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Sorting Out Valuation in the Charity Shop: Designing for Data-Driven Innovation through Value Translation

CHRIS ELSDEN, Design Informatics, University of Edinburgh, UK

KATE SYMONS, Centre of African Studies, University of Edinburgh, UK

RALUCA BUNDUCHI, Business School, University of Edinburgh, UK

CHRIS SPEED, Design Informatics, University of Edinburgh, UK

JOHN VINES, School of Design, Northumbria University, UK

Recent work within HCI and CSCW has become attentive to the politics of data and metrics in order to highlight the implications of what counts and how. In this paper, we relate these discussions to the longstanding distinctions made between value and values. We introduce literature on ‘Valuation Studies’ and argue for understanding the politics of data through valuation – an ongoing social practice that transforms socially embedded values into different forms of more abstract value. This theoretical work is developed through an ethnographic study of contemporary UK charity shops, as a site focused on the labour of valuation, but embedded in both local and global values. Through this study, we consider implications for the intervention and design of ‘data-driven innovation’, with a particular focus on distributed ledger technologies. We argue that these technologies inevitably engage in valuation, and require careful attention to the ongoing processes by which value is translated and performed by different stakeholders.

CCS Concepts:

Human-centered computing–Collaborative and social computing theory, concepts and paradigms

- Human-centered computing–Ethnographic studies

KEYWORDS

Valuation Studies; Values; Data; Currency; Data-Driven Innovation; Blockchain; Charity Shops;

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1 INTRODUCTION

Data-driven innovation (DDI) has emerged as the latest byword for economic growth delivered through the application of ‘Big Data’. The OECD introduce DDI as “*a key pillar of 21st-century growth, with the potential to significantly enhance social wellbeing*” [57]. In a UK context, industrial strategy policy references DDI in describing “*an era when the generation, collection, analysis and*

Author’s addresses: Chris Elsdén, Design Informatics, University of Edinburgh, Bayes Centre, 47 Potterow, EH8 9BT, Edinburgh, UK, celsden@ed.ac.uk; Kate Symons, Centre for African Studies, University of Edinburgh, Chrystal Macmillan Building, 15a George Square, Edinburgh, UK, EH8 9LD, k.symons@ed.ac.uk; Raluca Bunduchi, Business School, University of Edinburgh, 29 Buccleuch Place, Edinburgh, UK, EH8 9JS, raluca.bunduchi@ed.ac.uk; Chris Speed, Design Informatics, University of Edinburgh, Bayes Centre, 47 Potterow, EH8 9BT, Edinburgh, c.speed@ed.ac.uk; John Vines, School of Design, Northumbria University, Newcastle upon Tyne, UK, NE1 7RU, john.vines@northumbria.ac.uk.

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monetisation of huge volumes of data underpins the Digital Economy" [14]. However, alongside various waves of enthusiasm for 'datafication' [16] – from machine learning and AI, to an Internet of Things (IoT) and distributed ledger technologies – there is also a growing wariness of the promises and unintended consequences of these technologies [9,58,82].

The HCI and CSCW communities have consistently drawn attention to the politics and value judgements inherent in the design of databases and information systems that underpin data-driven innovation (e.g. [24,61,69,76]). In particular, contemporary sociological critiques have honed in on the growth in '*metric power*' [2] and '*audit cultures*' [13] where data, however it is subjectively constructed, is objectified and can be '*taken as a proxy for the facts*' [69]. As such, an important response for researchers in this context has been to source and identify the '*politics of measurement*' [61,76] and the extent to which data remains premised upon choices in terms of abstraction, categorisation and '*sorting things out*' [8]. In doing so, researchers have highlighted the explicit roles for design, values and, inevitably, ethics, in what are often presumed to be objective engineering processes.

In this paper, we build on these critiques of data-driven innovation through the lens of 'Valuation Studies', reflecting sociological debates on the translation and distinctions between value (singular) and values (plural). *Value* is traditionally viewed as the domain of economists, while *values* tend to emerge from social relations, norms and principles [65,66]. Frequently, these can seem incommensurate and in opposition; some things are said to be 'priceless', they can't be reduced to an abstract, exchangeable, single value. And yet in practice, value and values are very commonly compared, negotiated and brought into relation through a process of 'valuation'. This has led to recent attention on 'valuation as a social practice' where "*the value or values of something are established, assessed, negotiated, provoked, maintained, constructed and/or contested*" [17] – a process that translates values into value, and back again.

Valuation processes related to data might be most immediately apparent in the realms of high finance and algorithmic trading [50,59], but we argue here that such processes are integral to most forms of contemporary data-driven technologies – be it smart cities, IoT, gig economies, blockchains, AI, machine learning, to name a few. An underlying contribution from this work is therefore to develop the parallels between an understanding of the politics and processes of recording and measurement used to construct data, and the politics and processes of valuation. In essence, we argue that we might recast many of the troubles of data and measurement as issues of valuation – literally, what counts and how. As such, in this paper we suggest that a better understanding of the *processes* of valuation, and in particular the bridges back and forth between the abstract (value, data) and the specific (values, phenomena), can identify paths to reconcile the dichotomies and tensions between the two. Based on this theory, we offer a lens of 'value translations' that we propose will serve the CSCW community well in understanding and designing for emerging data-driven technologies that are increasingly implicated in new forms of economy.

To contextualise this argument, we focus on a site rich in the labour of valuation, with a multitude of different values in play – the contemporary UK charity shop. We have been working on a three-year project with a large UK charity to investigate the opportunities and challenges of blockchain applications in the context of charities, circular economies and international development. As part of this project, we undertook ethnographic work in a number of charity shops to understand their operations on the frontline, with an eye to potential data-driven and blockchain-based interventions. Reporting on this work, and our wider engagements with the charity, we recognise the careful and value-laden intermediary work required to attract high-quality donations of second-hand items, sell these on to diverse local customers, and generate as much revenue as possible from their sale for the charity's global mission. This work richly depicts valuation as a social practice, and presents compelling challenges and opportunities for data-driven innovation in such contexts.

The paper proceeds as follows. We first offer an introduction to Valuation Studies, highlighting a historical divide between the study of economy and *value* on one side, and the sociological study of social relations and *values* on the other, and efforts to move past such dichotomies. We highlight extant work on values and valuation within the HCI community, especially as it relates to data-driven technologies. We then turn to our ethnographic fieldwork to provide examples of valuation practices and the translation of value in the context of the contemporary UK charity shop. Finally, we extend this concept as a resource for rethinking the design of data-driven tools and services through the lens of ‘value translation’.

2 RELATED WORK

2.1 Introducing Valuation Studies

2.1.1. From Value vs Values, towards Valuation as a Social Practice. The contemporary field of Valuation Studies sets its sights on ‘*valuation as a social practice*’ [34]. The field is in part a reaction against the so called ‘Parsons Pact’, where disciplinary boundaries were erected between economists (who studied *value*), and sociologists (who studied *values*) [65]. By studying valuation as a process, researchers in this field aim to overcome such dichotomies, and recognise the interrelation of the two.

In the inaugural issue of the *Valuation Studies* journal, multiple authors identify confusion in the languages that surround the term value [42]. Indeed, looking back to John Dewey’s ‘*Theory of Valuation*’ in 1939 [15], he already identifies a ‘*double usage*’:

“For a glance at the dictionary will show that in ordinary speech the words ‘valuing’ and ‘valuation’ are verbally employed to designate both prizing, in the sense of holding precious, dear (and various other nearly equivalent activities, like honouring, regarding highly) and appraising in the sense of putting a value upon, assigning value to. This is an activity of rating, an act that involves comparison, as is explicit, for example, in appraisals in money terms of goods and services.” (Dewey, pp. 5-6)

Vatin [73] draws on Dewey’s distinction to demarcate ‘*valorising*’ as an activity that produces value, and ‘*evaluating*’ as the activity of determining the value of something. As Dewey notes, the core tension “*upon which schools are divided*” [15] is that prizing or valorising – what people care about, their norms, principles and ideas – is seen as a primarily personal, situated activity, with an emotional register. Appraising or evaluating something is, instead, considered a relational, intellectual, and generalizable activity. This raises substantial questions about which comes first. How is it possible to prize or valorise something without first evaluating it in some way? Upon which terms can something be evaluated while appealing to other norms, standards or ideals that we value?

Importantly, Valuation Studies emphasizes that “*to have values*” is “*a practical process, not some kind of a natural state*” [34]. Or returning to the pragmatist work of Dewey, any desires to achieve some ends are contextualised and emerge ‘*within a prior system of activities*’ [p.54] - our goals and values don’t emerge pre-formed from a vacuum. Of course, many ends (e.g. money-making, romance, even academic publications) may become standardised or so familiar that they are approached as possessing an inherent value. The consequence of this is a move to a ‘*process view*’, to understand value as a verb, and the process by which values are translated. Of particular interest to studies of technology are inquiries about how values can travel or be channelled through various socio-technical arrangements, and how different values can be more holistically linked together by reaching consensus on the process (and hence ends) of some valuation. In this view, value (singular) is the outcome of a situated valuation process.

2.1.2. Avoiding dichotomies and producing value. The central thrust of contemporary Valuation Studies is to avoid the dichotomies previously presented in discussions of value and values.

Changes in language, for example to develop a ‘*sociology of worth*’ [4,66], or undertaking design that is “*worth-centred*” [12], can offer some room for manoeuvre – however the tensions underneath can remain unresolved. Treating this as a more fundamental divide between the sciences and humanities, Dewey aspirationally appeals for “*prizing and appraising [to] unite in direction of action*” [15]. Valuation Studies might propose to do this by asking how the two interrelate and inquiring as to the “*circumstances that allow, sometimes, for the construction of the objectivity of value*” [34]? In other words, how do valuation processes construct (or obstruct) shared understandings of value?

The anthropologist Daniel Miller and legal scholar Viviana Zelizer offer perhaps the most constructive moves in this regard. Miller is concerned with overcoming the apparent “*incommensurable polarity between value as price, and value as priceless*” [54]. Drawing on diverse examples, from business, politics and high street shopping, Miller suggests that reduction to a bottom-line view of value (solely appraising or evaluating) is frequently counterproductive in actually producing value (valorising in Vatin’s terms [73]). Instead, he suggests that value is created most effectively through its own use “*as a bridge between what otherwise would be regarded as distinct regimes of value*”. Boltanski and Thevenot [4] argue that such ‘regimes’ of value incorporate certain evaluative frameworks or assumptions and orders of worth: economic value is often premised on market logics; social regimes of value often incorporate moral or cultural criteria of worth, as with reciprocity or gift exchange [52]. Hence, Miller is arguing that value is actually *created*, where a valuation process is not simply an evaluation within a single regime of value, but productively creates a channel or bridge to transform or negotiate between otherwise incommensurate values across regimes. For example, Miller argues that UK department store John Lewis became successful because it is able to provide products that holistically combine many different values (e.g. quality, price, style) that shoppers seek. A further reading of Miller’s theory is that such a bridge is one that creates a measure of flexibility, and even ambiguity between regimes of value. Similarly, Bourdieu describes a symbolic economy [7] as a kind of ‘*alchemy*’ where value can move through a social structure in multiple, often implicit, forms.

Miller points to taxation as a means to transform labour and individual income into valued public services. Yet Miller acknowledges the idealism of this theory: “*What goes up from values to value should ideally come down again from value to values*”. Miller also gives several examples where, for example, an abstraction such as ‘shareholder value’ undermines and loses sight of the very values of companies upon which their original value emerges. Miller hence argues for the need for value and values to be tightly coupled in their valuations: “*political and commercial systems work to our advantage when they do the same thing that we do every day in retaining this breadth of value and not flying apart until we end up with an opposition between value and values*”.

Zelizer [80] seeks to tackle the dichotomy between value and values by pointing to a third way. Discussing the intersection between monetary transfers and intimate social relations, she suggests that scholars typically make two kinds of arguments about value. On one hand, the economic and the social are proposed to exist in such separate spheres (or regimes of value) that they are ‘*hostile worlds*’ and cannot, or should not, be combined or studied together. Alternatively, it is believed that the two are ultimately reducible to a bottom line of either market logics, cultural values, or power and coercion. Zelizer draws on the way people practically arrange their affairs to offer a relational perspective of ‘*differentiated ties*’. First, she notes the way that throughout their daily lives, people demarcate different kinds of relationships through different methods of exchange and payment. For a contemporary example, Ikkala et al. [36] show how the exchange of money, rather than goodwill and favours, helps to create distinctive social relationships and expectations between guests and hosts on AirBnB¹ compared with Couchsurfing² platforms. As the existence of local and complementary currencies attest [7,17,18], there can even be ‘*qualitative*

¹ <https://www.airbnb.co.uk/>

² <https://www.couchsurfing.com/>

differences among different 'kinds of money' ([67] in [80]). As such, Zelizer argues that value and values cannot be conceived of entirely separately (as hostile worlds), or that one is inherently subservient to the other (as a bottom line), but that we need to be attentive to the process and social practices by which they are brought into particular relations and forms of exchange, ranging from formal payment and contracts, to more informal ties and trust [79,81]. Bourdieu identifies such subtle interweaving of value and values in the context of economies of the church. The church "*is an economic enterprise that can only function as it does because it is not really a business*" [7], and relies on '*double-truths*' and disavowal of explicit economic aims. Hence, a religious economy relies on very particular and socially-shaped ways of differentiating between kinds of economies. As such, Zelizer argues that many problems arise where such carefully situated arrangements and differentiated ties become flattened or misunderstood once translated to more abstract legal, technical and strictly economic criteria.

These authors demonstrate the need to consider value and values together, and further show that 'hostile world', or 'bottom-line', approaches are rarely productive nor reflect the pragmatic ways in which people value things in their everyday lives. Miller's theory proposes the worth in being able to build bridges between different social worlds or 'regimes of value'; Zelizer articulates how we build different bridges to support and signify different social relations. Recast in these terms, Valuation Studies is about understanding how such bridges are constructed, enforced and interacted with in a range of situations. Technology, and especially data, are evidently central to such work.

2.2 Valuation and HCI

On this footing, we now briefly reflect on existing discussions of value and valuation within HCI. There is a longstanding discourse around design that is explicitly 'value-sensitive' [31,32] or 'value-centred' [11]. In general, many researchers and design practitioners seek to identify practices and experiences that are in some way valued by a user or stakeholder, and try to orient their design work around these. Of late, authors have resisted the appearance of working towards a canon of particular values, and emphasised the need (and challenges) of designing for a plurality of values [6,44] and understanding the processes through which different communities construct value from technology. We might argue that designers also undertake a valuation process themselves, in order to understand and accommodate a range of values within the constraints of a given brief. In this vein, Speed & Maxwell [64] challenge designers to think beyond their traditional role of elevating value at one point of a linear production chain, and to consider their position in '*value constellations*' that acknowledge the multiple forms that value can take across a service or collection of interactions.

However, beyond the role of values as a resource or anchor for design, it is evident that new technologies, especially those entailing data and measurement, are increasingly implicated in valuation practices. These engender new modes of valuation, and, perhaps more intriguingly, new ways to represent and exchange value. As one recent UK-based research project on the topic of *After Money* asks: '*If you change the representation of value, does it change the values that you can represent?*'³. There is a wealth of recent work within the HCI and CSCW communities exploring how new forms of money and payment services can reconfigure social experiences and interactions (e.g. [19,23,25,26,40,41,47,53,74,77]). Many such studies highlight the careful and situated construction of '*differentiated ties*' [80] through different forms of payment [10], and the tensions that valuation can introduce. Several studies in particular identify challenges for time-banking networks [63] and highlight the tensions between instrumental and idealistic approaches to the exchange of time-based services. In a comprehensive overview of alternative currency and

³ <http://gtr.ukri.org/projects?ref=ES%2FN007018%2F1>

exchange systems, Carroll and Belloti [10] emphasise the need for stable and widely accepted forms of valuation, although do not delve deeply into valuation processes themselves.

Beyond directly financial applications, a great deal of data-driven innovation is premised upon extending the design and logic of markets into new domains. Lampinen and Brown [43] specifically urge a greater focus on ‘market design’ in HCI as markets permeate digital interactions and services, especially services based upon peer-to-peer exchange. At the heart of many of these data-driven services is a reliance on data, and specifically the ability to decompose, formalize and abstract the world in such a way to support new exchanges of value (e.g. measuring an Uber trip, creating an AirBnB listing, or defining a crowdwork task).

Furthermore, a new European regulation – ‘Open Banking’ (PSD2) – seeks to make banking services and one’s financial transactions open to API’s, supporting the building of new applications and programmable logic based on new flows of personal economic data. Elsdén et al. describe the integration of mobile banking applications with web automation service IFTTT [19] where, for example, a card purchase at a particular merchant, can automatically trigger playing a specific song, or messaging loved ones. Similarly, Hupfeld and Speed’s [35] study of users’ interactions with shopping loyalty cards offers a preface to how people may begin to understand and reconcile values such as their privacy and convenience with other forms of value that they might generate from their data.

Reflecting on our own starting point for this project, we would position blockchains and distributed ledger technologies (DLTs) at the vanguard of emerging technologies that are increasingly economic and data-driven. Heralded as an ‘*internet of value*’ [68], DLTs are a decentralised form of database or accounting system, which need not rely on trusting any single third party. In particular, DLTs afford the creation of unique digital assets [1] and support new forms of distributed and peer-to-peer exchange [60], ranging from cryptocurrencies, to more sophisticated decentralised marketplaces and infrastructure[37]. As tamper-resistant, distributed software, Wright and Fillipi [78] describe blockchains as a ‘*lex cryptographia*’ – where there is a commitment to pre-defined formalisations and abstractions, and hence a more ‘mechanical’ valuation process, based upon automated rule-following [39,62]. For example, the GeoCoin project [55] explores the use of ‘smart contracts’ and an alternative currency to credit and debit tokens from an account, based on a user’s GPS location. In practice, location can then be evaluated and valorised in different ways by those participating in that network. Projects like this suggest all manner of ‘*new value transactions*’ [56], with a proliferation of competing or complementary value systems, and the means to move seamlessly between them. Furthermore, in a review of emerging blockchain applications, Elsdén et al. [21] point to this potential to ‘*transactionalize*’ and evaluate all manner of activities as a key concern for these technologies.

As HCI scholars have become astutely aware of the politics of data, and the value-judgments made in data-driven technologies (e.g. [8,18,49,61,69,76]), our aim here is to take these issues together in order to consider how we might better design such systems. Here, we are staking out a position that goes beyond designing for certain values [32], and instead explores how we might design for **valuation processes** that better mediate a multitude of values, by bridging or creating differentiated ties as Miller and Zelizer each propose. In order to consider these theoretical manoeuvres in an applied context, we now turn to our fieldwork of valuation processes in contemporary UK charity shops.

3 STUDYING VALUATION IN CHARITY SHOPS

3.1 Research Approach

Our ethnographic work began as part of a collaborative research project with a large UK charity, with whom we are investigating the potential implications of blockchain technologies to their operations. Our earliest proposals for the project envisaged the potential to use DLTs to

incentivise and account for a more collaborative circular economy across a network of stores, by facilitating an optimal exchange of goods between stores themselves. More broadly, we envisaged the potential existence and role of alternative digital currencies and tokens which might support new forms of local community economies. However, the scope of our project quickly extended to all aspects of the charity's work, not only the trade of second-hand goods, but also fundraising activities, international development policy and the logistics of aid delivery. As such, the ethnographic work (described in section 3.3) was focused on gaining a holistic understanding of the life of the store, in particular the core activities of sorting out and pricing stock in the back room, and the range of value-laden intermediary work taken on by store managers. Simultaneously, we were also engaging in workshop activities with managers at the charities' headquarters, in order to help them understand blockchain technologies and to explore with them the potential implications of data-driven tools more broadly.

The ethnographic work informed our ongoing discussions with management, and the broader design perspective of the project. An entirely comprehensive description of the workings of a charity shop goes beyond our focus here (and indeed, work by Fitton [29] arguably already offers such a description). However, valuation practices, and the tensions they surface between different values, were present throughout our fieldwork. In this paper, we therefore present a particular theoretical and analytic cut through our corpus of data that reflects on specific cases of value translation, in order to consider the implications for the design of data-driven technologies, such as blockchains. Below, we unpack how we constructed the charity shop as a site for valuation studies, the specifics of our ethnographic approach, and our analytical process that focused on the way value is translated in these specific cases. We then reflect on these value translations as a resource for the design of data-driven tools and services.

3.2 Charity Shops as a Site for Valuation Studies

Kjellberg et al. [42] suggest several sites for the productive study of valuation. Among those, there are '*hot market*' situations, where valuation regimes are in flux and might be ecologically, morally or politically driven. They also consider sites that entail the '*construction and reification of valuing systems, tools and organizations*'. Lastly, they suggest '*sites of social change*' – potentially mundane settings that are politically and socially relevant. The contemporary UK charity shop could fit each of these. With a constant flow of unique goods to be valued, and significant autonomy within each shop, the valuation regime in stores is always in flux. In response, charity shops develop a range of tools and valuation processes, formal and informal, to effectively sort and price second hand goods. Charity shops are also sites of social change in the local communities they serve. Not only are they '*routinely provoking encounters between strangers*' [42], but they facilitate encounters between strangers' *things*, taking a central role in the way communities exchange second hand and even historical goods.

However, beyond the immediate challenge of the valuation of a vast array of goods, charity shops are curiously positioned in their 'value constellations' [64]. The stores where we conducted fieldwork in this study are part of a global international development charity. In effect, each charity shop mediates a range of local values, between their donors, shoppers, and volunteers, in order to extract a somewhat abstract value for a larger, far-off mission. Significant effort is made to assure the generous public that this value (the cold, hard cash) promotes certain values (equality, women's rights etc.). Indeed, recent work within the field of HCI has highlighted the potential role and challenges of more transparent accounting technologies in supporting charities to do this [5,51,75].

Clearly this is not a trivial task. The values and expectations through which charity shops move can often be in tension. Fitton [29] details through extensive ethnographic work the challenges for UK charity shops to become more professionalised retail outfits (and ergo, to

become more efficient at fundraising), while also maintaining a distinctive set of values and place on the High Street. As such, the charity shop is a rich context to consider how this translation from values to value, and back again, is achieved and may be mediated by new data-driven technologies.

3.3. Ethnographic Activities

Our ethnographic fieldwork was conducted jointly by the first and second authors. We used ethnographic methods including interviews, participant observation, the study of written guides and materials, and the interpretation of cultural and tacit knowledge through thick description [33]. Following anthropologists who analyse such variegated networks, we understood our field ethnographically through conceiving of social worlds as both rooted in places and travelling across networks [45,71,72]. These networks are bound together by shared ideas, regulations, values and infrastructure (in this case, of a specific charity), but also are themselves integrated with their own places and communities. As such, we were interested in both the working life of specific bricks and mortar stores, and the relations of stores to other sites and networks. This included other stores in their region, but also recycling and delivery services, community groups, the charities' own hierarchy and divisions, and external resources such as online marketplaces for second-hand goods.

We visited 11 different stores in person across Scotland and the North of England (spending at least one to two hours in most, but including longer repeat visits to certain stores). We also conducted phone interviews with managers from two further stores. Four of the store visits were conducted jointly, the remaining stores visited individually by either the first or second author. Our construction of this sample reflected the geography of the research team, but more importantly, sought to reflect the considerable diversity in charity shops, varying in size, location (e.g. city centre vs market town) and particularly the affluence of their local communities. We conducted 19 interviews in total, speaking to 11 store managers (a paid position, responsible for all operations of the store), 3 deputy managers (a part-time, paid position), 4 volunteers, and 2 area managers who were responsible for around 20 stores across their regions. The interviews were open-ended and with the exception of the telephone interviews took place in situ, often as we observed participants carrying on with other tasks. We asked managers and volunteers both broad questions about, for example, what their shops sell, their typical customers, their own motivations for working there, as well as specific requests to understand valuation processes such as sorting and pricing clothes. Lasting between an hour and two hours, these interviews frequently involved a tour of the shop and their backrooms as managers walked-through different activities with us. In many cases, managers were interrupted to help a volunteer with a task, or answer a query, allowing us to observe their work first hand. As well as audio-recording the interviews, we took photographs to complement descriptions of the various ways work was organized in the back room in different shops. This helped us to develop a broadly consistent picture of different key practices. In addition, we also spent extended time over two morning shifts shadowing in two larger stores, engaged in hands-on helping volunteers and managers with tasks from sorting bags of clothes, to cleaning, pricing, and serving on the till. Across these engagements we also took a range of individual field notes that were shared and discussed across the research team.

These in-store activities constituted the majority of our data gathering; however, our interpretation of the data is framed also by engagements with middle management at the charity's headquarters, and participation in events such as an Area Managers' meeting where all store managers in a region gather quarterly. Lastly, we also undertook two small focus groups (each with 3 donors and shoppers) from one of the shops we had spent the most time in. Although our focus had been primarily on the work of staff and volunteers, we wanted to gain a perspective from donors, who were also customers. These engagements were partly oriented towards a separate activity based around donors having greater control over how their donations were used,

but began with extensive group discussion of their motivations, interactions and views of the charity and their local shops.

3.4. Analytical Approach: Sorting Out Values and Valuation

The interviews conducted in store were transcribed in full, while extensive researcher notes were compiled for three interviews taken over the phone, and one where the manager did not wish to be recorded. Transcripts from the two focus groups were also included in the corpus. We then adopted two specific lenses in the analysis, building directly on the theoretical work above. We first considered examples of *explicit acts of valuation of goods in the store*, and the tools, data and infrastructure used to achieve this. Second, *we sought out incidents and exchanges that surfaced tensions or challenges in value translation for the charity* – specifically, the ways individual stores must reconcile the competing values that coalesce in the store, with the need to generate an abstract global value for the cause. To examine these issues, we read through the transcripts, highlighting and annotating any passages that concerned these two focuses. Akin to approaches in related work on the politics of data (e.g. [8,24,61,69]), these illuminated a number of cases where valuation was at the fore. We then looked across these cases for points of resemblance and contrast, and combined with our fieldwork notes and prior ethnographic summaries, produced a thick description of valuation and value translation in the charity shop. Following Zelizer's [80] and Miller's [54] work, our analysis considered particularly how valuation processes shaped social relations in the store, and instances where representations of value succeed or fail in bridging different regimes of value. As such, although we provide some further background about the stores from our ethnographic work, this is not an exhaustive account all of the activities and values of a charity shop. Rather, the cases we highlight in this article illustrate key processes and tensions in the phenomena of valuation that we wish to highlight in this work as a resource for design.

In order to coherently report our findings, we group these cases to describe: the different regimes of value in the stores; how specific valuation processes reflected or challenged these; the way volunteers were valued; and lastly the flows of data in the stores. Importantly, we are seeking to go beyond simply identifying the nature of values at play that we might design for, but to demonstrate the *translation and mediation* between different kinds of value.

4 VALUE TRANSLATIONS IN THE CHARITY SHOP

4.1. Mediating Different Regimes of Value

4.1.1 Finding the Right Price for Three Communities. In principle, the work of a charity shop is quite simple. A charity shop attracts second hand goods from *donors*; they resell these goods to *customers* and the proceeds are contributed to a worthy cause. However, to achieve this, the shops must sort out, and then set the right price for, the enormous variety of goods that they receive.

“This is what I always tell my new managers – you are pricing for 3 people. You are pricing for the person who has donated the item, they don't want you to give it away or they wouldn't bother giving it to you. They want you to get a good price for it and make as much money as you can for the cause. You have got the customer of course, who doesn't want to be ripped off. They want to have a good quality item but feel when they go out that they could have paid a lot more for it if they had gone somewhere else, they want to feel they have got a bit of a bargain and that will keep that fire going. If you go too high they won't come back, if you go too low you are not meeting the needs of the donor. Then the third part of call is the person who is going to benefit from that sale at the end of the day. You are trying to make as much money as you can for them. You don't want to give their stuff away when it is worth more because then you feel you have let them down. This is a 3-point dilemma that most shop managers, who are very savvy with their pricing, are juggling every day.” (Gerald, Area Manager)

This extract from an area manager aptly sums up the business of second-hand charity retail. Three core stakeholders are identified – donor, customer and beneficiary – each operating through different regimes of value. The donor is assumed to be sharing and trusting the values of the charitable cause, as well as perhaps having some attachment to the items they donate. Customers are seeking a retail experience in which they feel they are ‘doing good’ for a perceived development beneficiary, and to gain value from their purchase. The beneficiary ultimately gains from the abstract value, the money, generated from the sale of the object, as mediated and directed by the charity. These are each different frames the charity shop could use to set or justify a price – weighing for a higher price in favour of the donor and beneficiary, or a lower price in favour of the customer.

When done well, the value proposition of charity shops for donors and customers is clear – in Miller’s terms, charity shops are productive when they act as an effective bridge for their various regimes of value. The charity shop performs work for the donor by translating the values associated with old or inherited objects into an abstract value for a wider community. Donors must trust the values and processes of a particular charity shop to generate value from their donations. Charity shops produce value for the customer through their facilitation of a shopping experience and particularly ‘bargain hunting’. Managers frequently spoke of the need to keep the shop ‘fresh’ with a good turnover of new and unique items; all shops employed a system to ‘cull’ and re-evaluate unsold items, removing them from the shop floor usually after four weeks.

In deciding or justifying pricing, managers and volunteers appeal to these different values. If an item sells very quickly - potentially under-priced - then this loss can be compensated if the customer is likely to feel they got a great bargain, an experience that could generate future business and goodwill.

“Sometimes you put something out, and this happens a lot, you put a handbag out and you maybe put £10 on it and within 5 minutes someone will come and buy it and you think “I should have had £20 on it.” It is difficult at times though to know what you will get. I always say when you give a customer a good bargain that customer will be back and that customer will tell her friends and they will come in.” (Margaret, Store Manager)

Despite the variable nature of pricing, haggling or price complaints can be resisted based on an appeal to the fundamental values of the cause. The labour and mark-up of selling an item online can be construed as working for the donor – getting the best price possible. Hence, managers and volunteers make sense of and validate their work through the value gained by these three different communities. Evidently, the introduction of, and justification of any data-driven innovation to pricing in the store would have to mediate and operate flexibly across these three communities.

4.1.2 Local Communities vs Global Mission. Of course, the values of these stakeholders are not always in harmony or easily kept in balance. Donors vary in their interest or commitment to the cause: some value the charity shop simply as a recycling centre; others donate to support their local community rather than a global cause. And of course, by the fact that many donations are made over the counter, many donors are also customers too. They too seek a bargain, and pricing that is perceived to be fair. While there are many ‘regulars’ in charity shops, the dual-role of donor-customer is not formally recognised – donors rarely gain any favours or discounts, as one volunteer running a library for a local hospital described:

“We donate a lot of books over the year, we have, over the past few years given hundreds of books... we wanted some audio books for people with sight problems, being [a volunteer] at the hospital. And considering how many books I bring in every week, quite a few, and what we actually asked was ‘is it possible to get some of these audio books for the hospital?’ Not having to pay (for them) because you’re talking about three or four and we were giving them all these books, I think this particular day I took about 30 books in and they said ‘no, no, we can’t do that’ and I said ‘but it’s like part exchange, all I’m asking for is 30 for you, four for me’ ‘no, no, we can’t do that’.” (Donor, Workshop 2)

In taking a ‘bottom-line’ approach (as in this case), the charity ultimately prioritises their own beneficiaries ahead of any others in the local community. However, this donor clearly expects the

charity to acknowledge his contribution to the store over many years, and support other local initiatives, such as a hospital library. In one larger store, particular efforts were made to make the store more welcoming to young people, to offer work experience through a local college and to become a meeting place to all other kinds of local groups, from book clubs to knitting circles. This store hence went to great efforts to become embedded in a local community, while garnering support for a global mission.

Nonetheless, in recent years, the charity has deliberately sought to shift their market upwards in many shops, targeting higher quality donations, more affluent customers, and subsequently higher prices. This is underpinned by greater professionalization [29] through the import of many commercial retail practices (e.g. back-room reporting systems, targets, culling), improving the look and feel of the store to match other retail experiences.

“Slowly, a lot of shops have recognised that what they are selling is worth a lot more so it has been a very fine balance between building up the business to get more value out of our donations but actually, at the same time, not losing our core customers... (IV.) *And was that good or bad in terms of revenue?* I think in most cases it was great in terms of revenue” (Gerald, Area Manager)

However, there remain divergent views across the charity about higher pricing, reflecting volunteers’ own values at play in the work of the organisation. In more affluent areas, higher prices can be more easily sought and justified.

“Somebody said a customer had complained about the pricing of our books because it was more expensive than other charity shops. My view on it, at the meeting, was “Yes, but you are supporting [this charity] when you shop here so that is money that is going directly to [the charity].” We are trying to raise money here, we are not trying to provide cheap books. That is my view.” (Mary, Volunteer)

For this volunteer, the wider mission of the charity should be prioritised and indeed she expects shoppers to value this when they shop there. However, where there is a greater range of customers and economic hardship, local and global values have to be more carefully kept in balance.

“[Our customers] don’t have disposable income but they can come here and if they have children they can maybe buy their daughter a little dress from Next for 99p so that their children don’t feel as if they are lower than anybody else. Maybe they are second hand clothes but they are good quality and they are cheap so the people of [this city] can still afford them, even if they are on benefits, even if their benefits don’t stretch very far, they should be able to come in here and still feel good about themselves.” (Kate, Deputy Manager)

This deputy manager recognises that in the context of her shop, there is more at stake than the global mission that the charity explicitly supports. Therefore, in practice, the values in play need to be made sense of in the local context, by the manager or volunteer pricing an item. By doing this well, shops build up trust with their donors and customers, which is the foundation for ongoing relationships with the charity itself. These judgements are critical in retaining a ‘*breadth of values*’, in Miller’s terms. To understand this further, we turn now to how this valuation work is pragmatically achieved, and the range of resources, technologies and data are drawn upon to do so.

4.2. Unpacking Valuation Processes

4.2.1. Sorting and Pricing. It is important to establish the context in which valuation takes place. The majority of our collaborating charity’s shops occupy small retail units in busy urban areas. As such the space to receive, sort and store their stock is a perpetual challenge. Stores receive an extraordinary volume of stock from four potential sources: over the counter donations; from clothing banks; unsold stock cascaded from nearby stores; or through the charities in-house recycling centre. Yet, all managers described a constant need for higher quality stock, suggesting

anywhere between 50-80% of the donations they received were passed on to the charity's recycling centre.

All sorting and pricing takes place in the back room, undertaken by volunteers and managers. Every store we visited had piles and piles of unsorted stock, usually in black bin bags. As such, sorting and pricing has to be undertaken remarkably quickly – ensuring flaws (e.g. stains, rips, watermarks) are noticed, while potential high value items and brands are picked out. *“I will cream off the things to pay attention to because they are silk, cashmere, designer, whatever.”* (Diana, Manager). Although practices vary across stores, a typical trajectory for an unsorted bag of second-hand clothes is described below.

Sorting: Bags of unsorted clothes are stored together, often in a large cage, until they are ready to be sorted. An initial sort is undertaken to a) rapidly inspect the clothes and decide which are in 'sellable' condition, b) to set aside any potentially high-value items, and c) to categorise the clothes. Clothes that are deemed unsellable in that store are transferred to coloured bin bags, to be collected by the charity's recycling facility. High-value or vintage items could be priced there and then for a quick win to boost sales, or highlighted and set aside for a manager or another experienced volunteer to research further and price carefully. Other 'sellable' clothes are sorted and aggregated into particular categories (e.g. women's tops, coats, men's trousers). A number of bags will be initially and rapidly sorted in this way. A manager will then decide upon a particular category to begin pricing and preparing for the shop floor. This requires careful judgment and planning about what is likely to sell when, and to prepare for the turnover of existing stock. Sometimes, a manager may be specific, and ask volunteers to 'rummage' for, say, nice summer tops, or costume clothes. Items to be priced are transferred to a hanger and steam cleaned. This provides another opportunity to assess the item and check for flaws particularly around stress points. While there are not many hard and fast rules for pricing there are absolute requirements for the quality of stock – this is one value that cannot be compromised. The physical and hands-on labour to assess this is therefore integral to the process of evaluating the basic qualities of donated items, and transforms black bin bags into manageable, sellable stock. Only then can the item be priced.

Pricing: We encountered several different pricing guides that provide indicative pricing for certain kinds of items (e.g. £3.99 women's tops), as well as categories of premium and budget brands. These guides were primarily used to train volunteers, and were often the legacy of a prior store manager or another experienced local manager. However, we rarely observed these being used by experienced volunteers or managers, who quickly gained tacit knowledge of different price categories, brands and how to move between these depending on an items' condition, uniqueness and the desire for a quick sale versus getting the maximum value. Most items that are recognised as 'bread and butter' can be priced very rapidly by experienced volunteers. Standard charity branded price tags (from 99p up to £19.99) already exist to support this. Manager's described the need to be 'ruthless' – there is little time or room for sentimentality due to the overwhelming volume of items to be sorted. Nevertheless, it is vital to remain vigilant for potential high value items. These would often be given greater attention, discussed between volunteers and managers, and researched into further online to establish a price before being carefully displayed.

Pricing takes place literally in the back room, in a regime of abstract market value. The shops are trying to maximise the value for an item (this is assumed to be what the donor wants), while holding in mind the potential values for the customer based on deep knowledge of the kind of customers in the area, how similar items have sold before, or seasonal or pop-culture tie-ins which might valorise an item and lead to greater demand. Nonetheless, in many cases, pricing is an iterative process, driven by gut-instincts, and a try-it-and-see approach, rather than hard or fast rules. As charity shops have become professionalised, and teams of volunteers co-ordinate around pricing, these processes can become more regimented and categorical but the ability and need to price flexibly remains. For the moment, the technologies that support this flexibility remain

broadly manual and analogue; while the most important data remains shared local experiences of the market.

4.2.2. Localized Practices and Store Autonomy. Although following processes such as those above, shop managers ultimately have a remarkable degree of autonomy (in contrast to managers in most retail stores) in deciding what kind of stock to put out on their shop floor and how it is priced and displayed. Operating in a primarily economic regime of value, area managers for a region set indicative sales targets that store managers work towards, appear motivated by, and use to rally their volunteers as part of fundraising efforts. It is up to individual managers to figure out how to meet their target from the resources they have. In this light, good managers are described as '*personalities*' (Jean, Area Manager), able to present a caring and enthusiastic embodiment of the charity's values, and reflect the values of the local community. Despite the pressure of targets, stores are encouraged to develop an identity that bridges these economic aims, with the varied value regimes of donors and customers in that particular area.

"I think we are very good at identifying our market, at reacting to our competitors, at creating an identity which the autonomy of [the charity] has allowed to be possible. This shop wouldn't, as far as I can see, in my experience, belong to another charity." (Diana, Manager)

In essence, despite professionalization and a charity-wide effort to raise the quality and price of their goods, the very values of the local charity shop to donors and customers have to be performed and mediated on a daily basis by the manager, their volunteers and the goods put on sale in the shop. As one experienced manager suggests: "*I think the basis of them is the same but each individual shop runs completely differently.*" (Kate, Deputy Manager)

Managers have to be reactive, resourceful and entrepreneurial. One manager organised a rapid sale of end-of-the-line school uniforms just before the end of term. Others had personal contacts with antique dealers, or invited in craft and sewing groups to repair or upcycle damaged goods. Another received an original painting and managed to trace the artist in order to establish its worth; after a few weeks of interest, the painting sold for £400. Hence, while managers are usually deeply committed to the charity, and receive considerable training in their role (and indeed can be disciplined or critiqued by more established local managers), their autonomy is key to making the most of their limited resources and expressing the values of the charity. This can both increase the economic value of goods sold, but more broadly, transforms the professionalized High Street store into a place where particular local community values are practiced on a daily basis. To emphasise this process view of valuation, the values of a store cannot be simply injected through branding, or from a higher cause, but instead are made evident through the range of valuation work being performed in stores. Likewise, specific technologies or data brought to bear in the store will not automatically provide certain values; rather they may afford (or restrict) the *practice* of different values and valuation work.

4.2.3 Valuation through Online Marketplaces. Charity shops are increasingly challenged by the presence of online marketplaces (e.g. eBay, Etsy, Discogs, Abe Books) that provide a wider market and point of external reference for the price of many second-hand items, particularly rare books and records.

"It is a bit of a stand-off, you know. [The Charity] are using the internet to find the highest price they can get away with but their customers are also quickly checking their smartphones and thinking "hang on a minute, I can get this for 2 quid less". If they were more in tune with the prices on the internet, like this guy in the records shop saying this is equivalent to Discogs or 50p cheaper than Amazon, they would have an advantage there." (Donor, Workshop 1)

Stores do use online marketplaces extensively to price items, and generally aim to price just below online retailers, but clearly if the customer and charity are not '*in tune*' the valuation is brought into question. Online prices, especially for easily identified and categorised objects like

books and records, introduce the notion of a ‘right’ or accurate price – in which case valuation would be solely a classification activity where the charity may be expected to more transparently compare and reference their valuation. While the charity shop is hoping to avoid valuable items slipping through the net, arguably this undermines some of the customers’ romance of finding a bargain.

“The whole idea was that you would go to a charity shop and you would find a book and it would be, I don’t know, an Allen Ginsberg first edition or something and they would be selling it for £1 and you were like “GET IN” and that has kind of gone.” (Donor, Workshop 1)

The potential variability of price in a charity shop (a result of flexible valuation practices) hence remains a key attraction to customers. Interestingly, the charity itself is also increasingly moving to selling their own stock online through a dedicated online store, and other online marketplaces such as eBay. If a store has sufficient back room space, items can be listed for longer, reach a wider market and potentially a higher bidder. The economic value of an item can be increased, but at a potential cost to quality and diversity of goods available within the store. In one store, a manager claimed they could ‘*quadruple*’ the price of an object by selling online, and hence several stores identify online sales as the most significant area of future growth. Some stores have even begun to specialise in listing items online, and training volunteers in photographing and online listing. Despite the potential for greater revenue, the shops must take care about what and how they sell online, as this can take away from the quality of items displayed in the shop and risk shifting focus from their local market whom they often depend upon for donations. For online sales, stores will tend to focus on higher end, brand or vintage clothing in very good condition, as this is most deliberately sought out by shoppers, or collectors. Nevertheless, managers are keen to “*try to give a lot of the stuff a go on the shop floor first*” (Jen, Store Manager). Indeed, when considering the donor who gifted the item, they may expect that an item finds a new home within the local area. However, if the item is unsold, it can be later listed online if there is sufficient back-room space to maintain it in storage. As such, to take advantage of this potentially lucrative revenue, stores need to ensure the values of the local community can continue to be met through sufficient quality cheaper clothes, the independent identity of a bricks and mortar store, and engagement with other community initiatives.

4.3. Valuing Volunteers

Each shop relies upon and has a diversity of volunteers; the only paid members of staff in the store are a manager, and a deputy manager in some larger stores. Much like receiving good stock, attracting and maintaining good volunteers is a perpetual challenge. As one manager said: “*their time is a gift to us*”. Volunteers range from retirees seeking social activities, to teenagers and school pupils gaining experience, foreign exchange students or new migrants aiming to improve their English, or those out of work trying to build confidence and skills.

Volunteers are strictly unpaid – managers maintain a rota to help organize the shop and give structure, but it is imperative that volunteers can choose to work when they want and in the areas of the shop that they feel comfortable. This needs to be carefully balanced with the manager’s need for trusted and effective labour to maintain high standards. Managers go to extraordinary efforts to care for, motivate and thank their volunteers, reflecting the idea of the charity shop as a ‘space of care’ [30]. For some this relies upon cake and conversation, for others this is the opportunity to speak English, or become experienced or even an expert in a domain. Since volunteers cannot be paid, (they operate outside of an economic value regime) they must gain value and be motivated by the experience in other ways. Some managers described motivating volunteers by reminding them of the global mission: “*I tell the volunteers, that is why we are here. That is why we sort stock. That is why we have to make more money at the end of the day*” (Marianna, Store Manager). Pointing to targets, or sales volumes is an important way for the managers to

highlight the importance of the volunteer's work – both to translate the value of the volunteers' effort to the mission, but also to reinforce the need for high standards throughout the store.

However, the commercial aims of the store have to be carefully balanced with the ethics of volunteering, and the ability and values of individual volunteers. Certainly not all volunteers were as committed to, or even especially interested in, the wider mission. Managers are required to care sensitively for some volunteers, while pushing others on to develop themselves and their skills. Some volunteer opportunities often highlight a specific role e.g. window dressing, or researching books or records. In some larger stores, whole sales categories were the responsibility of experienced volunteers. In one shop with many school leavers and young adult volunteers, teams enthusiastically competed over the sales targets for their department.

P. There is a lot of competition going in the shop. They all stand round at the end of the day waiting for the results going "ha, I have beaten your department!" IV. **In terms of sales?** P. Yeah. Which is fantastic because it is the encouragement they need to work better basically to get the sales up. It is really good. (Store Manager)

In this case, sales targets for the store and managers are transformed into an experience of friendly competition and achievement for young, motivated volunteers, in a way that redefines the social relations between them – belonging to a team and creating the terms for games and competition. This form of valuation is ultimately productive because, in Miller's terms [54], it bridges the values of the store and those of the individual volunteers – though they each ultimately derive different values from a particular metric.

4.4. The Role of Data in Charity Shop's Valuation Practices

When we asked individual store managers about what would most help their management of the store in the future, rarely did they point to requiring more data or new technologies. Their core and immediate needs remained sufficient good quality stock being donated, and good volunteers to support the valuation and sale of that stock. Nonetheless, data was leveraged at times and had been introduced in several activities related to valuation.

Targets and sales data are used to signify the importance and value of work undertaken in the charity shops. Targets are used motivationally for managers and across their teams. Managers would do this to highlight how important processes (like asking for Gift Aid, or ensuring a high quality of stock) could make a difference to the money raised for a cause. Managers were astute in the way they talked about targets and sales with different volunteers. There was never a pressure or expectation to make targets; this is borne solely by the manager, the paid employee. However, the data can be used positively to signify clear ends and outcomes to the vast range of work undertaken by volunteers, such that they all feel they are contributing.

Sales data was also used to support categorisation, and a manager's own evaluation of the value of their goods, in order to support their decisions about how to organise the store, what stock to sell and at what prices. When asked about what sells well in a store, managers talked fluently in numbers as well as anecdotes. Some were even aware of how each unit of shelf space in a store was performing, and used this to inform decisions about how to accommodate new stock, such as Christmas cards or some other national campaign. This categorisation into different sections could also support giving volunteers responsibility, pride, reward and competition through sales of *their* category. At a higher level, the data is also used across a network of stores in an area to understand their relative strengths and weaknesses, their categorisation and hierarchy, and hence to inform decisions and routines for the cascading and exchange of unsold stock between stores.

Data was used informally through custom pricing guides and online marketplaces to provide a framing for pricing, as already noted above. Mainly, these could ensure potentially high-value items were not overlooked or under-priced – providing boundaries rather than a particular price.

Most of the time, such data was not required for pricing, and would be too time-consuming to consult.

A more formal use of data surrounds ‘Gift Aid’, a UK tax relief scheme to allow charities to reclaim 25% of the value of a donation from the income tax of the donor. This is a potentially significant source of ‘free’ extra revenue for the charity, but must be properly accounted for, and requires faithful record-keeping in order to claim. Hence, it requires additional diligence and labour from volunteers to ask for and collect donors’ personal details, and ensure that the individual’s gift aid tag is maintained through the sorting and pricing of their items, up to the point of sale. Mobile tablets are set to be introduced in some stores explicitly to ease this process. A secondary value of this process is produced through the letter a donor receives annually that informs them of the amount of ‘Gift Aid’ their donation raised, and in effect, the total value of their donations over the course of a year.

Although each store’s sales data and targets are promoted internally, we never observed this shared directly with donors or customers in stores. While aggregated data about the charity’s overall fundraising efforts and percentage spend on different activities (admin, fundraising, overseas programs etc.) is widely publicised, the remarkable income of the stores themselves (some stores can raise thousands of pounds a week) is not highlighted locally. One donor suggested such figures would be ‘*stark*’, as if the numbers would be incommensurate with the local values of the store – especially in low-income areas. (This recalls Bourdieu’s recognition of the “*taboo of making things explicit*” in a symbolic economy [7]). Some donors could be surprised by how much a charity could earn from items they had cast away; some customers might feel over-charged; some might question if the money could be used better locally rather than by a large international charity. Overall, patrons might be more comfortable buying into the values of the charity shop – as a meeting place, recycling centre, or source of bargain goods – rather than the economic value they generate for a remote cause. More broadly, we can see how naturally aligned targets and sales data are with the immediate economic aims of the store, and while the use of this data to bridge other regimes of value is possible, it requires careful mediation.

5 DESIGNING FOR DATA-DRIVEN INNOVATION THROUGH VALUE TRANSLATION

Our findings show many sides to valuation as a social practice in a charity shop. We see how the store has to **translate value on behalf of multiple communities**, primarily the donor, the customer and the end beneficiary. Since the shops depend on local communities to provide stock, custom and volunteer labour, the stores must demonstrate **sensitivity to local values**, while delivering perceived ‘global’ value for the cause. This is achieved through the **authentic and ongoing performance of those local values** by staff and volunteers in the store. It is for this reason that pricing guides, and data from global online marketplaces is only informally applied, when necessary, to direct local pricing. Where sales data can be used **to bridge or align values of different groups**, such as supporting friendly competition between engaged volunteers, or reporting annual donations through gift aid, it is shared and adopted as a common currency; in Zelizer’s terms, becomes a ‘differentiated tie’. However, while these are examples of data generating and bridging forms of value, there are also concerns **that explicit representations of value can reveal where values are misaligned**, and even undermine social relations more broadly.

We propose that by reflecting on these different examples of ‘value translation’, as a tentative theoretical framework, we might navigate the implications and troubles of datafication [5,61,69,76] when attempting to design ‘data-driven innovation’ (distributed ledger technologies in our case) in new contexts.

5.1. Translating Value between Multiple Communities

Prior work on value-centred design has already highlighted the challenges of designing for multiple stakeholders and competing values. Voida et al. point to this explicitly in the context of data-driven services through a study of the inventory and stock-taking systems in low-income food banks or pantries [76]. In this work they highlight how different units of measurement are employed at different points in the provision of food bank services; in the end, the choices of these units act as several ‘*competing currencies*’, each appealing to the differing values of a range of stakeholders. In design, negotiating these politics can, at times, seem intractable. Some things must be counted or valued ahead of others – valuation is after all a process of “*how people, things and idea(l)s are ordered in relation to one another*” [42]; the alternative entails the “*messiness of a system that tries desperately to be all things to all people*” [76]. In the context of designing a visualization of academic funding metrics, Elsdén et al. [22] run into similar trouble, noting a trade-off between metrics becoming a useful ‘*standard reference point*’ while somehow maintaining the possibility for a ‘*multiplicity*’ of perspectives and meanings on the data. Similarly, Fiore-Gartland and Neff [27] draw on the notion of distinct regimes of value to develop the concept of ‘*data valences*’ as they describe how patients and doctors have different expectations and demands for patient data. The challenge they pose is to find data which is able to link and meet “*the multidimensional differences in the expectations for, and values around data*” [27].

In our findings, we highlight in particular how store managers are highly skilled and sensitive in translating value between different audiences, through recourse to both formal and informal systems. The crux of our particular project was hence to identify how data-driven innovation, might help them achieve this value translation between communities. For example, we considered, ideas for how charity shops could function as part of a more distributed and autonomous network or platform, guided by data, and less dependent on individual store managers or large charitable institutions. How might a distributed online community set up, list, price and sell second-hand goods for particular causes? In the context of blockchain technologies, we could even envisage a charity shop as a ‘distributed autonomous organisation’ or DAO [56], where a trusted technical governance of the system might allow a diverse and trustless set of actors to collaborate online around some shared aims and values. Yet, while such algorithmic governance is increasingly conceivable, designing a data-driven system to satisfactorily translate value between all of the communities required to sustain a second-hand charity shop is clearly fraught. In our further discussion, we endeavour to show how a focus on value translation can offer some guidance.

5.2. Designing Data for ‘Valuation as a Process’

To navigate these tensions, we argue the need to see valuation as a process. Rather than simply seeking data that in some way embeds or reifies particular values, we might ask in what ways do different data and their infrastructures support the *performance* of particular values by different actors? A physical gift aid card, number and annual reporting letter supports the performance of a *loyal donor* for example. The act of signing a donor up for GiftAid – by asking them to complete a form of personal details – demonstrates *diligence* on behalf of the volunteer and store managers, and brings significant financial gain for the charitable cause. If we sought to extend the Gift Aid scheme, or to capitalise on that existing data, we should seek ways that support these multiple actors in performing and identifying with the values they prize. What kind of data-driven services could make gift-aiders feel like a part of the community of the charity shop, or give volunteers an opportunity to make a tangible difference through their diligence?

In our own project, we considered the potential introduction of an alternative currency or token, provided to donors, related to their GiftAid contributions through a distributed ledger. As

a parallel, local currency initiatives such as ‘HullCoin’⁴ seek to reward community loyalty with discounted access to other goods and services. However, there is clearly more to these initiatives than the prospect of an economic discount. Ferreira et al. [26] report that the use of the ‘Bristol Pound’ allowed traders and customers to perform to each other shared values of localism, which in turn set the scene for further forms of social connection. In the charity shop we might therefore explore how such a token could allow the performance of shared interests in a particular project or campaign or other values such as being a good neighbour, localism, competitiveness etc. However, to successfully design for these values requires close attention to the processes by which value is translated from a GiftAid contribution, through to the actions and discourse supported by an alternative currency.

5.3. Supporting Value Translation through Data Work

A focus on process reveals the ongoing work and management required in translating value between communities. In our findings we saw, for example, how sales data was used to productively align the action and varied interests of teams of competitive volunteers, and simultaneously to meet the values of the store managers and the charity itself. However, managers and volunteers all performed different kinds of work to maintain this arrangement: from the way second hand items are categorised when they are sorted and entered into the till; to the way sales data is ultimately shared on a blackboard in volunteer common spaces, and compared to appropriate short and long-term targets set locally by store managers.

This kind of labour reflects a number of recent studies within HCI and CSCW unpacking ‘*data work*’ [20,28,38,70]. In varied contexts, these studies show the ongoing labour people undertake to make data work for them; to make sense of data within certain circumstances or narratives; or to appropriate data towards different ends than could be originally envisaged. The values of particular data infrastructures therefore cannot simply be baked in or embedded from the start – but are mutually shaped [46] through the human action they support, and the subsequent performance of data work. This perspective raises broad questions about our ability to simply embed ethics or particular values into data infrastructures. Part of the enthusiasm for blockchain technologies in particular is that the highly distributed and tamper-resistant nature of their protocols, code and ‘smart contracts’ ensures mechanisms and systems which perform in very specific ways. Lustig et al. investigate the culture surrounding Bitcoin as an example of trust in ‘*algorithmic authority*’ [48]. Yet even in this somewhat extreme case, many participant’s faith in the values of the Bitcoin protocol remained ultimately related to the ongoing actions of a “*diversity of sociotechnical actors*” [pp. 751] involved in the network.

Rather than asking how we identify or harmonize particular values which can be ‘embedded’ in a data infrastructure, we suggest returning to Zelizer’s notion of ‘differentiated ties’ to explore value translation in another way. We might instead ask: how does a data infrastructure, as a form of valuation, allow actors to differentiate, set apart, or create new forms of social relations? These infrastructures might strengthen existing relations; bridge or transcend them to create new ones; or simply reify or flatten relations in a more problematic fashion. In this vein, we argue that data-driven innovation does not succeed simply by securing or enforcing the will of particular value systems (even if they are carefully understood), but by supporting a diversity of value-driven data work to be achieved *around them*.

The sales data is initially recorded for the benefit of area managers, trading managers and accountants, who will each perform different kinds of data work. However, ultimately this sales data is flexible and comprehensible enough to be appropriated by store managers and volunteers as an abstraction of their labour in the store, and hence it can be reworked to support the labour of volunteers in a store. Were sales data and targets imposed on volunteers, it would most likely be unproductive in Miller’s terms. What is critical and powerful is not the data itself, but the

⁴ <https://www.hull-coin.org/>

mediation of store managers to frame and make sales data available to volunteers in terms of different value regimes.

5.4. Designing Global Flows of Data for Local Values

As new data flows cut across the charity shop we need to consider the kind of data work these flows support. For example, volunteers and customers' ability to look up online, global marketplaces for equivalent second-hand goods greatly restrains the variability of the price of an item. As one participant suggested, this challenges some of the romance of charity shopping, where customers hope to unearth a bargain, and instead undertake their own data work to hold charity shops to account through online prices. This is resonant of Miller's [54] remarks on the way in which shareholder value, when taken as an economic bottom line, can end up *'flying apart'* from the values an enterprise ultimately relies upon.

In the charity shop, we might pose the question therefore: how can data-driven innovation support the performance of local community values in situ, with respect to global flows of data and capital? In one early internal design proposal, we considered the potential for differential and conditional pricing within the store – where the price of goods might vary, based on an input from different data sources. Prices might vary based on the occurrence of a natural disaster or the factory conditions in which 'fast fashion' [3] clothes were originally produced. Alternatively, flash sales could be automatically triggered by major gifts received by the charity, or in relation to poverty indicators in the local area. Perhaps individual donors could even choose to configure a price depending upon a personal ordering or prioritisation of certain values. Particularly in an online marketplace for second-hand goods, such variable pricing is not unimaginable.

However, for anything to be gained from these propositions, we argue that they must allow local values to be visibly played out in store; rather than simply playing an economic game where both charity and customer simply seek the best or 'right' price according to an online marketplace. Ideally, from Zelizer, different kinds of price become a way for customers to bridge the multiple regimes of value potentially in play. Of course, negotiating multiple frames of value may be asking too much labour of some customers or volunteers. It may also detract from the work international development agencies already do to frame a global 'mission' and abstracted 'other' which simplifies (for the donor) the very complex task of addressing global inequality. As Miller illustrates through an example of once beloved UK department store John Lewis [54], organisations, and technologies that can take on or ease this labour of uniting different threads of value will be held dear by various publics.

5.5. Summary Guidelines

In summary of the findings and arguments above, we offer the following guidelines for designing data-driven innovation through a lens of value translations.

Clearly, we need to first **understand different regimes of value and the processes by which these regimes are established and maintained**. The field of valuation studies (especially Kjellberg et al. [42]) offers many methodological starting points to identify values and the practices through which they are performed and translated. We hence argue for the need to **recognise valuation as an ongoing process**, supported and maintained by human and organisational labour – rather than simply being embedded or baked in to a system from the beginning. In the context of data-driven technologies, this process is frequently one of data work – moving between abstract *value* and specific local *values*.

It is through undertaking and performing valuation that particular values are developed, maintained and made visible. **New data-driven technologies should support the performance of a plurality of values** if the underlying data is to become common currency. In

the context of data-driven innovation, we should **design for a diversity of data work that supports the performance of different stakeholder's values**. Future work should explore whether encouraging a diversity of data work creates the opportunity for more just and equitable relations between stakeholders. Of course, care has to be taken as to the labour that this data work might require.

Drawing on Zelizer's work on 'differentiated ties' we should **consider how new forms of value translation and data work enable new kinds of social relations to emerge**. We argue that these ties can be used to strengthen existing relations and shared values, or as Miller suggests to bridge divergent regimes of value. Where data-driven innovation is imposed without sufficient room for data work, it can flatten or exclude existing relations or values, while reifying values that are misaligned.

6 CONCLUSIONS AND FUTURE WORK

In this paper, we have turned to valuation studies, and the work of Zelizer [80] and Miller [54] in particular, as a new lens on familiar challenges of 'data-driven innovation' in sensitive and value-laden contexts. While much work in HCI and CSCW is rightly critical of the way quantified data and metrics become implicated in work practices and social relations, these scholars point to occasions where data and different forms of valuation are worthwhile when they are used to mark out different relations, or to bridge different regimes of value.

Ethnographic fieldwork undertaken in charity shops provided our study a rich site of valuation work. We identified different regimes of values between donors, customers and beneficiaries, and the challenges for a store to negotiate between local values within a community, and a more abstract global value in the way they sort, price and display donated second-hand goods for sale. The autonomy of individual stores and their managers is vital to performing values that attract a community upon whose donations, custom, trust and voluntary work they depend. In our discussion, we aimed to reflect on how data-driven innovation could support the value translations at play in the daily life of the store. Through reflecting on our findings with respect to theoretical studies of valuation, and related work on the politics of data in HCI, we elicit key concerns and offer guidelines as we approach the design of data-driven technologies.

We recognise that this paper remains a first step in demonstrating how valuation studies could inform data-driven innovation. We see considerable scope for future work, in particular to use these guidelines generatively in different contexts. Literature in CSCW has identified many classification situations [39] where valuing systems become reified and impose particular politics. Alternately we might consider how to design for data-driven innovation in sites of social change, where societal values themselves are moulding and changing. In all of these contexts, we tentatively suggest that value-centred design perspectives (e.g. [6,11,31,32]) ought to be extended to focus on the very processes of valuation, for it is here that better design might hope to productively mediate values themselves. Although providing only a snapshot of the diverse life of charity shops, we hope the fieldwork we present in this paper can act as a forerunner to further work in such value-laden contexts.

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REFERENCES

- [1] Marc Andreessen. 2014. Why Bitcoin Matters. *The New York Times* 21.
- [2] David Beer. 2016. *Metric power*. London: Palgrave Macmillan.
- [3] Vertica Bhardwaj and Ann Fairhurst. 2010. Fast fashion: response to changes in the fashion industry. *The International Review of Retail, Distribution and Consumer Research* 20, 1: 165–173. <https://doi.org/10.1080/09593960903498300>
- [4] Luc Boltanski and Laurent Thévenot. 2006. *On justification: Economies of worth*. Princeton University Press.
- [5] Chris Bopp, Ellie Harmon, and Amy Volda. 2017. Disempowered by Data: Nonprofits, Social Enterprises, and the Consequences of Data-Driven Work. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (CHI '17), 3608–3619. <https://doi.org/10.1145/3025453.3025694>
- [6] Alan Borning and Michael Muller. 2012. Next Steps for Value Sensitive Design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '12), 1125–1134. <https://doi.org/10.1145/2207676.2208560>
- [7] Pierre Bourdieu. 1998. *Practical reason: On the theory of action*. Stanford University Press.
- [8] Geoffrey C. Bowker and Susan Leigh Star. 2000. *Sorting things out: Classification and its consequences*. MIT press.
- [9] James Bridle. 2018. *New dark age: technology, knowledge and the end of the future*. Verso Books.
- [10] John M. Carroll and Victoria Bellotti. 2015. Creating Value Together: The Emerging Design Space of Peer-to-Peer Currency and Exchange. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing* (CSCW '15), 1500–1510. <https://doi.org/10.1145/2675133.2675270>
- [11] Gilbert Cockton. 2004. Value-centred HCI. In *Proceedings of the Third Nordic Conference on Human-computer Interaction* (NordiCHI '04), 149–160. <https://doi.org/10.1145/1028014.1028038>
- [12] Gilbert Cockton. 2006. Designing Worth is Worth Designing. In *Proceedings of the 4th Nordic Conference on Human-computer Interaction: Changing Roles* (NordiCHI '06), 165–174. <https://doi.org/10.1145/1182475.1182493>
- [13] Russell Craig, Joel Amernic, and Dennis Tourish. 2014. Perverse audit culture and accountability of the modern public university. *Financial Accountability & Management* 30, 1: 1–24.
- [14] Department for Business, Energy & Industrial Strategy. 2016. *Science and innovation audits: wave 1 summary reports*. Retrieved April 1, 2019 from <https://www.gov.uk/government/publications/science-and-innovation-audits-first-wave-reports>
- [15] John Dewey. 1939. Theory of valuation. *International encyclopedia of unified science*.
- [16] José van Dijck. 2014. Datafication, dataism and dataveillance: Big Data between scientific paradigm and ideology. *Surveillance & Society* 12, 2: 197–208.
- [17] Liliana Doganova, Martin Giraudeau, Claes-Fredrik Helgesson, Hans Kjellberg, Francis Lee, Alexandre Mallard, Andrea Mennicken, Fabian Muniesa, Ebba Sjögren, and Teun Zuiderent-Jerak. 2014. Valuation Studies and the Critique of Valuation. *Valuation Studies* 2, 2: 87–96. <https://doi.org/10.3384/vs.2001-5992.142287>
- [18] Marian Dörk, Rob Comber, and Martyn Dade-Robertson. 2014. Monadic Exploration: Seeing the Whole Through Its Parts. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '14), 1535–1544. <https://doi.org/10.1145/2556288.2557083>
- [19] Chris Elsdén, Tom Feltwell, Shaun Lawson, and John Vines. 2019. Recipes for Programmable Money. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (CHI '19), 251:1–251:13. <https://doi.org/10.1145/3290605.3300481>
- [20] Chris Elsdén, David S. Kirk, and Abigail C. Durrant. 2016. A Quantified Past: Toward Design for Remembering With Personal Informatics. *Human-Computer Interaction* 31(6), 518–557. <https://doi.org/10.1080/07370024.2015.1093422>
- [21] Chris Elsdén, Arthi Manohar, Jo Briggs, Mike Harding, Chris Speed, and John Vines. 2018. Making Sense of Blockchain Applications: A Typology for HCI. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (CHI '18), 458:1–458:14. <https://doi.org/10.1145/3173574.3174032>
- [22] Chris Elsdén, Sebastian Mellor, Patrick Olivier, Pete Wheldon, David Kirk, and Rob Comber. 2016. ResViz: Politics and Design Issues in Visualizing Academic Metrics. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (CHI '16), 5015–5027. <https://doi.org/10.1145/2858036.2858181>
- [23] Chris Elsdén, Ludwig Trotter, Mike Harding, Nigel Davies, Chris Speed, and John Vines. 2019. Programmable Donations: Exploring Escrow-based Conditional Giving. In *CHI Conference on Human Factors in Computing Systems Proceedings* (CHI 2019) (CHI '19), 13. <https://doi.org/10.1145/3290605.3300609>
- [24] Melanie Feinberg. 2017. A Design Perspective on Data. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (CHI '17), 2952–2963. <https://doi.org/10.1145/3025453.3025837>
- [25] Jennifer Ferreira, Mark Perry, and Sriram Subramanian. 2015. Spending Time with Money: From Shared Values to Social Connectivity. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing* (CSCW '15), 1222–1234. <https://doi.org/10.1145/2675133.2675230>

- [26] Jennifer Ferreira, Mark Perry, and Sriram Subramanian. 2015. Spending Time with Money: From Shared Values to Social Connectivity. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW '15)*, 1222–1234. <https://doi.org/10.1145/2675133.2675230>
- [27] Brittany Fiore-Garland and Gina Neff. 2015. Communication, mediation, and the expectations of data: data valences across health and wellness communities. *International Journal of Communication* 9, 1446–1484.
- [28] Joel E. Fischer, Andy Crabtree, James A. Colley, Tom Rodden, and Enrico Costanza. 2017. Data Work: How Energy Advisors and Clients Make IoT Data Accountable. *Computer Supported Cooperative Work (CSCW)* 26, 4: 597–626. <https://doi.org/10.1007/s10606-017-9293-x>
- [29] Triona Fitton. 2013. The “Quiet Economy”: An Ethnographic Study of the Contemporary UK Charity Shop. *PhD Thesis*, University of York.
- [30] Ruben Flores. 2014. From Personal Troubles to Public Compassion: Charity Shop Volunteering as a Practice of Care. *The Sociological Review* 62, 2: 383–399. <https://doi.org/10.1111/1467-954X.12118>
- [31] Batya Friedman. 1996. Value-sensitive Design. *interactions* 3, 6: 16–23. <https://doi.org/10.1145/242485.242493>
- [32] Batya Friedman, David G. Hendry, and Alan Borning. 2017. A Survey of Value Sensitive Design Methods. *Foundations and Trends® in Human-Computer Interaction* 11, 2: 63–125. <https://doi.org/10.1561/1100000015>
- [33] Clifford Geertz. 1973. *The interpretation of cultures*. Basic books.
- [34] Claes-Fredrik Helgesson and Fabian Muniesa. 2013. For What It’s Worth: An Introduction to Valuation Studies. *Valuation Studies* 1, 1: 1–10. <https://doi.org/10.3384/vs.2001-5992.13111>
- [35] Annika Hupfeld and Chris Speed. 2017. Getting Something for Nothing?: A User-Centric Perspective on Loyalty Card Schemes. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*, 4443–4453. <https://doi.org/10.1145/3025453.3026017>
- [36] Tapio Ikkala and Airi Lampinen. 2015. Monetizing Network Hospitality: Hospitality and Sociability in the Context of Airbnb. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW '15)*, 1033–1044. <https://doi.org/10.1145/2675133.2675274>
- [37] Karim Jabbar and Pernille Bjørn. 2017. Growing the Blockchain Information Infrastructure. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*, 6487–6498. <https://doi.org/10.1145/3025453.3025959>
- [38] Steven J. Jackson and Karen S. Baker. 2004. Ecological design, collaborative care, and ocean informatics. In *PDC 2004*, 64–67. Retrieved July 9, 2015 from <http://rossy.ruc.dk/ojs/index.php/pdc/article/view/316>
- [39] Julian Jürgenmeyer and Karoline Krenn. 2016. Classification Situations: A New Field of Research for Valuation Studies? *Valuation Studies* 4, 2: 177–189. <https://doi.org/10.3384/Vs.2001-5992.1642177>
- [40] Jofish Kaye, Janet Vertesi, Jennifer Ferreira, Barry Brown, and Mark Perry. 2014. #CHIImoney: Financial Interactions, Digital Cash, Capital Exchange and Mobile Money. In *CHI '14 Extended Abstracts on Human Factors in Computing Systems (CHI EA '14)*, 111–114. <https://doi.org/10.1145/2559206.2559221>
- [41] Joseph Jofish Kaye, Mary McCuiston, Rebecca Gulotta, and David A. Shamma. 2014. Money talks: tracking personal finances. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI'14)*, 521–530. <https://doi.org/10.1145>
- [42] Hans Kjellberg and Alexandre Mallard. 2013. Valuation Studies? Our Collective Two Cents. *Valuation Studies* 1, 1: 11–30. <https://doi.org/10.3384/vs.2001-5992.131111>
- [43] Airi Lampinen and Barry Brown. 2017. Market Design for HCI: Successes and Failures of Peer-to-Peer Exchange Platforms. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*, 4331–4343. <https://doi.org/10.1145/3025453.3025515>
- [44] Christopher A. Le Dantec, Erika Shehan Poole, and Susan P. Wyche. 2009. Values As Lived Experience: Evolving Value Sensitive Design in Support of Value Discovery. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '09)*, 1141–1150. <https://doi.org/10.1145/1518701.1518875>
- [45] Tania Murray Li. 2007. *The will to improve: Governmentality, development, and the practice of politics*. Duke University Press.
- [46] Leah A. Lievrouw and Sonia Livingstone. 2002. *Handbook of new media: Social shaping and consequences of ICTs*. SAGE Publications Limited.
- [47] Ann Light and Jo Briggs. 2017. Crowdfunding Platforms and the Design of Paying Publics. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*, 797–809. <https://doi.org/10.1145/3025453.3025979>
- [48] C. Lustig and B. Nardi. 2015. Algorithmic Authority: The Case of Bitcoin. In *2015 48th Hawaii International Conference on System Sciences*, 743–752. <https://doi.org/10.1109/HICSS.2015.95>
- [49] Caitlin Lustig, Katie Pine, Bonnie Nardi, Lilly Irani, Min Kyung Lee, Dawn Nafus, and Christian Sandvig. 2016. Algorithmic Authority: The Ethics, Politics, and Economics of Algorithms That Interpret, Decide, and Manage. In *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '16)*, 1057–1062. <https://doi.org/10.1145/2851581.2886426>

- [50] Donald MacKenzie, Daniel Beunza, Yuval Millo, and Juan Pablo Pardo-Guerra. 2012. Drilling Through the Allegheny Mountains. *Journal of Cultural Economy* 5, 3: 279–296. <https://doi.org/10.1080/17530350.2012.674963>
- [51] Matthew Marshall, David S. Kirk, and John Vines. 2016. Accountable: Exploring the Inadequacies of Transparent Financial Practice in the Non-Profit Sector. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*, 1620–1631. <https://doi.org/10.1145/2858036.2858301>
- [52] Marcel Mauss. 1990. *The Gift: The Form and Reason for Exchange in Archaic Societies*. Routledge. <https://doi.org/10.4324/9780203407448>
- [53] David R. Millen, Claudio Pinhanez, Jofish Kaye, Silvia Cristina Sardela Bianchi, and John Vines. 2015. Collaboration and Social Computing in Emerging Financial Services. In *Proceedings of the 18th ACM Conference Companion on Computer Supported Cooperative Work & Social Computing (CSCW'15 Companion)*, 309–312. <https://doi.org/10.1145/2685553.2685562>
- [54] Daniel Miller. 2008. The uses of value. *Geoforum* 39, 3: 1122–1132. <https://doi.org/10.1016/j.geoforum.2006.03.009>
- [55] Bettina Nissen, Larissa Pschetz, Dave Murray-Rust, Hadi Mehrpouya, Shaune Oosthuizen, and Chris Speed. 2018. GeoCoin: Supporting Ideation and Collaborative Design with Smart Contracts. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*, 163:1–163:10. <https://doi.org/10.1145/3173574.3173737>
- [56] Bettina Nissen, Kate Symons, Ella Tallyn, Chris Speed, Deborah Maxwell, and John Vines. 2017. New Value Transactions: Understanding and Designing for Distributed Autonomous Organisations. In *Proceedings of the 2017 ACM Conference Companion Publication on Designing Interactive Systems (DIS '17 Companion)*, 352–355. <https://doi.org/10.1145/3064857.3064862>
- [57] OECD. 2013. Exploring Data-Driven Innovation as a New Source of Growth. <https://doi.org/10.1787/5k47zw3fcp43-en>
- [58] Cathy O’Neil. 2017. *Weapons of math destruction: How big data increases inequality and threatens democracy*. Broadway Books.
- [59] Frank Pasquale. 2015. *The black box society: The secret algorithms that control money and information*. Harvard University Press.
- [60] Alex Pazaitis, Primavera De Filippi, and Vasilis Kostakis. 2017. Blockchain and value systems in the sharing economy: The illustrative case of Backfeed. *Technological Forecasting and Social Change* 125: 105–115. <https://doi.org/10.1016/j.techfore.2017.05.025>
- [61] Kathleen H. Pine and Max Liboiron. 2015. The Politics of Measurement and Action. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*, 3147–3156. <https://doi.org/10.1145/2702123.2702298>
- [62] Theodore M. Porter. 1996. *Trust in numbers: The pursuit of objectivity in science and public life*. Princeton University Press.
- [63] Patrick C. Shih, Victoria Bellotti, Kyungsik Han, and John M. Carroll. 2015. Unequal Time for Unequal Value: Implications of Differing Motivations for Participation in Timebanking. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*, 1075–1084. <https://doi.org/10.1145/2702123.2702560>
- [64] Chris Speed and Deborah Maxwell. 2015. Designing Through Value Constellations. *interactions* 22, 5: 38–43. <https://doi.org/10.1145/2807293>
- [65] David Stark. 2000. For a sociology of worth. In *Keynote address, Annual Conference of the European Association of Evolutionary Political Economy, Berlin, November*.
- [66] David Stark. 2011. *The Sense of Dissonance: Accounts of Worth in Economic Life*. Princeton University Press.
- [67] Cass R. Sunstein. 1999. *Free markets and social justice*. Oxford University Press.
- [68] Don Tapscott and Alex Tapscott. 2017. How Blockchain Will Change Organizations. *MIT Sloan Management Review; Cambridge* 58, 2: 10–13.
- [69] Alex S. Taylor, Siân Lindley, Tim Regan, David Sweeney, Vasillis Vlachokyriakos, Lillie Grainger, and Jessica Lingel. 2015. Data-in-Place: Thinking through the Relations Between Data and Community. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*, 2863–2872. <https://doi.org/10.1145/2702123.2702558>
- [70] Peter Tolmie, Andy Crabtree, Tom Rodden, James A Colley, and Ewa A Luger. 2016. “This Has to Be the Cats” - Personal Data Legibility in Networked Sensing Systems. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing (CSCW '16)*, 490–501. <https://doi.org/10.1145/2818048.2819992>
- [71] Penny Travlou. 2014. Ethnographies of Co-Creation and Collaboration as Models of Creativity. *ELMCIP*: 245.
- [72] Anna Lowenhaupt Tsing. 2011. *Friction: An ethnography of global connection*. Princeton University Press.
- [73] François Vatin. 2013. Valuation as Evaluating and Valorizing. *Valuation Studies* 1, 1: 31–50. <https://doi.org/10.3384/vs.2001-5992.131131>

- [74] John Vines, Paul Dunphy, Mark Blythe, Stephen Lindsay, Andrew Monk, and Patrick Olivier. 2012. The joy of cheques: trust, paper and eighty somethings. In *Proceedings of the ACM 2012 Conference on Computer Supported Cooperative Work*, 147–156. <https://doi.org/10.1145/2145204.2145229>
- [75] Amy Volda. 2014. A Case for Philanthropic Informatics. In *User-Centric Technology Design for Nonprofit and Civic Engagements*, Saqib Saeed (ed.). Springer International Publishing, Cham, 3–13. https://doi.org/10.1007/978-3-319-05963-1_1
- [76] Amy Volda, Ellie Harmon, Willa Weller, Aubrey Thornsby, Ariana Casale, Samuel Vance, Forrest Adams, Zach Hoffman, Alex Schmidt, Kevin Grimley, Luke Cox, Aubrey Neeley, and Christopher Goodyear. 2017. Competing Currencies: Designing for Politics in Units of Measurement. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW '17)*, 847–860. <https://doi.org/10.1145/2998181.2998209>
- [77] Yang Wang and Scott D. Mainwaring. 2008. Human-Currency Interaction: Learning from Virtual Currency Use in China. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '08)*, 25–28. <https://doi.org/10.1145/1357054.1357059>
- [78] Aaron Wright and Primavera De Filippi. 2015. Decentralized blockchain technology and the rise of lex cryptographia. Retrieved September 18, 2017 from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2580664
- [79] Viviana A. Zelizer. 1989. The Social Meaning of Money: “Special Monies.” *American Journal of Sociology* 95, 2: 342–377. <https://doi.org/10.1086/229272>
- [80] Viviana A. Zelizer 2006. The Purchase of Intimacy. *Law & Social Inquiry* 25, 3: 817–848. <https://doi.org/10.1111/j.1747-4469.2000.tb00162.x>
- [81] Viviana A. Zelizer. 2012. How I Became a Relational Economic Sociologist and What Does That Mean? *Politics & Society* 40, 2: 145–174. <https://doi.org/10.1177/0032329212441591>
- [82] Shoshana Zuboff. 2015. Big other: surveillance capitalism and the prospects of an information civilization. *Journal of Information Technology* 30, 1: 75–89. <https://doi.org/10.1057/jit.2015.5>

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