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Problematising transparency through LARP And deliberation

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Information technology is increasingly designed to make people's transactions visible (transparent), as a way to increase trust. However, it can be hard to comprehend and anticipate the social implications of information visibility (transparency), people's competing expectations of transparency versus privacy, and the role of enabling technologies. We devised Live Action Role Play (LARP) as a means for people to explore the potential and consequences of transparency, within a social context of daily transactions related to food, fashion, and finance. Through the process of deliberation, we enabled people to critically assess their co-created LARP experience and articulate their transparency expectations for design considerations. We report on insights into people's expectations and perceived limitations of information technology in delivering transparency, including social measures required to realise the full potential of technology, as well as transparency, while minimising unintended consequences.

CCS Concepts: • **Human-centered computing** → *Interaction design, process and method*.

1 INTRODUCTION

Technologies emerge and evolve in relation to complex social arrangements [40, p.129-130]. As a modern example, societal issues surrounding the trust people have in their social, political, and economic interactions have led to an increased desire for *transparency* of the actions and decisions made in human interactions. Transparency, however, is a loaded term, and its implementation and practices are contentious across various application contexts [21, 54]. Even so, numerous technology solutions have been developed in response to the growing calls for transparency in human transactions, ranging from open data initiatives [35], to distributed ledger technologies (DLTs) such as blockchains, which are considered to promote transparency via shared, verifiable and irreversible set of records [6, 19, 52].

Given the increasingly pervasive use of information technologies, the opacity of these technologies' operation, and the resulting increase in visibility of daily human interactions and their consequences, we argue that people's critical assessment and expectations of technology-enabled transparency is required. To achieve that, we propose an approach, combining Live Action Role Play (LARP) with deliberation to gain deeper insights into the functional, emotional, and rational dimensions of the human experience with respect to the effects of transparency.

We contribute this approach as an alternative for designers and HCI researchers to engage the public in problematising information technology, and report on the resulting insights into the limits of transparency within social contexts as well as measures to address these limitations. As an immersive, emergent, social game [64], however, Live Action Role Play (LARP) offers a safe space for designers and developers of technology solutions to increase visibility (transparency) of human exchanges, to explore how human factors could play out. Our LARP-based approach provides rich experiential knowledge for deliberation, which in turn explains human preferences within these contexts.

Fig. 1. Research design: Problem area, methodology, and findings.

2 PROBLEMATISING TRANSPARENCY

2.1 Transparency-enabling technologies

Regardless of the context, transparency implies a state in which information is made visible [70]. In open-data movements it refers to the willingness of companies, institutions and governments to make their information available to all [28]. In information technology domains, transparency can refer to an explanation of user interfaces [27, 30, 36], intelligent systems [11, 20, 38, 65], or the application of AI [73].

Information-based technologies have been deployed to deliver transparency. Examples of these initiatives include the use of text mining techniques to improve clarity of publicly available information about government spending [2] and the deployment of open data to promote transparency and accountability in local governments' spending [33]. DLTs have been applied in financial services [1], the sharing economy [26], and supply chains [60, 61] to build trust.

However, both transparency and transparency-enabling technologies have limits. Transparency, as a means for individuals to exercise their rights to manage visibility of information pertaining to themselves, as prescribed in Article 5(1)(a) of the General Data Protection Regulation (GDPR) is problematic [17, 18, 39]. Such autonomy over information pertaining to individuals depends on individuals' information and technology literacy, rather than information about the data being processed. Worse, transparency about data collection and processing can be presented in ways that are incompatible with the diverse range of technology literacy of data subjects or the way they consume information [13, 55]. Using technologies such as DLTs to deliver transparency in human transactions can also pose challenges to individuals' ability to manage their their information visibility [1, 54] and even limit regional autonomy [56].

These limitations of transparency and transparency-enabling technologies, including competing principles and interests underpinning them, invite further investigation into the acceptable and responsible trade-offs concerning transparency practices. Therefore, we developed a method for examining the attitudes, understanding and expectations of users, both businesses and individuals, towards transparency. We applied this method to generate insights into users' expectations of transparency capitalisable for design and development of information technology, as well as governance of technology applications.

2.2 LARP

Engaging people in assessing transparency practices is difficult for two main reasons. On the conceptual level, transparency is a slippery term that involves various factors, and human and technological actors. On the operational level, transparency enabled by technologies is contextual and incomplete, with often oversimplified explanations. Given these challenges, it can be difficult for individual and business users to comprehend and articulate what is at stake in the design and appropriation of transparency or information visibility.

We address these challenges by devising a design-based approach, using Live Action Role Play (LARP) and deliberation. We use LARP to facilitate co-creation of human experience, through improvisation, with transparency in various social

contexts. We use deliberation to support participants to work through their co-created experience, to formulate and articulate their preferences for transparency outcomes in social interactions.

Live Action Role Play (LARP) is an "acted, immersive, social game" [64, p.108], which combines acting (performative arts), gaming, social interaction, and immersion. This combination distinguishes LARP from other immersive drama techniques employed in operational research [7, 8] and other theatre or performance art, because the acting element is not performed for an external audience [68, p.4]. Rather, the acting in LARP is aimed at the players who do the acting themselves in order to co-create of an experience. The *principles of embodiment* [25] in LARP require participants (players) to live their character and interact with other characters within a given scenario—historical, fantastical, futuristic—as if they were living in that specified space and time. This opens up a space for participants to inhabit and develop their characters, and build relationships and alternative realities together with their fellow players. In this way, the game element, or challenge, in LARP is emergent and generative of new states of play and narratives, rather than a progressive discovery of pre-authored or latent narrative sequences [24, 32]. These generative and emergent properties make LARP a good tool for world-building and for exploring alternative realities, and share the affordances of fiction to support critical and reflective practices in technology design and research [5, 43]. Through these processes, Simkins contends that development of practices can be observed [64]. By stepping into the shoes of their randomly given character, LARP enables participants to see their own preferences in a social context. We argue that with the support of deliberation, explanations for these preferred practices can emerge from the narratives of the LARP.

LARP varies in style (e.g., political, staged art, theatre), structure (e.g. combat, sandbox, rule-based), themes (e.g. adventure, war, historical, future) and objectives (e.g. entertainment, education, inspiring social-change) [25, 67]. In this research, we use Nordic LARP for its affordance for participants to:

- *escape* into a different context, leaving behind their daily life, routine, and environments;
- be *exposed* to specific topics, themes, and contentious situations by LARP organisers, also called game hosts, in order to push an agenda;
- react or respond to the messages *imposed* by game hosts through the playful and generative nature of the game, which serve as a "social alibi for pushing the boundaries of what is tolerated"; and
- subsequently *explore* alternative realities, practices, social relations, and structures without the stigma or consequences of failure that we have in real life [67, p.25-28].

As such, we use LARP as a critical exploratory tool for a collaborative construction of transparency practices to inform technology design and development. In our approach, we *expose* participants to and *impose* diverse themes around transparency practices, and allow them to explore alternatives to these arrangements.

The aim is to provide a playground to safely experiment with transparency practices, as well as the associated functional and emotional dimensions of human experience, despite the challenges of transparency discussed above. The functional element is achieved through escape, exposure, and imposition, which makes participants feel as if they were in particular situations, facing certain dilemmas and embodying certain attributes. The emotional element involves feelings that the characters develop when exposed to particular situations and dilemmas. These functional and emotional dimensions of human experience, together with the resulting co-constructed alternatives of transparency practices and the meanings participants assigned to these practices, provide rich resources for deliberation. These materials therefore serve as units of analysis from which configurations and types of social interactions can be derived [72].

2.3 Deliberation

Deliberation is a talk-based process to derive mutually acceptable solutions to problems through open, reflective, and respectful exchange [16, 44]. In this research, deliberation serves as a method for encouraging participants to discuss different values and priorities and collectively develop mutually acceptable transparency practices, having considered the perspectives of various stakeholders in the information society. This process constitutes the rational dimension of human experience with technology.

Applying the deliberative methods for public engagement due to Coleman and Gøtze [9], we provide participants with an open, equal, and reflective platform for developing collective judgements on transparency practices. The development of collective judgement follows a four-step process: experience sharing, problem definition, solution brainstorming, and resolutions. This process has been successfully applied to design research [57] and deployed in social and policy research concerning digital rights for young people [10, 55].

In our approach, the shared experience involved the functional and emotional elements of participants' experience with transparency within a social context of an information-dependent society, co-created through LARP. Based on this shared experience, participants develop their problem definition and collectively brainstorm approaches to tackle the problems they collectively defined, in post-LARP deliberation. In this process of reflective exchange (deliberation), the moderator played a critical role in prompting participants to refer back to their playful exploration of transparency in LARP and identify what participants found problematic and why, then encouraging participants to exchange ideas on how their self-defined problems should be addressed. The emphasis of this deliberative process, as well as the analysis of the resulting data, is placed on preference formation and empathetic reasoning, rather than preference assertion and position-taking. Collectively, participants derive a rational dimension of human experience, thus providing an explanation for both preferred and frowned-upon configurations as well as types of social interactions.

2.4 Related work

Various technologies, ranging from Internet portals [47], social media [4], open data [33], and application programming interfaces (API) [41] have been applied to deliver transparency in both technology and human operations. Increasingly, DLTs have gained attention from researchers, designers, and developers in the human-computer interaction (HCI) community. However, much of the CHI literature concerning DLTs and blockchain applications focuses on users, user behaviour, and blockchain technology as an infrastructure [22, 29, 34, 37, 62, 63]. Parallel to the core interests in users and human-computer interaction are growing efforts to understand the effects of DLTs on everyday life and people's perceptions of these emerging value transactions through user engagement in design-based research [42, 48, 49, 53, 58].

We contribute our approach to engage users in the design, development, and critique of transparency-enabling technologies as well as insights into people's expectations of transparency. HCI designers and researchers' engagements with LARP have focused either on the role of artefacts or technologies in augmenting the LARP experience [31, 71] or the role of LARP in supporting design of and research in co-located experience[14, 45]. However, our LARP focuses on participants' narratives, as a way to explore and construct transparency alternatives within a social context. These narratives feed into our deliberative process, designed to engage participants in critical reflection on the consequences of various transparency alternatives they explored in our LARP and articulate their expectations of transparency in human transactions, constituting design considerations for transparency-enabling technologies. Our LARP approach expands on the use of fiction [5, 43] to elicit users' insights in support of design and research of future technologies.

The way we use LARP can be considered a variation to playification as an approach to foster "open-ended" playful user-engagement rather than "goal-oriented" gaming [46, p.377], reflective fiction for design futures [5, 43].

3 THE FICTIONAL FOCUS GROUP: OUR LARP DESIGN AND RESEARCH PROCESS

We implemented our approach, combining LARP and deliberation, in two workshops held online for the safety of the researchers and participants during the COVID-19 pandemic. We ran two workshops to accommodate diversity of participants' interpretations of the characters and dilemmas that shaped their improvisation. We recruited a total of 20 participants through advertisements across social media platforms (Facebook, LinkedIn, and Twitter), special interest groups, and mailing lists. Of these recruits, 11 attended the first, and 9 attended the second workshop. All participants were informed about the nature of the workshops and provided consent to use their information for our research study, which was approved by the ethics committee at our institution.

Once recruited, participants were asked to complete an online pre-workshop survey to collect information about their demographic data, technology confidence, attitudes toward data, consumer ethics, and purchasing habits around food, clothing, and financial services. We sent each participant the details of a character and a dilemma that their character was facing. Characters and dilemmas were split across three sectors: food, fashion, and finance. We asked each participant to complete a dilemma diary, detailing the decision their character made and the factors shaping it. Each workshop took approximately 3 hours with two 10 minutes comfort breaks in between. After the workshops, participants were invited to complete another survey.

Both workshops were audio- and video-recorded, and thematic analysis was applied to the transcription of the workshop recordings, with an emphasis on participants' preference formation. Statistical analysis and cross-tabulation were applied to the pre-and post-workshop survey data to observe changes in participants' attitudes and self-reported behaviours concerning information. The complete toolkit of our LARP (i.e., our survey questions, characters, and character dilemmas) can be found in the supplementary material.

3.1 Characters

Characters were developed based on the five-factor model of personality [50] and responses to the pre-workshop survey questions concerning the factors that shape purchasing decisions and information sharing preferences. We interpreted participants' pre-workshop survey responses to provide numerical representations of the characters' personality traits, in terms of their conscientiousness, agreeableness, and self-orientation. Other key features of our characters include gender-neutral names and pronouns, and complex life challenges. These features were designed to ensure that our participants would encounter life experiences that are different from their own and that anyone, irrespective of their actual demographic backgrounds, could relate to and play these characters. These characters, and all the characters we developed, serve to represent diverse worldviews, personal circumstances, interests, and priorities [9].

3.2 Dilemmas

Dilemmas were tailored to the roles of either consumers or businesses. These were created based on the attributes and potentials of DLTs recorded in academic literature [59] and news media [3, 66], and in particular their usage and consequences in the food, fashion, and financial sectors. These dilemmas situate participants in their daily interactions with a highly information-dependent society and provoke critiques of the underlying arrangements. The dilemmas for both consumers and businesses centered on the tension between ethical choices, motivations or incentives, and the

True

Insight

Bootcut Bo: A conscientious consultant for an established fashion company

Collegiate Charlie: A self-oriented university student on a tight budget

FinTech Frankie: Head of a start-up investment bank, subsidiary of an international bank

Human Rights Perry: An agreeable university drop-out turned food truck start-up

Rural Rain: A self-oriented consumer on a pension after years of hard work as a care worker

Safe Sunny: A conscientious and self-oriented aspiring corporate law student with expensive taste

School-leaver Roux: An agreeable consumer and construction worker on a tight budget

Soldier Sam: A highly agreeable consumer who served as a private in the military for many years

Careful Couple Rinix: Conscientious consumers who have been together for a while and have a joint bank account

Sole-trader Taylor: A conscientious marketing consultant for a small business with a turbulent past

Vegan Xen: A conscientious consumer with past job struggles and conservative family roots

Cornershop Ore: An agreeable undocumented immigrant and owner of a small grocer

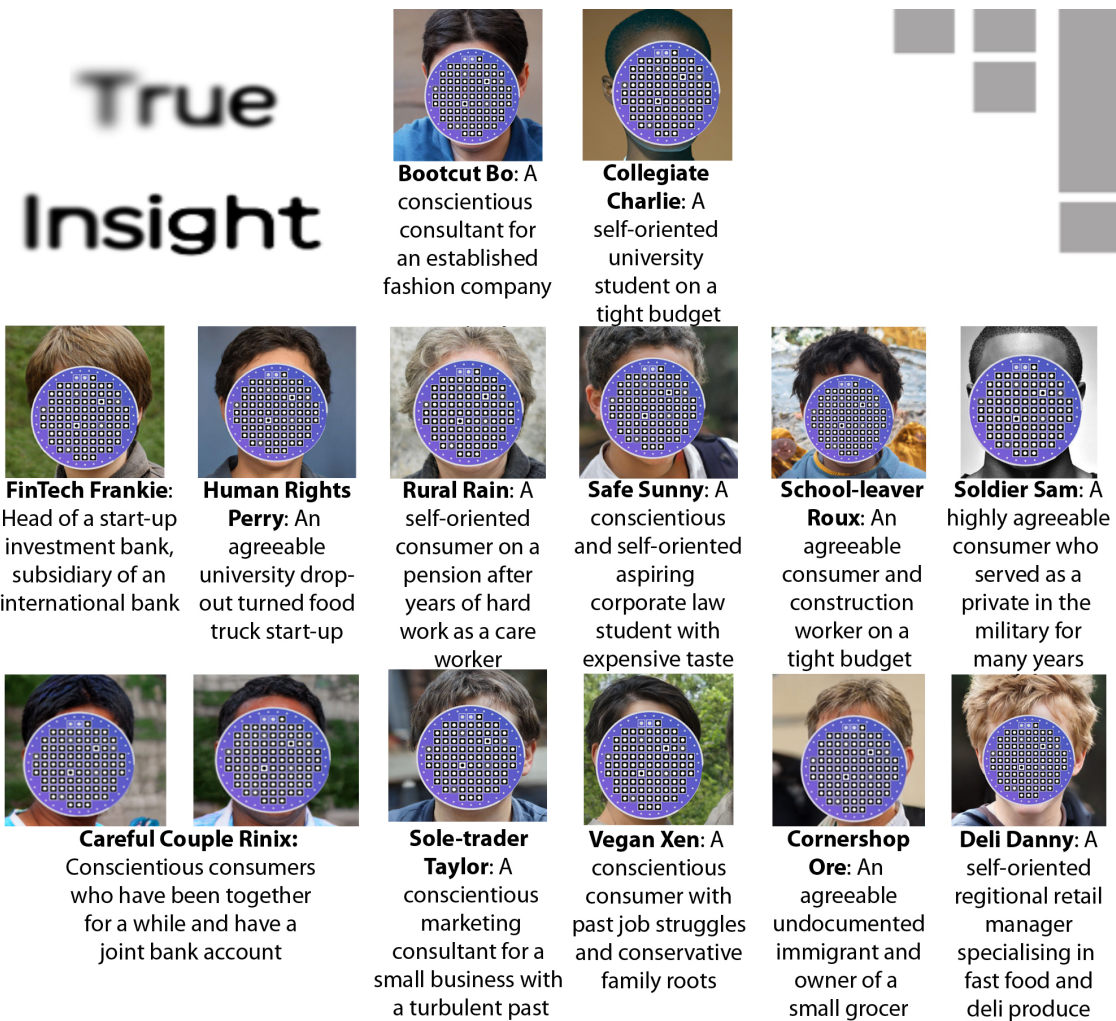**Deli Danny**: A self-oriented regitional retail manager specialising in fast food and deli produce

Fig. 2. A list of characters, their roles, and character traits.

practicality of making informed decisions. The differences between consumers and businesses relate to their roles and priorities, which at times compete (see Figure 3).

3.3 The Year 2020: Future scenarios to explore transparency consequences

To prompt participants to think about the consequences of their choice, the second half of the LARP sent them 10 years into the future, to a time of increased transparency. Through a series of news reports designed to acquaint them with the year 2030, shown in Figure 4, participants learned that food packaging automatically displayed environmental and social impacts, while augmented reality allowed people to stay in the safety of hazmat overalls and face masks but still appear in the highest fashion. They also learned that new transparent financial regulation made everyone's credit ratings and financial status visible at all times. These changes *exposed* participants to the ubiquitous computing

Food Business	**Food-from-where?** You are a medium size food business... Some of your larger competitors are starting to use the extended food labelling system to declare additional information about product provenance... What are you going to do and why?
Food Consumer	**Frantic Food Search** You have lost track of time and you're meant to start work soon... You need something to eat on the go... you are torn between the economy and brand ranges... What did you buy, and what influenced your decision?
Fashion Business	**Fashionable but Demoralising Data** Your contribution to 'smart label' innovation is widely acknowledged... Your quality control team alerts you to a complaint that your alpaca supplier had been mistreating their workers...What are you going to do and why?
Fashion Consumer	**Coat Comparison** You go online and you are impressed! You can't decide between two coats... One is more expensive than the other. Its 'smart label' displays information about the sustainable raw materials... Which coat did you buy and why?
Finance Business	**Financial Fiasco** Your new bank is going from strength to strength ... until a dossier appears on Wikileaks implicating your investments with arms dealers and military contractors ... What will you tell your customers and why?
Finance Consumers	**Loyalty to what?** A few years ago you set up a savings account ... You received a loyalty bonus five times the usual amount... You discover that 90% of its investments are linked with major arms and military contractors... What do you do and why?

Fig. 3. Summary of business and consumer dilemmas used.

processes that make information about our daily engagement with society visible to others. This was also a message we *imposed* on transparency practices within this fictitious focus group to push participants' boundaries of tolerable practices. The use of exposition and imposition in our LARP also served to stretch participants' imaginations about the positive and negative consequences of information visibility, which were revealed in the story of their characters' lives in this new age of total visibility.

4 LARPING AND DELIBERATING TRANSPARENCY

When participants joined our online workshop, we introduced them to the game and performed a ritual to signify their entry to the Live Action Role Play (LARP). Our LARP took the form of a focus group, run by a fictional research company called True Insights, to study shifting attitudes and practices around transparency in a highly information-dependent society. The ritual to enter the LARP involved the ringing of a gong, prompting participants to change their screen name to the name of the character assigned to them. Once in the LARP, participants were greeted and briefed on the research activities by two game coordinators, playing the roles of True Insights employees.

Fig. 4. Future scenarios summarised in news reports of the year 2030.

The fictional focus group serves as a realm to which participants can *escape* from their daily routine and environment. It also serves as a platform for participants to *explore* aspects of transparency in various contexts of use—food, fashion, and finance—that they are *exposed* to as consumers or businesses. Through dilemmas, we created encounters between consumers and businesses as our way to *impose* messages about the competing interests of consumers and businesses, as well as the tensions between transparency and other tenets, such as privacy, agency, and accountability.

Our pre-workshop survey results showed a mix of demographic backgrounds and levels of technology confidence. Eight of our participants were male and twelve were female. Two of our participants were in the 18-25 age range, six were over 45, and the rest were between 26 and 45. Our participants came from diverse professional backgrounds, such as students, artists, journalists, and academics. The majority of our participants were tech-literate, with only three out of twenty participants reporting themselves as "tech-awkward". Six participants reported being tech-sceptic. The survey results showed that all our participants are cautious with their information sharing: nobody reported randomly giving away their data. The results also suggested that participants' usage of information for purchasing decision is complex and contextual, with price being the main determining factor for 19 out of 20 participants, followed by ingredients.

4.1 Act I: Present day consumer and business dilemmas

Once briefed on the research activities, participants, wearing their character, were sent to breakout rooms for small-group discussion about the sector-specific dilemma that they faced. In these discussions, participants were asked to share their experience about the dilemma and explain their decisions, with reference to the online dilemma diary that they had completed. Participants were then asked to collectively identify what they found most problematic about their experiences and report back to the participants in other groups.

Competing priorities, trust, and accountability. From the experience sharing and the characters' justifications of their decisions, tensions relating to the purpose of information usage by businesses and consumers began to arise. These tensions concentrated around areas of competing priorities, information presentation, and consumers' scepticism about the validity of information provided by businesses. In both workshops, discussions moved from the issue of competing priorities to the question of trust in information and accountability.

Food. Business and consumer characters across both workshops reported finding competing priorities problematic, which then surfaced the issue of trust in information provided. In the first workshop, Human Rights Perry, an agreeable and conscientious business character, vented that consumers didn't seem to care about the information he provided about the ingredients and the supply chain behind the falafel he sold. A conscientious and self-oriented consumer, Deli Danny, explained: *"I care about the ethics […] but […] my priority is for nutritional value. I think that generally there's a big distrust from the general public regarding labels that certify a certain type of ethics."* She further qualified that she believed in nutritional value more than information about how the product is sourced because *"nutrition is scientific"* and that she could *"weigh the grams"* herself. Similar problems also emerged in the second workshop: *"I'm a student so price is very important to me. I don't have a lot of money, but I also don't want to support businesses that go against my principles"*, said Collegiate Charlie, a conscientious and self-oriented consumer character.

The business characters that saw themselves as small businesses reported that their budget and the cost-effectiveness of their investment limited the information about their products that could be provided. In the first workshop, Human Rights Perry stated: *"obviously you need to make a profit, and that can sometimes be difficult, so you have to get good suppliers who you can trust […] and then you have to work with them to get a price."* In the second workshop, however,

Human Rights Perry interpreted her business to be medium sized, catering to an affluent market segment, so felt she could shift her costs of information provision to consumers.

Fashion. Conversations in the fashion group followed a similar pattern to that observed in the food group. The conversation started with business characters justifying their priorities for either workers' welfare or environmental impact, followed by feedback from consumer characters regarding the rationale for their purchasing decision. In the first workshop, a conscientious consumer character, Vegan Xen, remarked that consumers *"shouldn't have to choose between worker rights and animal rights."* The conversation progressed to discussions about the consequences of making worker welfare information available, as it was partially based on their health records. *"The second company had some kind of system in place for taking workers' health data and then firing them based off of it. So, it's supposedly anonymous but actually people are being laid off"*, said School-leaver Roux, an agreeable consumer character. Bootcut Bo, a highly conscientious business character, replied that *"for us the concern is to try and figure out the best way for the consumer to understand all aspects of the production process, and our focus is directly on the welfare of the animals and the workers. I'm not sure there is a direct truth in how HR deals with the data that's been gathered."* Bootcut Bo also added: *"What I can say is that we've made choices so that any data gathered is not passed on to any other third parties."*

Finance. Conversations in the finance group also revolved around the issues of competing priorities, information presentation and trust. However, the context in the financial sector invoked greater discussions concerning trust, both in the information given and in the source of information, as well as accountability. These discussions reflect the real-world social status of a financial institution and the real-world consumer expectations of this institution. The competing priorities discussed in the finance group reflected the competition between a business' interest in its reputation and a consumer's interest in the business performing their expected due diligence. These competing priorities are most clearly observed in the business' treatment of the alleged connection between the bank and arms trades as a *"PR fiasco"*, according to Fintech Frankie, a highly self-oriented business character. This approach provoked a mix of reactions from consumer characters. A highly conscientious consumer, Careful Couple Rinix, and a rather self-oriented consumer, Rural Rain, were disappointed and stated that they were *"shocked"* by the information they discovered, with Rural Rain saying that she expected the bank to perform *"due diligence."* On the other hand, another highly conscientious and self-oriented consumer character, Safe Sunny, treated the incident as a non-issue and decided to keep his lucrative savings account with the bank. He justified that his benchmark for ethical transparency practice was whether the business breached any laws, and, in this case, there was no proof of that having happened.

4.2 Act II: Future consequences of today's decisions

Having shared the problems identified in their sector-specific discussions with other participants, all participants time-travelled to the year 2030, in which their consumer and business decisions were made visible to everyone.

Participants were then asked to ponder the consequences of these legislative and technology developments on the lives of their characters during a break and then share their experience in their sector-specific groups when they returned from their break. The experience sharing at this stage quickly progressed to re-identification of the problems that participants, in character, reported in Act I but in a very personal way. From this round of experience sharing, we observed a shift in participants' narrative—how they talked about information visibility—from a dry rational choice perspective to a personal and subjective perspective. This new perspective in storytelling in turn brought out new dimensions of the problems concerning trust and its connection with accountability previously identified in Act I. From this new perspective on storytelling, participants also identified new problems: lack of boundaries and fairness. Both

the new dimensions of the problems identified in Act I and the new problems highlighted the relational and spatial aspects of context that shape participants' value judgement of data and data practices.

Blurred boundaries and heightened social anxiety. The sharing of characters' life stories and how they experienced ubiquitous transparency in the year 2030 concentrated around the unintended consequences of transparency for the privacy and well-being of the characters.

Food. In food, both the business and consumer characters reported negative consequences of ubiquitous information visibility. In the first workshop, Human Rights Perry reported having to close down his falafel shop and retrain as a lawyer because the costs of making information about his product and supply chain visible could not sufficiently be covered by his sales. He chose to specialise in transparency law and found that *"it's hard to keep anything private [...] People who you work with know everything about your personal life. People in your personal life know about your work life. And then that lack of boundaries has been a challenge for many of us who would like to be able to present different aspects of our personalities."* Other business characters in the second workshop also experienced similar blurred boundaries. Human Rights Perry found her work life unexpectedly bled into her personal life: *"the market segment that I'm catering to is strictly limited […] to the elite who are able to pay extra […] for their information […] but it means that I'm identified as part of that elite and I've got to send my children to private schools."* Corner Shop Ore, an agreeable business character, shared that information visibility related to his grocery business *"caught up"* with him too. It leaked his status as an undocumented immigrant, which led to him having to fight for his right to remain in the country.

Consumer characters also reported being affected by how their shopping records were passed on to third parties without their prior consent. A highly agreeable consumer character in the second workshop, Soldier Sam, raised a social and relational impact of the visibility of her *"unemployment"* and the resulting *"credit score"*, stating: "*I feel […] like everybody's super judgemental about our situations and of our data."*

Fashion While there was rather heavy emphasis on the negative unintended consequences of transparency in fashion, characters saw both sides of the same coin. Vegan Xen reported *"feeling free"* given greater opportunities to *"express"* himself through the deployment of augmented reality in the fashion industry. However, he also reported feeling *"constantly judged on his earnings and his past history of having a very unstable working life because it's literally written across my face that I don't have much money and that I struggled with financial matters for a long time."* Similarly, School-leaver Roux said: *"I think transparency is good because now I employ other people, and […] I think that a level of transparency financially is actually quite good. I think it helps workers to feel like they're being compensated fairly […] On the other hand, I don't love my financial information being aired out everywhere."*

Finance Unlike the fashion group, the characters in the finance group echoed more negativity than optimism. That said, Rural Rain noted that increased transparency in the financial sector had some positive impact on consumer behaviour, making people more *"responsible"* with their personal finances. She observed that *"people are not able to just pass on nest eggs to their children in the same way. And now of course people who want to have insurance for care needs can take that out when they're younger, so in a way it sorts of changed the market to make that much more equitable."* However, she was also quick to note the *"corruption"* in the *"governance"* of the financial system, which she deemed a political and institutionalised problem that she didn't think *"technology could impact in the same way."* She further qualified her comment that *"transparency isn't fairness, that fairness and ethics are still active questions that haven't been solved by this technology."* Another consumer, Careful Couple Rinix, reported feeling disempowered: *"I don't think it's necessarily getting better with more information. The amount of information about financial institutions is just so much."*

In the second workshop, participants focused on the effects of ubiquitous information visibility on their personal life and social relations. Careful Couple Rinix reported that the increased visibility of her partner's financial history caused them to *"grow apart."* Rural Rain also reported an overzealous information practice among her fellow local community members who caught wind of a handyman whom she contracted to fix her broken shower and *"called [her] out"* for the handyman's poor dietary habits, which had been made publicly available.

The discussions excerpted above demonstrated that the future scenario transformed information visibility from an abstract principle and rational choice to a relatable daily experience. With this experience, participants were empowered to explore the latent effects of information visibility embedded in its relational and spatial contexts. The exploration of these latent effects then surfaced the issue of blurred boundaries between public and private information, resulting in dwindling privacy and increased social anxiety, or sensitivity toward being judged.

Transparency paradox. The exploitation of information visibility was identified as a problem that escalated from the issue of blurred boundaries between public and private information. This aspect of transparency was discussed only in the finance group, possibly due to the different context of information use and the implications for business as well as consumer characters. As observed in Act I's real-world reflection, consumer characters have different expectations of their business counterparts in this sector, which mimic real-world requirements and regulations for financial institutions.

This discussion on the abuse of information visibility stemmed from the reflection of FinTech Frankie: *"I guess what these past 10 years have taught me is that what we think we know through the ledger is really not what we know [. . .] What we are experiencing is that the transparency is being used entirely as another front for what has become completely uncontrollable as an industry."* Safe Sunny, who in 2030 got a job as a corporate lawyer, concurred: *"Yes [. . .] it's possible for [business] to be totally transparent but actually not give a particularly accurate picture of what's going on in terms of [their] investments [...] If anything, I think the consumer ends up with less knowledge, less insight than they had before."*

5 OFF-LARP DELIBERATION: A REFLECTION AND SOLUTION BRAINSTORMING

After participants finished the main group discussion in Act II, the game coordinators asked them to perform a ritual to mark their exit of the LARP. This ritual involved changing their screen name from their character's name back to their original one. Having exited the LARP and their characters, participants were invited to join an off-LARP deliberation to reflect on the transparency problems that their characters identified in the game and collectively brainstorm solutions to these problems. To prompt deliberation in this session, the moderator summarised the problems that the characters had identified and asked whether the participants could relate to any such problems in their daily lives.

5.1 Problematising transparency

The parallel participants drew between their in-character experience and the experience in their daily lives led them to exchange views on the limits of transparency in their daily engagement with information-based technologies. This discussion concentrated on the ability of transparency to promote individual agency, the relationship between transparency and trust, the abuse of transparency, and the assumed relationship between information and knowledge.

In the first workshop, a participant critiqued the assumption about the role of transparency in improving individuals' agency and their ability to affect positive change through their choices. She said: *"I think that transparency in and of itself is not enough [. . .] there needs to be some sort of layer on top of transparency."* In terms of transparency and trust, another participant observed: *"I think part of the problems we have these days with companies is they have burned all*

their capital, all their goodwill, so we are incredibly suspicious of them [. . .] And transparency on its own won't solve that because all it does is it pushes the trust back one level."

Another participant added: *"I think [the information glut is] kind of a useful dissembling tool to provide more and more information to hide the truth behind other things."* This comment highlights transparency abuse, or information spin, as a problem. Another participant noted that she found the assumed correlation between information and knowledge to be problematic. She said: *"I think there's a problem between data information and knowledge [. . .] because of the computer, the rise of computation in computers and data crunching and machine learning. There is this idea that somehow the more data points you have the more knowledge you have, and they're not necessarily related."*

5.2 Solution brainstorming

Having articulated what they thought were the limits of transparency, participants were prompted to brainstorm solutions for the transparency problems they identified. Here, a broad range of solutions were shared and weighed out.

> **a. Tech solutions and information literacy.** To promote individual agency and build trust, a participant suggested: *"what we need is a broader framework where businesses are known to behave ethically, and therefore you can trust the things they tell you without necessarily having to validate every step of the way."* The same participant also proposed the concepts of *"data stewardship, personal data stores, and data trust"* as technical solutions to give individual users greater control over their personal data, which other participants also agreed were important. In proposing these concepts, however, this participant also gave the caveat that technical solutions would not work on their own and that their intended outcome *"relies on people being sufficiently aware of the systems within which their data is embedded to actually care, and to care before the consequences become apparent."*
>
> **b. Business strategy.** To implement accountability, a participant shared with the group an approach that he used in his work. He said: *"For some time we've been thinking about this in terms of how can we help businesses to be more responsible and to make that demonstrable and assuage some of the fears that people have because they've been bombarded with the glossy CSR reporting for so many years."* He also added that the answer to achieving transparency and accountability was to be realistic about what businesses could actually do to address the issues they chose to engage with. In this way, information about business activities, for example in corporate social responsibility (CSR) work, was not just spin to serve a PR purpose.
>
> **c. Regulation.** One participant highlighted a problematic relationship between transparency and trust: *"If you remember all the whitewashing stuff from, you know, Nike commissioning factory inspections, and nobody believed the factory inspections because they don't trust the people who are paid by Nike to inspect the factories. So again, how do you set a framework within which you can reasonably trust the people who are telling you things?"* Another participant responded: *"I think what would help if there is more government regulations, because I think the whole thing, the example of the food labels in the future being the same as tobacco labels, I think that would be a step forward."* This participant also acknowledged that one of the limits of regulations could also be *"trust"* in the government. Even so, he felt that *"you can do something about your government in a way that you can't do something about the businesses that provide you things."* This comment implies that this participant has more faith in his ability to effect change through a political process than through his engagement with businesses as a consumer. Similarly, another participant suggested using *"antitrust"* law, explaining that: *"Classic antitrust law holds that the owner of the content and the owner of the pipes over which that content moves should not be the same business because it gives the owner of the pipes has too much leverage over how the competitors operate".*

5.3 Post-workshop survey and vox-pop interviews

We administered a post-workshop survey and carried out several vox-pop interviews immediately after the off-LARP deliberative session. Having participated in the workshop, 10 out of 20 participants reported some increase in their sense of efficacy; i.e., their perceived ability to effect positive change in businesses' information practices. As compared to the pre-workshop survey, these participants changed from having "no say at all" on the information practices of businesses to having "very little say", or from having "very little say" to having "some say". Seven of the participants also reported an increased sense of agency, changing their answer from "not knowing whether it is humanly practical" for them to "have a say on the type and amount of data companies have on [them]" in the pre-workshop survey to realising that they "can have a say and would like to be involved in the design and development processes of the information systems and policies so that [their] data management principles are respected by design".

In our more in-depth vox-pop interviews, the participant who played Rural Rain in the second workshop stated: *"I find it really illuminating that Iwas playing an older person aged 75 [. . .] I just thought that was such a brilliant way to work with transparency, by really imaginatively stretching it. Like we have some really interesting examples in other countries where pay is transparent, and it does cause those actually really uncomfortable conversations".* Another participant, who played Vegan Xen in the first workshop, reported having realised that a character and also a person in real life *"have got certain elements to social capital"* that would place this person above someone else in a social setting and that would *"not be a comfortable thing to be faced with"*. This participant also reported that LARP and deliberation *"forced"* him to *"think about data in ways that [he hasn't] done"* in that the method *"engaged"* him more with the subject and research. He added that the method promoted him to think about how others view data and information visibility because: *"I think when you've got this, a vague idea of something, you don't really engage with how other people might have a vague idea of it as well."* The participant who played Deli Danny in the second workshop reported that wearing this character forced him to see things through other people's perspectives given different demographic and work-life circumstances, *"imagining"* how his character would feel like *"given [the character's] descriptions."* He also noted that he learned from participating in the workshop that *"emotions"* form part of human experience with data and transparency, so data protection and security should take into consideration the emotional element of human experience.

Despite these positive outcomes, in the post-workshop survey, only 3 out of 20 participants reported having changed their mind about how they use information in their purchasing decisions, and their perception of information asymmetry, while 4 out of 20 reported changing their mind about their information sharing preferences. The changes that were reported, however, suggested a decrease in impulsive purchases and an increase in the level of conscientiousness in their purchasing decision, as well as a realisation from participants of the limits of their own information processing ability. This change resonates with a common problem about information overload raised by consumer characters in the LARP, as discussed earlier. Of the four participants who reported changing their mind about their information sharing preference, their reported changes reflected a shift towards either a tighter control over their personal data or a data trading model. This change was anticipated as a consequence of running the workshop with relatively tech-literate and privacy-conscious participants.

6 DISCUSSION AND DESIGN CONSIDERATIONS

6.1 The potential of the fusion of LARP and deliberation

The comparison participants made between their LARP and daily life experience, what they saw as the limits of transparency, and their proposed solutions highlight the potential of the combination of LARP and deliberation in

problematising the use of technology to solve human problems, such as transparency and accountability. In participants' own words: *"by using improvisation and creative relational engagements, we actually learnt something in those relational connections that was much more than I would have learnt by just using my own head and experience to come at these issues today."* LARP offered participants a playground to explore the consequences of one approach to transparency, as well as various alternatives. The functional and emotional dimensions of human experience co-created through the LARP provided inputs for participants to critique and envision measures to make transparency practices better aligned with their values, preferences, and requirements in the deliberative process. In this way, deliberation complements the functional and emotional aspects of human experience, co-created in the LARP, with a rational dimension. This open, reflective exchange of deliberation unlocked a *"collective intelligence"*, as one participant called it. Based on this collective intelligence, we argue that careful consideration of social context of use is required in designing transparency-enabling technologies to ensure meaningful benefits to people (users) and minimise the risks of misuse or abuse.

6.2   Design considerations

The reactions of participants' characters to the type, volume and consequences of information made visible by information technologies recorded in our findings (see section 5) highlight that people's expectations of transparency - information visibility - vary depending on the contexts of use and people's personal circumstances. The off-LARP deliberation further revealed participants' consensus that technology solutions alone are insufficient to deliver on their transparency expectation which were:

- The ability to dynamically manage and negotiate with various stakeholders the types and volume of information made visible, depending on contexts of use;
- Accountable and responsible data practices as well as general business practices; and
- The ability to trust the human and technology agents that they interact with daily.

As noted by participants who played Rural Rain in both workshops, fulfilling them requires information as well as technology literacy and regulation, so that people, as consumers and citizens, can exercise their rights when utilising technology. Our analysis of the reactions of participants' characters to the transparency consequences revealed in the year 2030 scenarios and their off-LARP deliberation surfaced five design considerations to increase the potential of information technology in realising people's transparency expectations.

Complexity of information-based decision making and context of use. The narratives about transparency in the context of food and fashion labelling, as a form of business transparency practice and consumers' purchasing decision, highlight complexity in both information provision and consumption. Such complexity resembles the existing social and economic factors that shape both businesses and consumers' information practices and implies that information consumption and provision are very contextual. Compared to the conversation in the food and fashion group, participants' characters in the finance group appeared more invested in information about their financial products and services, and transparency here was deemed more obligatory. This expectation, if unmet or mishandled, affected not only the trust in the information provided, but also consumers' trust in the business that provides the service. These differences in consumer expectations across food, fashion, and finance suggest that context is a crucial determining factor for which technologies aiming to provide transparency should take into account.

Cost barrier to technology-enabled transparency benefits. Conversations about competing priorities across all the groups led to discussions around the added costs to businesses, both financial and in terms of reputation, of making information

publicly visible. These include not only the cost of any necessary technology, but also—and more importantly—the cost of making the whole production process presentable as well as sustainable. Likewise, the consumer characters paid for increased information visibility through their time and higher prices. These added costs for both businesses and consumers point to the real-world issue of resources acting as a barrier for less affluent businesses to harness the benefits of information visibility that technology can provide. This barrier means that the potential benefits of transparency are not equally accessible across all socio-economic sectors.

Transparency and privacy trade-offs. Participants' in-character sharing of the consequences of their choices in 2030 revealed an underdiscussed dimension—emotional consequence—of the tension between transparency and privacy in the academic literature concerning transparency and DLTs. However, social anxiety as an emotional consequence of our data-intensive culture is very well documented in other research about Internet use and social media impact [15, 23, 69], as are the privacy challenges for information-based technologies such as DLTs [1, 54]. In the LARP, for example, the business decision to make worker welfare available had the unintended consequence of violating the workers' privacy. Although there are technical solutions for achieving privacy in DLTs [74], these solutions can undermine the visibility of information that should be made public for audit, particularly in the financial context [1]. Thus, a careful trade-off between transparency and privacy is required in relation to the intended context of use.

The limits of transparency. The limits of transparency to promote individuals' agency manifests in two ways: the ability of an individual to control information about themselves, and to affect changes in the practices of others. The characters' experience sharing across our three contexts of use demonstrates that neither consumers nor businesses had full control over information about themselves. This is a real-world problem for individuals and businesses, who often struggle to exercise control over information related to them in their engagement with increasingly complex technology systems [21]. The limited ability to use information to better inform decisions, as reported in the characters' experience sharing, also resembles the real-world limits of using transparency to promote agency, as in the case of informed consent [17, 18, 39]. Ultimately, information-based technologies can address only part of this problem by designing more user-friendly control features to support users' exercise of their agency over their personal data.

Transparency abuse. Based on the narratives around consumer and business dilemmas, the potential to make more information visible does not necessarily make the human activities recorded true or ethical. Neither does information visibility directly translate into trust, as some DLT advocates assume [19, 26]. Indeed, the use of transparency to create a particular image and build a reputation, as recorded in the characters' reflection on their decisions and practices in the past, reflects parallel practices around information spin in various contexts, including politics and business management. In politics, such information practices are observed in the public relation strategies deployed to shape public opinion as well as decisions in democratic processes [12]. In business and business management, such information spin is observed in the use of facts to shape consumers' value perception [51]. These real-world examples demonstrate that information visibility can be manipulated to produce a perception that generates a particular value, including trust. Thus, information visibility and information-based technologies, such as DLTs, do not on their own guard against the abuse or manipulation of information about activities that are meant to build trust.

7   CONCLUSION

This paper demonstrates how our LARP-inspired deliberative approach successfully engages the public in critically assessing transparency practices to derive insights into people's transparency expectations in daily social contexts: food,

fashion, and finance. We contribute this playful and reflective approach to the design and development of transparency-enabling mechanisms. While transparency, as an operational principle, and its enabling technologies promise great potentials to address human challenges, such as trust and accountability, it is also important to understand how people make sense and make use of information made visible to them (transparency). Our approach reveals that people expect varying degrees of transparency, depending on the contexts of their exchanges and their personal circumstances. For example, people expected granular details about financial institutions' operations but less so when it came to clothes manufacturing. The application of our approach also shows that transparency alone does not directly translate into an increased sense or exercise of agency. Such perception and action depend on the efficacy of other social, economic, and political mechanisms available to individuals and on the individuals' abilities to harness these mechanisms to decide where to place their trust or hold parties accountable. We argue that these insights can be capitalised in design and development of transparency-enabling technologies to derive meaningful outcomes for users.

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