly agency often took the form of erroneous inscriptions that were left upon the legacy data during the migration process. Such inscriptions were borne of the code’s failure to correctly parse some characters in the original text of the legacy data, which resulted in the transmogrification of the original characters into a string of illegible symbols in Uwazi. These marks on the ‘text’ often distorted the data’s readability, sometimes to the point of incomprehensibility. Consequently, though the glitchy inscriptions left by the migration process could well be understood to constitute a surprising rewriting of the narrative building blocks stored in the database, this unruly textual practice was nevertheless largely experienced as an irritating problem by members of the Huridocs team. Often discovered as project managers checked over the legacy data in their new Uwazi structure, the glitch raised the prospect of long and arduous work of cleaning and repairing the text, lest the potential narratives ‘hidden in data’ be distorted and lost.

During my fieldwork, I watched on as Drew spent many conscientious hours identifying and manually reformatting the ‘garbage’, as they put it, left by the migration process
on an existing dataset that was being moved into Uwazi. This involved identifying the glitchy symbolic strings inscribed by the migration process and cross-referencing them with the original data text in order to identify which characters had been transformed and in what way. Together, Drew and I learned that the migration process had rewritten many characters within the data and therefore the text. For instance, through migration the space character has been overwritten as ‘\n\n’ – a code artefact that usually signals two new lines in a string – in 28,000 instances. Conversely, the character ‘é’ had been transmuted into ‘√©’ in 485 instances. Once a glitchy symbol had been matched with the original character, Drew used the ‘find and replace’ function to restore the original character as it appeared in the legacy database.

Drew’s efforts to correct the text of the data are undoubtedly a reminder of how much human ‘articulation work’ continues to subtend the smooth running of digital technologies. Even while it remains ‘invisible to rationalized models of work’, this articulation work remains central to ‘[getting] things back “on track” in the face of the unexpected, . . . to accommodate unanticipated contingencies’ (Star, 1991, p. 275). In this way, the patient, committed, but largely unrecognised work of the project manager offers a glimpse of what the smooth sheen of digital technology and its fantasy of smart, automated and labourless processes often covers over and obfuscates. As Gemma Newlands (2021) point out, even the most ‘automated’ of machine processes often leans heavily on forms of human labour that are simply shunted into more infrastructural and therefore less visible parts of the process.

My key concern, however, is with those times at which the unintended inscriptions left by the migration process posed a generative problem that engendered creative possibilities. In these moments, glitchiness could be read as more than simply an anomaly or disruptive phenomenon. I thus concur with Shawn Bodden and Jen Ross (2021, p. 16) in their contention that at certain moments a glitch can pose itself as a ‘generative problem, one capable of introducing unanticipated possibilities and futures into an otherwise prescribed situation’. Particularly pertinent here is Bodden and Ross’s insistence that the ‘speculative and creative potential’ of the glitch can ‘re-turn . . . what matters and what appears possible’ (p. 16). Though their invocation of ‘what matters’ is here shaped by the Baradian concept of ‘mattering’ (Barad, 2007), I want to suggest that it has a very particular resonance in the context of narrative and narration. Here, re-turning what matters signals those moments of glitch, friction or failure that present new opportunities for reflection upon what has already been forgotten or marginalised in the data and, in drawing attention to omissions or silences, pose new possibilities for future narrative.

I caught a glimpse of this generative potential when I observed Drew overseeing data migration processes on a different project. In this case, the legacy data referred to a large national database of human rights victims. The partner organisation wanted Huridocs to import the data to a new database structure in Uwazi primarily so it could be presented on their website as part of an ongoing public archive. One of the fields in the original database was ‘history of mental illness’, signalling at least some interest in rendering visible important relations between the victimisation of particular individuals and their mental health. However, for almost every single victim entered into the database the data field had been left blank. But as Drew emphasised, the near total uniformity of this blankness should not be read to mean that none of the victims inhabiting the database had
histories of mental health problems. It instead indicated, Drew suspected, that organisational interest in questions of mental health had waned or was only intermittently sustained or followed through.

But if the emptiness marked by the blank space had perhaps enabled this waning interest to go unacknowledged by drawing little notice to the absence and thus casting it to the peripheries of user attention, the code layered into Uwazi spectacularly upended this relative invisibility. Following the data migration, the blankness was, in every instance, replaced by a far more conspicuous inscription: ‘No Value’. In its emphatic colonisation of the field, ‘No Value’ suddenly made something that once seemed peripheral or inconsequential completely unignorable, causing Drew to understandably worry that its conspicuousness in the public-facing archive would cause ‘confusion’. But there was also something potentially generative about this glitch which demonstrated the ways that ‘unruly more-than-human encounters can re-draw the contours of our attention and prompt speculative problem-making and repair’ (Bodden & Ross, 2021, p. 30).

Taken literally, ‘No Value’ refers to the simple fact that no data values had been entered into the field. But in its conspicuous appearance across the public victim data, the glitch also gained another valence; it pointed toward the level of value that the ‘history of mental illness’ field, and concomitantly the question of mental health, had been given by the organisation over the years it had been collecting the data. At this level, ‘No Value’ provided opportunities to reflect on what had been sidelined in the data, and thus in the narratives that the human organisation had been making. That is, the glitch harboured some capacity to pose questions not only about the stories that had not been told but also the stories that could be told in future if the data field – and the social issues it expresses – were made to matter differently.

This possibility could not initially be grasped by Drew, who saw it as part of their role as project manager to offer ‘professional advice and support, troubleshooting, . . . helping organisations to better understand and use technologies for specific, you know, data collections’. Accordingly, Drew advised the organisation to ‘filter out the field from the public-facing part of the database because it wouldn’t make much sense’. For Drew, the glitch was perhaps understandably a problem to be rendered invisible for clarity’s sake, thus foreclosing questions of narrative possibility – a clear demonstration of Bodden and Ross’s point that one’s ‘disposition toward the site and actors of the glitch’ is critical for making use of its generative potential (2021, p. 31). The partner organisation’s own initial resistance to Drew’s advice, however, seemed to be prompted by their own awareness that rendering the field publicly invisible was only one possible path at this fork in the road. Their pause was an acceptance of the glitch’s invitation to consider both the limits to the stories their data might tell as well as possible futures in which stories could be told differently.

As I completed my research with Huridocs the question of how to respond to the glitch remained unresolved between Drew and the partner organisation, itself a reminder that the ‘incompleteness’ of our own narratives as researchers is an often frustrating but inescapable part of all social research (West, 2017). Nevertheless, the ongoing presence of the ‘history of mental illness’ field within the organisation’s public-facing archive, no longer inscribed with the words ‘No Value’, does at least suggest that Drew, Huridocs and its partner organisation all saw the potential opened by the erroneous inscription and
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sought to make it matter. In this sense, Uwazi’s unruly inscriptions speak to the capacity of non-human actors involved in our knowledge making practices to draw attention to our assumptions, to the omissions we make through habit, and pose the question at least of whether it is possible to narrate things differently.

Conclusion

If, as Slaughter (2017, p. 469) has suggested, ‘human rights represent a legalistic commitment to narrative’, then the issue of how novel digital infrastructures mediate those narratives is not a marginal problem but a pressing question for those engaged with human rights practices today. Through its analysis of two moments of infrastructural failure, this article has gestured to the different ways that digital infrastructures such as database technologies imbricate with questions of narrative within the practice of human rights. On the one hand, it has demonstrated that a postcolonial politics of recognition can be embedded within software, and thus points toward the ways that narrative possibilities can be shaped by the infrastructures that both undergird and construct data texts. On the other hand, the article has also shown that complex technical operations embedded in computational forms can ramify into something both unruly and generative. The unintended inscriptions of code on data texts proffers opportunities to consider the assumptions, omissions and failures that mark data collection processes, and prompt consideration of the ways that stories might be told differently.

Through these examples, then, the article demonstrates that digital infrastructure can have both negative and productive consequences for the construction of narrative. Understanding these consequences requires an attentiveness to the way that granular, technical and often opaque parts of an infrastructure are implicated questions of power, recognition and omission within the textual practices that define human rights. Software and infrastructure studies, this article demonstrates, can provide a critical theoretical perspective with which to grasp this granularity and consider ways that grey media enable, constrain and productively intervene in, the construction of narrative. But perhaps also more than that: insofar as human rights narration is just one of many arenas currently being shaped and reshaped by novel data infrastructures, the article gestures to the growing value of software and infrastructure studies approaches to sociology more broadly. As the social world undergoes new and more expansive rounds of datafication, the theoretical approaches deployed here provide tools that may be increasingly necessary to unearth the marks that new digital infrastructures leave on ever-more social practices.

Funding

The research and writing up of this article was supported by the Leverhulme Trust, grant reference ECF-2018-221.

Notes

1. NoSQL stands for ‘Not Only Structured Query Language’ and defines a newer generation of databases that are more flexible compared to the relational Structured Query Language (SQL) database.
2. Ethical approval for the empirical aspects of the research was granted by the College of Business, Arts and Social Sciences Research Ethics Committee, Brunel University, London in April 2019. Individual participants have been pseudonymised to protect their anonymity.

3. Interestingly, other project managers also captured this idea of working between the technical work of software development and the needs of partners. Phrases like ‘translating’, ‘mediating’ and ‘going between’ were used by a number of project managers to describe their work.

4. The capacity to both resist technical expectations and pose questions about norms makes the glitch an important site of what Jacob Gaboury (2018) calls ‘queer computation’. As an example of queer computation’s operational modes of disruption and failure, Gaboury argues that glitch can ‘make clear the values and assumptions that drive our culture of technological development’ (p. 485). This perspective owes much to Jack Halberstam’s (2011) insistence that failure is an important disposition in queer theory.

5. This issue was, however, eventually resolved before the publication of this article.


7. List summarised from field notes of a discussion with Drew.

References


