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Programmable Donations: Exploring Escrow-based Conditional Giving

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ABSTRACT

This paper reports on a co-speculative interview study with charitable donors to explore the future of programmable, conditional and data-driven donations. Responding to the rapid emergence of blockchain-based and AI-supported financial technologies, we specifically examine the potential of automated, third-party 'escrows', where donations are held before they are released or returned based on specified rules and conditions. To explore this we conducted pilot workshops with 9 participants and an interview study in which 14 further participants were asked about their experiences of donating money, and invited to co-speculate on a service for programmable giving. The study elicited how data-driven conditionality and automation could be leveraged to create novel donor experiences, however also illustrated the inherent tensions and challenges involved in giving programmatically. Reflecting on these findings, our paper contributes implications both for the design of programmable aid platforms, and the design of escrow-based financial services in general.

CCS CONCEPTS

• **Human-centered computing** → *User studies.*

KEYWORDS

Charity, Blockchains, Automation, Conditionality,

1 INTRODUCTION

From cryptocurrencies [16, 30] to mobile money applications (e.g. [1, 24, 31], a key feature of many new financial technologies is the attachment of specific rules and conditions to the exchange of value, underpinned by data and enforced algorithmically. By making money 'smart' [27] in this way, it is envisioned to afford entirely new financial infrastructures, services and interactions. In this paper we extend the growing interest in financial technology (FinTech) in HCI, to the contested realm of philanthropic informatics [38], and explore the potential design space for *conditional and 'programmable' money* [11, 27] in the charitable sector. Rooted in an ongoing collaboration with a large UK-based international development charity, we explore with donors emerging forms of conditional charitable giving that support what we term 'programmable donations'.

Our research is grounded in the recent emergence of blockchain-based and automated financial technologies in the charitable sector [12, 13, 22]. Blockchains are envisioned to support: more direct and efficient international transfer of funds from donors to beneficiaries; end-to-end tracking of donations; new forms of crowdfunding via crypto-token offerings; and the capture and reward of demonstrable social impacts. In this paper we focus specifically on two aspects of such systems: giving conditionally, and the implementation of an automated 'escrow'. An escrow is a third-party account or wallet where donated funds are held until specific conditions are met, at which point they are released to

a beneficiary. The power of such escrows is the possibility to 'program' a donation to make it conditional and to only be disbursed according to pre-defined logics and data. Our particular interest is to explore the opportunities and implications of such programmable donations *for donors*. Based on prior engagements with a partner NGO, we focus primarily on the *'first mile'* of donations; that is, how funds are solicited and transferred from donors to charities, rather than how those funds ultimately deliver impact to eventual beneficiaries over the *'last mile'*. For example, donors could pledge to give to a charity *if* there is an earthquake; to give a small donation based on air pollution data reaching a threshold; or to give *each time* one takes a flight.

To explore this, we conducted a study where we speculated about the potential value of programmable donations with donors. Drawing inspiration from speculative approaches to interrogate experiences of emerging technologies (e.g, [8, 15, 34, 41, 42] we report on two pilot workshops (with 9 participants) and an interview-based study with a further 14 charitable donors who were invited to participate and enact a speculative service. We investigated the range of conditions - from personal to world events — donors would consider attaching to a donation, and the actors they would trust to provide and validate information that triggered their donation.

Our analysis of how participants oriented to programmable donations and reflected on the speculative service contributed to the emerging HCI literature at the intersection of financial technologies, blockchain-based systems and philanthropic informatics. First, we discern the value and challenges of different approaches to conditional giving based around pledging support, dynamic and data-driven donations; and giving related to personal activities. Second, we recognize the ways in which programmable donations, and the networks of actors and relations they might support, offer radically new models of philanthropy. This extends existing work in the fields of philanthropic informatics and digital civics by highlighting the ways in which emerging technologies can be seen as negatively impacting relational forms of trust and accountability in not-for-profit and charity contexts. Finally, we crystallize these insights to provide implications for the human-centered design of programmable aid platforms, and financial escrow-based platforms in general.

2 RELATED WORK

Here, we review literature on the multifaceted motivations donors have for giving; extant work about technologies for charitable giving in HCI; and the state of the art regarding programmable and escrow-based donation platforms.

Motivations for Giving

The study of charitable giving from the perspectives of donors has been examined in depth in the field of philanthropic studies. Bekkers et al. [2] offer a framework of eight 'mechanisms' that drive charitable giving based on a review of more than 500 papers across multiple disciplines. Examples of these include donors 'awareness of need'; their belief in the 'efficacy' of giving to charity, 'psychological benefits', often described as the 'joy of giving'; and the extent to which charities express 'values' that a donor prizes. These mechanisms vary extensively across donors, can be experienced simultaneously, take many different tangible and intangible forms, and involve various actors besides the donor themselves. Mejova et al. [32] indicate that many of these mechanisms hold when charitable giving is mediated by digital technologies, specifically discussing examples of donation behavior responding to email solicitations.

In this study we do not aim to directly address why people donate to charity, however, these prior theories provide a useful framing for our exploration of conditional giving. In particular, we consider that conditionality may be appropriated by donors as a way to balance or prioritize particular motivations they have. For example, making a donation conditional on evidence of a disaster could appeal to those who give most when they are aware of a need. Alternatively, a condition to give related to one's food consumption could appeal to those who give within a particular value system, such as environmentalism.

HCI Research on Philanthropic Technologies

In their envisioning of 'philanthropic IT', Harmon et al. [19] take a critical stance on the moral imperative towards embracing new technologies often found within the non-profit sector. For charities, new technologies promise greater efficiency, accountability and connectedness with their communities (e.g. [14, 39]). On the part of the donor, these technologies tend to aim to support increased transparency and trust [4, 29], or to smooth the process of donating itself via new payment mediums and platforms [26]. However, in-situ studies of philanthropic IT systems recount a litany of shortcomings as they often poorly account for existing organizational practices, the underlying values of charities, and the diversity of philanthropic work [6, 19, 20]. These studies highlight how those involved in fundraising must practice 'legitimacy' [36] and 'accountability' work [29] through a variety of IT systems. At their most dysfunctional, Bopp et al. [6] describe how organisations can feel 'disempowered by data' and regimes of monitoring and evaluation. To counter these challenges, it is argued that philanthropic informatics ought to make possible a broader view of the kinds of data and accountability that *matter* [37], and their performance

for various stakeholders (not only donors). Further, Harmon et al. emphasize informal philanthropic work, looking beyond specific charitable transactions, and instead supporting practices of 'care work' throughout everyday life [20].

It is important to recognize that as an explorative and speculative study, our work does not yet reckon with the pragmatic challenges of new philanthropic IT. However, by undertaking a speculative study *with donors* our ambition is that we might envision forms of conditionality and programmability that produce alternative matters and meanings of data, oriented to diverse values and experiences, beyond algorithmic accounting and efficiency. Prior work has already considered features of specific giving platforms that foreshadow the possibilities of programmable donations. Work by Lee et al. [25] and Voida et al. [40] points to the challenge of reconciling competing views of fairness in design of data-driven philanthropic systems. Researchers have developed systems to optimize the distribution of crowdfunding support [43] and the weighting of recommendations for a donation platform [33].

Notably, Beltran et al. discuss *'Codo'*, a system to support *'conditional donations'* to crowdfunding projects [3]. Their approach details a grammar to support the technical implementation and resolution of conditional systems. The platform focuses primarily on regulating the value of one's own donation based on the support from other specific donors. For example, donors can state: *'I will donate $10 if: another user/group donates x amount; or if the total donations are greater than x'*. Through a brief user study they noted competing views of conditional giving. Some users found the system off-putting, seeing charitable giving as something entirely personal, while others were invigorated by realizing the potential for collective action (e.g. [9]).

Conditional and programmable giving as we envision in this paper differs from this work in some significant ways. First, we consider a far greater array of possible conditions related to any manner of real-world phenomena — from the occurrence of an earthquake, to a daily step count. Second, the data that can be used to inform and validate those conditions may be drawn from a network sources, from oneself, to third-parties and automated sensors. Thirdly, the majority of conditions envisioned are independent, rather than co-dependent on other donations.

Blockchains and Charitable Giving (State of the Art)

Under the moniker of 'Blockchain for Good' [23] several commercial start-ups are developing proposals for programmable donations and blockchain philanthropy, as the state of the art in the sector. Premised on making charitable giving more direct and accountable, the proposed platforms follow one of three broad premises. Cryptocurrencies themselves are viewed as a way to potentially support more direct forms of

peer-to-peer giving, to individual beneficiaries or community projects (e.g. *BitGive*[1]). Cryptocurrencies could potentially provide a solution to the expense and risk of international money transfer that all international charities face. However, the unstable value and the risk inherent in cryptocurrency exchanges present risks for direct adoption. Instead, *Disberse*[2] propose a 'backbone' service for the development finance supply-chain. Similarly, enterprises such as *AidTech*[3] are targeting solutions for 'end-to-end' tracking of direct cash transfers, to ensure the delivery and receipt of donations.

Several groups seek not only to demonstrate that funds have been appropriately disbursed, but more ambitiously, that a charity can actually deliver impact. These 'social impact networks' — such as *Alice*[4], and *Promise*[5] claim to use programmable cryptocurrency tokens and reputation systems to enforce a process where charities are required to demonstrate completion of project milestones, before subsequent funds are released. Such systems endeavor to incentivize best practices and charitable reporting, although demonstrating the true impact of charity is notoriously challenging [17].

Automated escrows are a fundamental feature of all of these platforms. These are used to hold and then disburse funds according to specified conditions and protocols. The secure and reliable function of these escrows is ensured through immutable smart contracts and 'self-executing' blockchain based transactions. To our knowledge there is no prior work that has investigated with donors their perception, understanding and use of blockchain-based philanthropy or escrows in general. These features, and the resulting programmability of charitable giving are central to our study.

3 CONCEPTUALIZING PROGRAMMABLE DONATIONS

Our research is part of an ongoing collaborative project with a large UK international development NGO to investigate the potential role and design of blockchains in their sector. Through this work, we have recognized the considerable challenges of effective aid allocation, and the domain expertise that many charities possess in identifying the most impactful and worthy causes. Through a series of prior iterative engagements with this charity, we chose to focus our inquiry on the *'first-mile'* of donations — how donations are triggered and channeled to charities, rather than attempting to determine aid impact. In particular, our partner NGO sought new approaches to fundraising that may appeal to what they described as *'globally engaged citizens'*.

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[1] https://www.bitgivefoundation.org/

[2] http://www.disberse.com/

[3] https://aid.technology/

[4] https://alice.si/

[5] https://www.promisegiving.com/

We see escrow-based programmable donations as a mechanism or tool, within the wider aid and fundraising infrastructure that could remediate relationships between donors and charities. We conceptualize the escrow as a potential mechanism to redress declining trust in charities [10], and create novel experiences of giving. Specifically, we envision conditions that can: a) act as a pledge, and make specific commitments; b) support donations that are variable and dynamic, depending on data-driven conditions; and c) automatically relate donations to personal activities and behaviors.

This approach is now the subject of an iterative technical development that we are exploring with charitable partners. The technical aspects and feasibility of such a system (and the use of blockchains in general) are not our key concern here. Instead, this simply provided the context for an exploratory study where we sought to investigate the premise and concept of such a service with donors. The basic premise of the service from which we began our inquiry was presented to donors as follows:

Using smart contracts, powered by blockchain technology, you can set up contracts to pledge a donation, if certain conditions are met. If the conditions are met, your donation is automatically released. However, if your contract expired before this, the donations can be returned to you, or reinvested in another project or contract.

1. *Decide if you want to give a one-off amount, or a small amount often.*
2. *Create conditions for your donation. For example, your gift could be related to your own lifestyle, local and world events, or global measures and metrics.*
3. *Choose how your conditions will be validated and who you trust to do this.*

Figure 1: Promotional descriptive text 'Smart Donations' service provided to participants.

We envisaged the use of escrows as a way for a donor to set up an individual *'smart donation'* with a charity. Each donation would contain an *'offer'*: the value of the donation, and how it is withdrawn; specific *'conditions'* that trigger the release of a donation; *'validator(s)'* who provide the data that informs the contract whether conditions are met. Lastly, donations would define a *beneficiary* — the individual, cause or account who would directly receive the funds once released — and an expiry date, at which point any unreleased funds would be returned to the donor. The escrow as a mechanism to hold and release money underpins the attachment of conditions and validation. The donation serves as a contract between donor and charity, which is immutable, but requires funds to be pledged up-front by the donor.

This conceptualization is clearly only one example of how programmable donations as a class of technologies could be implemented or presented to donors. Our concept is based primarily on an abstraction of the system proposed by our technical team, but as we have seen, bears many features of other blockchain-based donation platforms. We adopted this as a basis both to inform our ongoing project, but also as a provocation that donors could engage with and ultimately shape.

4 RESEARCH APPROACH AND METHODS

With this conceptualization in mind, we designed a study that would generate empirical insights while providing an opportunity to speculate with participants and explore the broader design space for programmable donations. We were inspired by recent approaches in HCI to undertake 'co-speculation' [41], and forms of enactments [15, 34] that invite participants to experience and reflect upon possible futures through engagements with various speculative artefacts and scenarios. Over the course of six months, we undertook a series of engagements with a total of 23 participants to co-speculate on a programmable donations service.

Pilot Workshops

Our study commenced with running two pilot workshops, where we set out to co-create a catalogue of examples of programmable donations with participants. For the workshops we developed card-based materials [Fig. 2] to support participants in ideating a range of offers, conditions and validators. In a hexagonal format, participants were invited to complete instructions for a programmable donation. *"I WOULD GIVE [A], TO [B], IF [C], AS APPROVED BY [D])"*. These imagined donations were tailored towards three different generic fictional causes, loosely based on existing projects promoted by our partner NGO, to: 'combat climate change', 'support a refugee', and 'water for all'. Participants were provided with cards to exemplify different kinds of offers, conditions and data sources.

The first pilot workshop lasted 90 minutes and was conducted with six post-graduate students, who were studying courses related to FinTech and international development and worked in pairs to develop examples of donations for each cause. A second pilot workshop took place with three researchers in a design school, who also had prior knowledge of blockchain technologies. They used the same materials, and completed the same task of constructing programmable donations independently before sharing their motivations for each example in a focus group format. The workshops were undertaken as a way to pilot methods and languages for starting to discuss the concept with participants. Both workshops produced numerous examples of programmable donations, however, on reflection there was limited depth into each individual's personal approach to charitable giving. Further, the use of cards was overwhelming for some

participants, who focused primarily on three factors: an offer, a condition, and the validating data source. We took the experience and insights from these pilots into our central study.

Donor Interviews

Following these workshops, we moved to an interview-based approach with individual charitable donors. Although group discussions supported the collaborative generation of different donations, we wanted to gain greater depth on how different individuals own motivations and values towards charity (often quite private matters) related to programmable donations. We also wanted to give participants longer to reflect upon the service. Therefore, we gave more thought as to how to present such a service to donors, as an introductory pack that could be sent ahead of an interview as a form of 'sensitising' probe [5, 25].

Recruitment. Focusing on personal motivations for giving to charity, we sought to engage with a diverse range of charitable donors. In particular we advertised for and approached: donors who gave monthly monetary donations to charity; people who donated to second hand charity shops; and people directly involved with volunteering and charitable fundraising on a local level. In total, we recruited 14 UK-based participants (10F, 4M; Aged 24-70; Mean – 44.4 years old) None had any experience or specialist knowledge of financial or blockchain technologies. We viewed these donors as 'experts' in their own giving — however acknowledge future work should also engage non-donors.

Pre-Interview Materials. Participants who expressed an interested in the study were posted an introductory pack ahead of their interview. The introductory pack consisted of a cover letter, three glossy tri-fold leaflets [Fig. 2], and an information sheet and consent form that detailed the nature of the research. (The study received full ethical approval from our host institution and was of low-risk to participants). The leaflets were a considerable simplification of the prior card-based approach of the pilot workshops, but with the same core activity — to prepare instructions for a programmable donation. Each of the leaflets were identical, besides different titles, descriptive text and colours to denote the three different fictional causes. These leaflets were primarily intended to introduce and sensitize participants to a novel and challenging concept. We wanted participants, few of whom had any expertise with technology, to not only understand, but be able to extend and co-speculate this concept with us.

The front cover of the leaflets presented a traditional charity appeal and invited donors to set up a donation. The inside pages of the leaflet provided space for participants to write out three programmable donations for each cause. As a simplification of the previous cards, the construction of these

donations was *'I WOULD GIVE [A]; IF / WHEN / EACH TIME [B]; AS APPROVED BY [C]'*. In the space provided for an answer, semi-transparent text again provided examples of the categories of conditions and validators that a donation might take. The inside flap of the leaflets included the text to describe the service [Fig. 1], as well as three brief examples, which guided participants through the process of setting up a donation. The back page of the leaflets reiterated the key details of the research study. Participants were asked to spend some time with the leaflets before their interview, and generate at least one example for each cause.

Interview Protocol. Interviews were semi-structured, took place in a meeting room on our University campus, and lasted between 30-70 minutes. The interview began by asking participants to describe the way they currently donated to and engaged with charity. The researcher then introduced the key features of the smart donations service (no technical details were discussed however), and confirmed participants understanding of the concept and the leaflets themselves. At this point participants were given more time to consider their donations if they wished. They were then invited to talk through each of their proposed donations, describing how they envisioned they would work, and their motivation for setting up such a donation. The remainder of the interview was then spent discussing each example, considering possible alternatives or extensions, as well as parallels to existing charitable interactions. To conclude, participants were asked to give their views on the service as a whole, and whether they could envisage themselves opting for a 'smart donation' if they were offered one by a charity. Participants were given a £20 shopping voucher in appreciation for their time.

Follow-Up Enactment. Finally, seven participants who were sufficiently interested in the concept were offered the opportunity to take part in a brief follow up 'enactment' [15] of the service. Participants were asked to choose one of their examples that would be a feasible commitment for one to two weeks. The research team staked a £10 donation, to a charity of their choice, and agreed terms of a smart donation, including how their condition would be validated. A convenient date for a follow-up interview was agreed, and set as the expiry date of the contract. At this interview, the conditions of the donation were evaluated, and the resulting value of the donation (up to £10) was calculated. Any money remaining in the 'escrow' was returned to the participant as a further shopping voucher. Participants were asked to reflect on their experiences of the donations, the service, and any changes they would make. With this enactment we hoped to extend participants experience and create some consequentiality for their involvement and the conditions they chose.
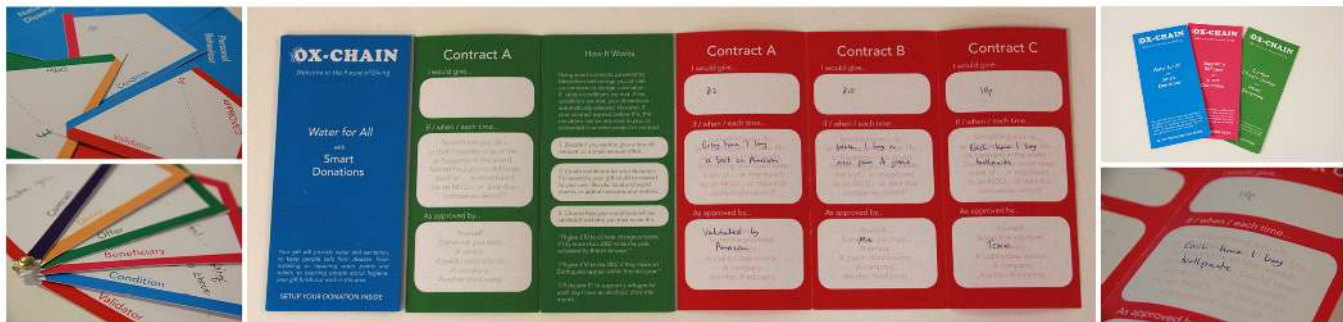
Figure 2: Card-based Workshop Materials (left) and Pre-Interview Leaflets describing Smart Donations service.

Data Analysis

These varied activities produced a large corpus of qualitative data. Across all engagements a catalogue of 99 different programmable donations were proposed by participants. In addition, audio was recorded from both pilot workshops, 14 individual donor interviews, and the 7 follow up interviews. All of these recordings, except those from the initial pilot (with poor audio quality), were transcribed in full.

Our analysis of this data followed two threads. First, we wanted to understand how our participants had approached the construction of these donations, their diversity in style, and what made them compelling to donors. We collated a spreadsheet of all 99 proposed programmable donations, including the offer, condition, validator and cause for each. Using qualitative analysis software NVivo, we systematically coded each of these donations for their overall intention and purpose (e.g. as a tax; in response to need); the kind of offer (e.g. a microdonation; a one-off); and the nature of the validator (e.g. a web-app; a sensor). Following Braun and Clarke [7], we then began thematically grouping these codes to develop a coherent overview of different kinds of programmable donations. A summary of this analysis is presented in the first section of our findings.

The second thread of our analysis focused on the donors interviews and was rooted in an Interpretive Phenomenological Analysis (IPA) [35], focused on idiographic reflections and speculation, and the way in which the novel features of escrow-based conditional giving intersected with existing motivations and practices for giving. Each transcript was highlighted and annotated to illuminate passages where participants reflected on their motivations for charitable giving, and passed comment on the 'smart donations' service as a whole. These annotations provided the basis to produce biographical summaries for each participant, recognising their often idiosyncratic approaches to charitable giving, and core concerns regarding programmable giving. These summaries formed the basis of the reflections reported in Section 6,

to demonstrate a diversity of views related to engagement, temporality and conditionality itself.

5 APPROACHES TO PROGRAMMABLE DONATIONS

In this section, we report how donors approached programmable donations, in terms of the choice of conditions; the offer or value of a donation; and the approval of conditions.

Conditions and Triggers

The character and intention behind each donation stemmed primarily from the choice of condition. The likelihood, frequency, and clarity of these conditions would then determine an appropriate offer, and validator for each. While participants had diverse approaches, in general they drew upon their everyday routines and experience — news events, weather, bills and travel were especially common triggers for a condition.

Personal Conditions. The most significant distinction between conditions was whether they were internal or external to the donor — in other words, whether the donor could control the condition through their personal activity. Several examples of such personal conditions concerned activities that donors perceived negatively, and hoped to change or avoid. For example: one donor pledged *"50p each time they walked less than 10,000 steps over a year"*; another participant proposed *"£1.60 (the price of a bus ticket) each time they take the car"*. Motivations for these kind of donations varied. Adding additional costs to a bad habit could provide an extra incentive to avoid or overcome it; alternatively it might offset some of the guilt one experienced about the activity through a charitable donation.

Although such donations were envisaged by many participants, on reflection this style of condition often produced an awkward dissonance. Most donors aimed to give to charity, as well as improving their behavior. In the prior examples, achieving one's goals meant giving less to charity and being less generous. Furthermore, a charitable donation does

not simply equate to and write-off one's guilt over certain actions. Following the enactment of a donation to donate £1 for each plastic bottle he purchased, one participant summed it up as: *"[The donation] didn't reduce the feeling of guilt, but I felt slightly better that there was a positive action …It didn't make me think less about it, I didn't feel more carefree (P12)."*

Negative personal conditions were arguably more effective when framed by participants as a kind of 'offset' or personal 'tax', related to a necessary or unavoidable action like flying or driving a long distance. Setting up the donation did not aim to prevent or reduce the behavior, but by giving to a climate change cause, for example, it was a way to acknowledge and commit to proportionate action to address one's own impact.

However, donations were also related to positive personal activities, especially those that participants felt privileged to enjoy. For example, two participants suggested a small donation to a water charity each time they visited a swimming baths. *"I have the privilege of doing that, but I also need to be aware that some don't. [P6]"* Such donations could also act as a form of empathy. One donor imagined donating to a refugee charity every time she menstruated. Finally, programmable donations could be envisioned as a kind of added reward or celebration for reaching milestones or doing good. In one enactment, a donor chose to donate as a reward and extra incentive for swimming 40 lengths — as if she were swimming for a cause. *"I wanted it to be more of a …like everyone's a winner, you know. I win because I'm like healthier and, you know, I want to get fitter but also my charity wins, you know. (P5)."* As this quote shows, giving related to positive behavior is quite in contrast to the dissonance experienced when giving as a punishment.

Needs-Based Conditions. There were three other styles of external conditions proposed by donors. The first of these related to providing evidence of needs, which the donation or charity would directly address. Several donations addressed drought, humanitarian crises, war or forced migration. Even for such significant events, part of the challenge of these conditions was to decide upon an appropriate indicator of this need. Some envisaged using a news application as a cipher, while others expected there to be other NGOs or appropriate trusted experts who could determine this.

Some needs were expressed more specifically than a general humanitarian crisis. One participant suggested: *"I will donate £100 if a whale species that I choose, because I'm attached to that whale species, is reported extinct by the [World Wildlife Fund]."* Such constructions indicate the possibility of much more personalized engagements with charitable giving. Needs-based conditions also presented an opportunity to maintain accountability of charities, and a desire to support their most urgent and important work, without tracking 'end-to-end' the actual delivery of that aid. In essence, for some, the very existence of such terrible events as drought and species extinction justified the charities themselves, regardless of how their particular donation was eventually spent.

Symbolic Conditions. A second set of external conditions related to events that signified a wider issue that the donor hoped to address. For example, one participant proposed a climate change donation *"each time today's temperature exceeds the average on this day over the past 5 years"*. For the donor, this measure indirectly but very concisely highlights the issue at hand. Symbolic conditions often related to the frequency of events, for example: *"if a sustainable power/energy initiative is reported by the BBC."* Symbolic conditions were apt for issues of ongoing concern, like climate change, which may not have immediate moments of crisis or need, as with a humanitarian disaster that stimulate a large appeal. The trigger event could simply be a means to offer a conscious reminder; for example one participant proposed a donation every time she changed the filter of her water-bottle. This was a regular six-weekly event, but gave her a cue to give.

Activist Conditions. Finally, there were conditions that were more political in their character, whose primary intention was to bring attention to a particular issue, or publicly support a cause. For example: *"I will give two pounds […] every time the UK's arms sales to Saudi Arabia go up, as reported by the Department of International Commerce."* Other examples included monitoring speeches of prominent politicians for offensive remarks, and donating in spite of them. As such, these conditions would often depend upon news reports or public information as a source of data.

Another approach to activist conditions were those that were intended to demonstrate support for specific organisations. One donor with experience of working in the charity sector suggested: *"I would give one pound every time someone signed up to their newsletter. (P13)."* As such, by pledging donations for these kinds of conditions, donors are able to affirm and practically demonstrate their support for issues that matter.

Calibrating Offers

Donors were required to decide how much money and how often money could be withdrawn from an escrow. At the simplest level, the 'offer' could be either a one-off amount that would be withdrawn all at once, or a recurrent withdrawal each time an event occurred, up to a limit, Donors, especially those on low incomes, were very aware of what they thought they could afford, or donations that they feared could quickly become too expensive. Beyond what they could afford, donors were sensitive to what seemed 'fair' or 'reasonable'. For personal conditions, intended to punish or reward actions, the sum should be such that they would be aware of

it: *"Well [£5]'s like, it's enough that it's an amount, but it's not enough to completely deter me from taking taxis . . . So, it is just like getting that balance [P6]."* For more frequent conditions, especially those envisaged as a kind of personal tax, microdonations of even a few pence were considered more appropriate. Another key factor was the extent to which donors felt in control of the condition, and how unpredictable it was. More predictable donations could be calibrated, towards an expected total donation over time. Most participants who took part in the enactment approached their donation in this fashion. Others felt it would be important to be able to calibrate and *"tweak the amount as you go along, if you realize that you've set it a bit too high, or a bit too low (P5)"*.

Recurrent offers were not always a fixed amount, but could be dynamic, varying according to conditions themselves, for example being equal to the cost of a meal or luxury, or dependent on oneâĂŹs extra available income. A number of other offer mechanics were generated by donors. A larger one-off donation could be made when specific thresholds for a condition were met. A round-up, based on transaction data, could be used to calculate small donations for regular events, such as refueling one's car. Others proposed donations that would match the costs of specific items or donations. Indeed, billing and existing transactions were frequently envisaged as a site through which the precise value of a donation could be calibrated.

Evaluating and Validating Conditions

The most challenging aspect of the service for participants to consider was the evaluation and validation of their conditions. This required imagination about appropriate forms of data that related to the condition, and a reliable and trusted source for that data. Especially for personal conditions, participants reached first for themselves as an arbiter. In some cases, participants found it hard to imagine technology in their lives that would reliably recognize their activities, for example, if they used a takeaway cup. For some participants, familiar technologies they already used to monitor their activity, such as step tracking or commuting, were imagined as ways to inform their conditions. Still, in many cases, having at least a personal confirmation maintained a sense of control, and the possibility to flexibly interpret and approve the meaning of the contract in exceptional circumstances. Certainly, this makes the donation less automatic; but participants felt strongly that if prompted by such a system, they would be honest, seeing the donation as a sort of promise. On some occasions, donors also envisaged that trusted individuals could be employed to help keep such promises.

Participants were able to envisage third-party enterprises as validators of conditions, especially where they were already familiar with data that they collected (e.g. Google, UK Met Office). Several conditions entailed transactional data,

for example from a supermarket loyalty card, or even a bank transaction. For external conditions, concerning a need or world event, participants considered the role of specialists or those in trusted positions. In some cases, these included other NGO's, with perceived authority in an area — for example, the World Wildlife Fund could report species extinction. However, with the exception of weather conditions, there were limited examples of specific metrics that people would expect to trigger a donation. This may indicate the need for charities to better communicate the key factors that determine how they allocate aid.

6 CONTEMPLATING PROGRAMMABLE DONATIONS

In this section we take a broader view of how donors reflected on programmable donations as a service, and how they speculated about its position in relation to existing approaches to charity. Clearly, individuals had mixed attitudes towards the service, related to their personal approaches to charitable giving and new technologies. The following analysis is not an effort to summarize all of these attitudes, nor a general verdict on the service. Rather, we aim to highlight distinctive features that defined the service for donors, and use these as a basis for a discussion of the implications of these technologies.

Balancing Donor Engagement

An initial motivation for the service we had proposed was to support donors in becoming more actively and consciously engaged in giving to charity. However, several generous monthly donors were deliberately unengaged in their giving. *"Once I've agreed to do it then I can, kind of, forget about it, you know" (P8).* For these participants, they had made a decision to support certain causes, and giving through their bank account on a predictable, but unremarkable, basis supported this. Choosing to donate to charity can be joyful [2] but comes with an emotional responsibility. Greater engagement evidently demands significantly more of donors: *"Yes, I like to see where my money's going, but do I want to be thinking about it all the time? . . . there's the emotional aspect of it." (P7).* Further, there is the risk that giving becomes donor-centric: *"There are some things I feel strongly about I want to give to but I want it to be as simple and painless, and as unselfconscious as possible"* (P4). Ultimately, this participant was wary of programmable donations. Although *"it is nice to try and connect people's giving"* he was concerned that *"that has a value in it that is about me as the giver, that's the thing, [that] I need to feel good about my giving"* (P4).

As one regular donor to a cycling charity described: *"Every time I go on a cycle track and use one of [the charitiy's] signs, immediately, the touchpoint is there for me . . . My reward, or my payoff, for my contribution."* And so in his approach to

programmable donations, he envisioned something similar: *"I need some way of having an idea when something might be triggered …because normally, when I was making an action, I could suddenly relate what action I was doing, to the giving bit" (P12)*. Routine and everyday actions, such as refueling one's car, or walking 10,000 steps, could become acts of generosity. Especially as they related their conditions to specific causes, donors could construct their own stories and meaning to their donations: *"The step thing was about how far, you know, refugees have to walk everywhere" (P9)*. Activist conditions especially highlight the way conditional donations could express a wider concern in order to foster engagement in an issue.

However, programmable donations also demand more of a donor. Several participants initially favored personal conditions because they felt a sense of control and accountability as to whether and when those conditions would be triggered. However, this can also *"exert a lot of pressure on [you] to act in a certain way to get a certain outcome" (P6)*. Reflecting on her participation in an enactment, P6 continued: *"I viewed it as £10 that would go to charity, but I would have to do something. So I would have preferred to just give £10" (P6)*. When attached to a behavior that donors sought to change, the donation risked being even further donor-centric. *"It became more about me having a short shower …but it seemed like sort of an obfuscating factor in terms of if you want to give to charity" (P10)*. External conditions were more out of a donors own hands, however, this would be something to *"think quite hard about it in advance."* The proper configuration could require careful engagement to calibrate the donation appropriately in the first place, but perhaps afterwards would be easier to manage — it could even be forgotten about. Clearly already there are donors who more actively engage in giving to and thinking about charity, as something *"natural to actually go and do it" (P2)*. Others take a more passive approach. A key challenge of programmable donations is to balance the donor's engagement — to empower the donor, without over-burdening them.

Negotiating Temporality

Programmable donations presented an entirely different temporality to giving. Escrows are necessarily slow, and require predicting and then waiting for conditions to be met. Whereas placing spare change into a bucket can be immediately gratifying, this sensation is significantly delayed with a programmable donation: *"I like giving things on a whim, you know. So, I gave the guy outside of Gregg's today, a pound, because you know, I felt like he could use it, he looked like he needed something …And I like, if I have the money, I like doing that, instead of, I don't know, instead of setting goals" (P9)*. Furthermore, escrows require upfront commitment, or cost to the donor, removed from this moment of gratification.

Indeed, it is possible that no donation will be made at all. As P9 outlines, this is a more rational and calculative way to approach charity. By contrast, P12 suggests a desire to experience programmable donations as a form of membership: *"I probably give where there's a relationship."* And in the worst case *"this might start to feel like a bill, or something, it's just another thing" (P12)*.

When making personal conditions, participants clearly saw programmable donations as an opportunity to make a commitment. Anxiety about the potential cost and unpredictability of donations often related to a desire to keep to one's commitments. *"You can say, oh, well, £10 for this and £10 for that and then you feel as if you can't keep the promise (P3)."*

A core feature of escrows is their immutability, their ability to preserve present intentions into the future. Part of the challenge for donors is to ascertain with what certainties they can engage or affix their relationship with a charity, and when they wish to respond more dynamically.

The Value of Conditionality

Contemplating programmable donations requires considering the value of conditionality itself. That the very act of giving could be so explicitly conditional is potentially challenging: *"It's like if you give somebody money for a present, you can't tell them how to use it; it's up to them, I feel (P11)."* For nearly all participants, the potential return of money they had donated seemed entirely alien: *' 'I've never really even thought of actually getting money back, I've never thought of it that way, ever. To me once you donate it that's it, you expect that money is going to a good cause" (P1)*. Therefore the moment of giving is in committing to the donation: *"Because once that money was in that escrow account, I don't see it as mine anymore" (P6)*. Relatedly, few participants imagined spreading more money than they intended to donate into several contracts, with the expectation that some might be returned. When confronted with money that was returned to them, several donors insisted they would simply give it to another worthwhile cause or contract.

To experience the donation as conditional, it could require participants to think quite differently about whether they were giving at all. P8 imagined making a donation each time she took the car into town, rather than using a park and ride. She viewed this as *"a bit like an insurance policy"* — it would be there to make her *"think twice"*, and she hopes she does not need to use it. *"I wouldn't feel at all concerned if I didn't give them any money because I'd always used the park and ride, because at the end of the day, this is all about trying to do something to improve our climate change prospects …So if I've done my bit, that's okay (P8)."* Conditionality in this case is useful to determine the degree to which one gives. P8

has agreed she should be taxed for taking her car, and the donation is programmed to calculate this.

Even where donors always intended to make their donation, conditionality could still serve a useful function in synchronizing a donation with an event. *"I'm gonna see on the local news, that there's something happening, so okay. Oh it's terrible, oh I'm feeling better, I've just given a quid to it, you know (P12)."* Predictable phenomena, such as menstruation (P9) or a water bill (P5), would almost guarantee a donation was made, but by attaching a condition to their donation donors are able to sync these events with charity, and transform them into generous acts. As such, the value of conditionality is not simply whether to give or not. Rather it could be a question of 'how much' to give; 'when' to give; or even 'what' to give to.

7 DISCUSSION

In this study, we presented participants with a challenging and provocative proposition — that they could start to attach rules and conditions to their charitable donations. Although our work is necessarily anticipatory, the concept of 'Smart Donations' that we presented to participants offers a lens on contemporary trends in philanthropic informatics [38] — in particular, the desire for greater accountability of charitable funding [28], and the opportunities to use data-driven tools to configure this accountability work [29]. Of course, the very idea of conditional giving could be considered transgressive, and should not be accepted uncritically. Through this discussion, we aim to constructively reflect on the opportunities and benefits of programmable giving, as well as the challenges and risks, to consider how and when such technology might be employed.

The Value of Programmable Donations

Prior to the study, we speculated that allowing donors a way to tailor and 'program' their donations could help them to configure new relationships with charities that better addressed their own motivations for giving [2] — be that helping those most in need, supporting charities with certain values, or simply through a joy of giving. We saw the use of escrows and programmability as a means to make firm pledges to charity; to make one's donations dynamic and data-driven by varying the total value and timing at which donations are released; and to relate charitable giving to the occurrence of personal activities or habits in daily life. We now reconsider these propositions.

Pledging support. In our findings, we saw that while donors proposed conditional relationships in response to disasters or needs, this support was rarely truly conditional. Having decided to trust a charity, and set up a donation like this, donors did not expect their money back, and otherwise trusted the charity to spend the money elsewhere as required. At best, pledging support in this way can achieve a sense of timing, and an alternative model of commitment to a regular monthly donation. However, the gratification of knowing their donation has helped a cause can be delayed for the donor — they might even feel rebuffed if their donation is not ultimately put to good use.

The use of programmable donations as a form of pledge or firm commitment appeared to hold more promise as a tool for activism and vocal support of specific causes. Attaching or promising a donation to an activity raises awareness of its significance, especially if one can inspire others to do the same. For example, a crowd of supporters could act collectively to fund refugee charities every time high-profile politicians make statements contrary to that cause. An escrow-based pledge can be used to demonstrate collective commitment, and co-ordinate obligations between core networks of supporters.

Further, pledges could be used to explicitly drive charities towards particular actions and democratize aspects of their governance — or for charities to seek funding for activities that might otherwise lack legitimacy. Programmable donations could be directed to political funds of a charity, or charities could be incentivized to act on a particular topical issue.

Dynamic and Data-Driven giving. Conditional and data-driven giving presents donors with tools to program and calibrate the amount they want to give to a cause. However, it was clear from our study that giving an unpredictable amount can be challenging to come to terms with. This is especially the case for those on low incomes, for whom giving to charity is a defined part of their outgoings. In orienting to programmable donations, many participants sought ways to maintain control over how much they would give. Offers were carefully calibrated, with efforts to try and assess the likelihood of their conditions. Donors felt the need to be able to tweak donations once set up. This requires the donor to have a good understanding of the condition, and the literacy to understand how such conditions could be defined by data-driven systems. In sum, this placed a demand on donors to engage and *"work it out"* [P9]; else it meant surrendering control and experiencing uncertainty as to how much they had actually committed to give.

Therefore overall, dynamic and data-driven seem to be too calculative an experience. There is a sense that conditionality is being used here simply to optimize giving, to give a 'right' amount, at the 'right' time. For our participants who were already generously engaged with giving to charity, there's little clear value to such optimization. Indeed, for many donors it's questionable if the 'right' amount and 'right' time to give

to charity can be determined programmatically. Programming donations may come at cost to a sense of control, and stretch out the experience of giving compared to the simplicity of a one-off gift, or regular sustained support. However, further work could determine if there is a time, place and audience for dynamic giving, beyond the examples captured in our study.

Personal giving. Giving related to one's own everyday life offered participants the opportunity to construct their own narratives of living generously. Even predictable everyday events, such as visiting a swimming pool or having a takeaway, became opportunities for empathy and gratefulness for one's own good fortune.

However, conditions framed such that one is required to personally act, or avoid acting, in particular ways to trigger a donation to charity, can become emotionally demanding and burdensome to participants. At worst, one's everyday life can get in the way of simply giving to charity. Motivations to change behavior and simultaneously give to charity can quickly become confused and in tension with each other. However, this could be alleviated somewhat, if reconfigured as a social or competitive activity, or as a sponsorship activity to raise funds from others (rather than releasing one's own funds).

As such, we can see how the framing of personal conditions is crucial. Indeed, in some cases it was best to consider a programmable donation as a contract, between an individual and a charity, rather than a donation at all. Returning a gift can be offensive to a donor, but if the purpose of the donation is simply to account for a cost, and the original contract is configured as a form of personal tax, insurance or social responsibility, then a dynamic and calculative approach can be more acceptable.

New Models of Philanthropy

We began our research on this project with a large UK international development NGO, and continue to envisage with them how a programmable donations platform could fit within their organization. Following this study, there are clearly conditions that could present a compelling new experience for donors if they are supported in configuring their donations. However, under the surface of the study are potentially radical new models of philanthropy. If giving to charity means funding activist movements or taking out a contract to account for one's carbon footprint is this really giving to charity as it is traditionally understood? In the UK context, the role of charities is already beginning to blur as they step into spaces of care and service provision left vacant by the retrenchment of local public services. Should charities begin to engage with their donors as 'taxpayers' or perform roles closer to an insurance company?

Such envisioning cuts to the core of political discussions of data-driven tools, and especially blockchains, as a class of technologies. It is clear that programmable donations, and the implementation of escrows in particular, provides a facility for a donor or group of donors to enter into some kind of carefully defined exchange with a charity who are a form of service provider. Similarly, in an overview of blockchain technologies, Elsden et al. note a trend towards 'transactionalization' [16]. Yet, in their reflective study of 'everyday philanthropy' Harmon et al. [20] poignantly highlight *"that philanthropic work is not just about transactions of money, goods, or services."*

While programmable donations could hold promise in harnessing crowds and 'paying publics' [26], by giving networks of donors the ability to configure their own charitable infrastructure, does this simply represent the further 'transactionalization' of care work or even 'charity as a service'? Donors also viewed charity as about values that go beyond the efficient transfer of economy from 'haves' to 'have nots'. It's also clear that some donors value an experience of membership or a deeper relationship with charity, which is reinforced by forms of exchange, for example receiving regular charity literature, or gaining preferential access to national landmarks and events.

We suggest that the conditionality, connectivity and automation implied by programmable donations presents a challenge to traditional charities, but may also provide space for alternative forms of social and not-for-profit organisations to co-ordinate around shared aims. The challenge will be to harness programmability as a commitment to shared values, rather than a reduction of charitable values to abstract economic exchange.

8 DESIGN CONSIDERATIONS

With these broad reflections in mind, we conclude with specific design considerations for platforms incorporating elements of programmable donations.

Conditional and Data-Driven Donation Platforms

(1) How programmable donations are framed may greatly inform their use and motive. They may not even be a 'donation' as commonly understood, nor a substitution for current fundraising channels. There is a need for charities to present compelling stories to donors, that relate networks of conditions, validators and beneficiaries.

(2) Programmable donations could be designed for active and passive donors, to meet varied expectations of engagement. While programmable donations could support activism and raise awareness of certain conditions, other donors may seek conditions that can be set up and comfortably forgotten.

(3) Seek to support conditionality and data that foster experiences of empathy, gratefulness and supporting others. These experiences may emerge through synchronizing donations with need, or creating opportunities for generosity through everyday routines.

Escrow-Based Services

(1) Escrows are slow technologies, which considerably elongate the experience of exchange, and run counter to decades of financial technology that have sought to make payment as fast and seamless as possible. We may explore how escrows can be designed to make a virtue of this slowness [18] and fixity [21].

(2) One approach to negotiating the unusual temporality of escrows may be to present them as an anchor for shared commitment and relationships, that express membership or possession of certain embedded values.

(3) In an escrow, funds are held in a curious kind of stasis - between the charity and the donor. However, donors may still experience the cost of having already given those funds away. Therefore, there is a challenge to reflect this transitional rather than finalized state to users.

(4) Finally, escrows can hold assets that have uncertain futures and destinations. Therefore, there is a challenge to communicate this uncertainty and conditionality to users in a way such that they realize the ramifications and potential future value of the escrow.

9 CONCLUSIONS

In this study we explored with donors the emerging concept of conditional giving via escrow-based, programmable donations. Based on a series of engagements and co-speculations with participants our study elicited both the values and challenges of giving that is more conditional and data-driven. While donations envisioned by our participants hint at novel donor experiences and fundraising opportunities, we caution about a purely transactional approach to charity. In offering implications for the design of conditional giving platforms, and escrow-based services, we note the need for considered research to relate to deeper human values of empathy, care and membership through these technologies.

10 ACKNOWLEDGEMENTS

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