# HCI as a Means to Prosociality in the Economy

**John Harvey***
*Horizon Digital Economy Hub
University of Nottingham
psxjh2@nottingham.ac.uk

**David Golightly***
dave.golightly@nottingham.ac.uk

**Andrew Smith**
Business School
University of Nottingham
Andrew.p.smith@nottingham.ac.uk

**ABSTRACT**
HCI research often involves intervening in the economic lives of people, but researchers only rarely give explicit consideration to what actually constitutes prosociality in the economy. Much has been said previously regarding sustainability but this has largely focused on environmental rather than interpersonal relations. This paper provides an analysis of how prosocial HCI has been discussed and continues to be defined as a research field. Based on a corpus of published works, we describe a variety of genres of work relating to prosocial HCI. Key intellectual differences are explored, including the epistemological and ethical positions involved in designing for prosocial outcomes as well as how HCI researchers posit economic decision-making. Finally, emerging issues and opportunities for further debate and collaboration are discussed in turn.

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**INTRODUCTION**
Since the financial crash of 2008 there has been a spate of attempts to reassess what really matters in our economic lives. People, organisations, money, and technology have all been scrutinised in the hope that a fair, healthy, and universally democratic economy could be described, prophesized or even enacted. In the wake of capitalist profligacy politicians and decision-makers alike spoke of the need for change to create a new, humane and needs-oriented economy. For many academics (e.g. [5]) HCI is seen as an interventionary discipline and that its purpose is not to describe or interpret the world, but to actually change it. With this in mind it is worth asking how the HCI community perceives the economy and what is considered to be prosocial when it comes to economic relations. Numerous reviews (e.g. [25], [10], [4]) have examined the role that HCI plays in the sustainability of our economic lives but they have tended to focus on environmental aspects rather than prosociality. Dourish [28] and Brynjarsdóttir *et al* [13] both present a critique of the sustainability debate and call for a step-back to better understand the social processes that allow for the emergence of such discourse. This is an opportune moment to take stock of current research agendas and understand the whole gamut of perspectives on prosocial economic relations within the HCI community. How do researchers see economic transactions as good, fair, or moral, and what role should interaction design play in facilitating such behaviour?


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**THE GOOD, THE BAD AND THE ECONOMY**
Whether as an investment in meaningful causes or as charitable donation money can provide the necessary impetus for social change, but the vast majority of monetary exchange in the economy is dominated by *quid pro quo* transactions. Some anthropologists and economists contend that these transactions are based on the possibility of 'alienability', or in other words, money often helps to remove the sense of moral obligation between people involved in transactions by quantifying value and creating equivalence which can then subsequently be bartered [45]. When people mention the word 'economy' what frequently comes to mind are notions of national finance, debt, gross domestic product, interest rates, inflation, wage labour and other calculative dimensions of the choices we make individually and collectively. But this of course represents only part of our economic lives. The media may present a dominant discourse of the formal *market* economy, but the *informal* economy represents just as significant an amount of time, effort and interpersonal meaning. When we give, share, lend, borrow, take, or even steal, we often do so in the absence of calculative reason: the *quid pro quo* which typifies normal day-to-day transactions is in many cases absent. Together, these activities constitute the *informal economy*. The informal economy has received a wealth of academic attention over the past few decades largely due to the influence of anthropologists such as Geertz [37] and Hart [46]. The Internet has also helped to create new means of economic transfer for both sides of the economy. As various forms of consumption have become dematerialised and digitised the Internet has created new opportunities for both the formal and informal economy to be mediated by human-computer interaction. With much of our economic lives now becoming increasingly digitally-mediated there are also opportunities to address questions about what a moral economy is and should be. An analysis of prosociality in the economy inevitably involves questions of property, access, ownership, distribution, redistribution, and welfare. In this paper prosociality is defined as a 'voluntary intentional behavior that results in benefits for

another' [29]. The word 'benefits' is left open for interpretation by the designer or practitioner to help illustrate the varied and often conflicting perspectives held. The purpose of this literature review is to explore the field of human-computer interaction and specifically what has been recognised as constituting pro-social behaviour in the economy. Unlike other papers that have attempted to map out a vision of what prosocial HCI should look like, this paper attempts to empirically identify how prosocial, HCI-led intervention in the economy is already conceived and enacted. It is hoped that by examining the epistemological and ethical basis of previous research it will be possible to expose the underlying intellectual commitments of HCI researchers and stir further debate. The following section begins with a consideration of methodology. Emerging genres in the field are then discussed in turn before further analysis is given to some of the key intellectual differences which separate researchers. Consideration is then given to emerging issues, before finally gaps in the field and potential for further research is discussed.

## METHODOLOGY

The method described henceforth was influenced and heavily indebted to the exemplary review into Sustainable HCI conducted by DiSalvo *et al* (2010) [25] and the previous research [26, 41] which inspired their approach to reviewing and framing research questions. However, the focus in this review is shifted towards interpersonal rather than environmental relations. Of crucial importance is how the HCI community conceptualises prosociality and the scope of human agency within the economy. The review process began by constructing a relevant corpus of papers from which specific examples could then be selected. The search term "Prosocial HCI" was used in the ACM Guide to Computing Literature with all results noted and added to the corpus. Any papers that were cited in each corpus paper were then also examined to see if they fit within the original scope and were added where suitable. The criteria for determining suitability were twofold. Firstly, it was asked whether each work had an explicit goal which was related to prosocial economic relations. Various papers were related to prosociality through means such as environmental sustainability or health interventions, studies were only included wherever prosociality was explicitly targeted as an outcome of the design mechanisms mentioned. This was necessary to differentiate from previous work examining sustainable HCI which was not markedly prosocial. Secondly, it was asked whether the works were intended for a HCI community audience. This ensured that papers that discussed HCI or IT but were focused on other disciplines such as experimental economics were also excluded. The corpus was then split into two subsets: (1) 28 Programmatic statements (including panel discussion and workshop abstracts) and previous analyses of prosocial HCI; and (2) 63 Peer-reviewed journal and conference papers, notes or works in progress. These form the basis of the analysis. From the programmatic statements and analyses we developed a series of questions to ask of each paper based on the varying perspectives held. These questions included: (1) How does the paper define prosociality? (2) What disciplinary orientation is used? (3) How are positive economic outcomes or 'benefits' defined and justified? (4) What epistemological and ontological presuppositions are countenanced in the study of economic relations? (5) How is the role of the researcher framed? (6) Who is considered the expert and whose point of view is questionable? (7) Who takes action, or is supposed to take action? (8) How do the authors deal with political disagreements about prosociality? (9) What constitutes success and who are the beneficiaries?

Individual summaries were written for each paper. The series of questions were answered for each paper and then coded into a spreadsheet. These results provided the basis for examining the corpus across three forms of analysis: (1) *Genres* were identified which demonstrated clustered formulations of problems and/or challenges that could be addressed through considered interaction design. (2) Key intellectual differences apparent in the same and contrasting genres were identified. (3) Issues that emerged from the analysis which indicate worthiness of further inquiry as well as opportunities for future interdisciplinary research and collaboration.

## GENRES

The genres identified within the review are formed from clusters of research which posit problems of unsociability or undersirable economic behaviour in similar ways. They share many similar original sources and citations and consequently have a large overlap in scope. Given the recent emergence of much of the work some of the genres might best be thought of as movements as the sections may otherwise give a sense of misplaced concreteness. Much of the work in this area is at an early stage; the aim is therefore not to provide a comprehensive 'map' of prosocial HCI, but rather to offer a lens through which some of the key epistemological debates can be seen. To that end, while we borrow from DiSalvo *et al's* methodology, our usage has a slightly different aim. There is some discussion given to newer and less commonly described emerging genres, but there is nonetheless a familiar core to most. As much of the work discussed is interdisciplinary in nature there are instances where papers could be argued to coincide with multiple genres; this serves to illustrate the remarkable heterogeneity of approaches and philosophies brought to bear on the riddle of prosociality in the economy. These genres are now discussed in turn:

### Persuasive Technology

Following Fogg's [33] seminal early work on persuasive technology there has been an explosion of subsequent studies seeking to investigate the prosocial value that HCI can help create. As previously described much of this work focuses on encouraging environmental sustainability or persuading people to make decisions towards better health, however there is increasing recognition also being given to the role

that HCI can play in generating prosociality. IJsselsteijn *et al* [53] note that *"Persuasive technologies apply principles of social psychology in influencing people; principles of credibility, trust, reciprocity, authority and the like."* Factors such as reciprocity and trust play a huge part in the formation and maintenance of all economies. HCI is seen by many of as way of influencing the antecedents of such prosocial relations. In a recent CHI panel Revelle *et al* [79] bemoaned the fact that children are increasingly engaging with social media but few are designed with the intent to actually promote prosociality. They contended that technology should be designed with the intent of explicitly increasing children's awareness of the lives and needs of others to promote caring about the welfare of others. This pedagogical theme is prevalent in much of the other work in this genre, particularly in the context of deterring or dissuading unsociable behaviour from the 'users' of the HCI. Examples of work in this genre include experimental priming to elicit and therefore understand the causes of unsociable behaviour [108] experimentation into framing effects to help nudge people away from privacy- invasive mobile apps [19]; and approaches drawing from behavioural economics in order to persuade. Lee *et al* [63], for instance, base their approach on designing the presentation and timing of choices to encourage people to make socially beneficial decisions. Other work in this area examines the emotional basis of persuasion, studies have focused on creating trust between strangers [99]; rebuilding trust after breakdown in interpersonal relations [98]; and the role that guilt and shame can play in eliminating unsociable online interactions [97]. Using technology to expose power imbalances and inequality can also be a practical way of deterring unsociable behaviour from other designers. Unsociable aspects of interaction can be implicit in the structure of HCI. Consider for example the work conducted by Irani and Silberman [54] which examined and through design helped to reveal invisible labour in Amazon Mechanical Turk. In the absence of unionization workers are paid below minimum wage in many cases, lack solidarity and can remain socially isolated. The lack of research discourse also meant little pressure was exerted on employers, so technology probes provide a much needed fresh perspective. This method of 'experience prototyping' [14] clearly resonates with calls for empathic approaches to HCI which give designers insight into what it feels like to be a user [102] and represents an opportunity for HCI research to wade further into the welfare debate.

### Domestic Computing

Following Bell *et al* [8, 9] numerous HCI researchers have examined domestic life and the role that HCI plays in it. A key debate has emerged from research into feminism and HCI which draws upon a body of work in feminist economics, anthropology, and critical theory [6, 82, and 71]. Here the central critique of the domestic environment illustrates how economic life is reliant upon the home. These authors have been critical of simplistic interpretations of the relationship of interaction design to the economy based on a critique of gender, ideology, and instrumental reason. Assigned roles associated with unpaid domestic labour are called into question, as are the supporting assemblages of technologies which uphold unpaid production and consumption [92]. Forlizzi and Disalvo [34] provide an interesting case study for the disruptive influence of HCI by examining the use of service robots in the domestic environment. They note that a social consequence of their intervention was that engagement did not correlate with gender. This may of course have to do with simple novelty but it nonetheless offers a valuable insight into the possible role of redistributive labour that HCI may offer. Alternatively, Erete [30] examines responses to interfaces that are designed to protect the home from potential burglars and suggests that intervention may actually result in the requirement of new human-human relationships to support the efficacy of the technology.

There is clearly a delicate balance to be managed when introducing HCI into spheres of economic life which previously existed without computers. Existing social roles may be created, eliminated, or indeed supported as has been demonstrated by a number of studies examining ways to help improve familial relationships of people working in different locations. In these cases considered interaction design is used to facilitate a greater sense of place and familiarity of the participants, many of whom are international economic migrants [105, 100] or work long hours away from home [107, 56]. Underpinning most of these cases is a focus on 'transnational practices', or in other words, the benefits that can come from imagining technology use beyond a single country or culture [100].

### Prosocial interaction design

The goal of prosocial interaction design is to imagine and enact alternative socio-political futures. Exemplary work in this field attempts to understand and then economically enable the disenfranchised of society through informed design. Giving and sharing as a means of political and economic transformation or subversion has long been recognised in the anthropological literature [69] and is prevalent in prosocial interaction design in a variety of forms. Ledantec [62] has argued that despite the rich and numerous studies of technology deployment in developing countries, research aimed at marginalized populations within Western society has only recently begun to gain momentum. There is a growing core of research [60, 61, and 80] which examines the economic lives of homeless people and provides interventionist support through access to technology. The research argues that despite the pervasiveness of new mobile technology there remain many vulnerable people who do not have access but would benefit from the increased socialisation that it can bring. It is argued that the intervention at a social level can bring subsequent improvements to the economic lives of the homeless by creating a greater opportunity to find provisions [103, 104].

Similarly, location-based information systems have also been examined as a means of enabling food assistance schemes and food banks [27].

There is a wealth of research into welfare provisioning within the prosocial interaction design genre but there are also researchers working towards proactive means of intervention. This spans from activism, by trying to increase charitable donations online [39] through to post-hoc analysis of charitable giving online after natural disasters as a means of preparing for the future [94]. There has also been recent consideration given to the emerging form of unpaid labour called digital volunteerism in response to natural disasters [89, 90]. A central theme in this genre is compassion in times of austerity and hardship.

#### Cooperative Work & Collaborative Consumption

There is a long history of research into computer-supported cooperative *work* (CSCW) [81] but increasingly there is a now also a focus on *consumption*. Botsman & Rogers [12] described this field as 'collaborative consumption' and it has come to mean almost any form of consumption in which more than one person uses the internet to gain negotiated access to a physical or digital resource. This includes paid access to a resource, but many papers in this genre examine subcultures which entirely eschew monetary transactions. The process privileges access over ownership, celebrating the shared experiential benefits of consumption and consequently results in resources being reused. Various works [51, 15, and 43] have highlighted that in many cases resources are appropriated and reappropriated not merely for the potential sustainability benefits that reuse may bring, but rather for the opportunity to have positive and meaningful social interactions. In the context of digital resources various studies have examined cooperative work for pointedly prosocial aims which rely on open data [3, 67, and 65]. Here the focus has been on how to improve and measure knowledge contributions for the greater good to shared common pool resources online such as Wikipedia. Ramchurn *et al* [77] have also examined cooperative work in relation to public resource contribution with a focus on crowdsourced geographic information for the emergency services. They note in the paper that purely social motives are not good enough to attract a large number of contributors so recommend a combination of incentives to ensure maximum participation. This conclusion is shared by other designers in the field who have turned to introducing elements of game design into non-game environments [24]. Examples of this type of approach include: Motivating in order to improve contribution to online community resources [78]; Gamifying as a means of enriching the quality of work for elderly or impaired persons in production [59]; and as a means of making mundane production tasks more enjoyable [32].

Cooperative production and consumption of physical items has also garnered attention from the HCI community too. Here the economic prosocial aims vary widely. Examples of studies include: reusing old 8-bit computers as a means of creating exciting family entertainment and social bonding [66]; buying second hand PDAs for the sense of shared nostalgia and the social hobby of collecting [52]; sharing available mobile phone signal connectivity as a means of negotiating tension and resolving value conflicts in India [85]; and implementing crank-based mobile phone charging systems in Kenya that allow communities to work and consume together without the need for financial trade [106]. The scope for digitally-mediated consumption has grown enormously as internet usage rates have increased. Harvey *et al.* [47] have called for a reexamination of how interaction designers consider shared consumption as it occurs both online and offline through HCI rather than through the oversimplified constraint definitions of time and place in CSCW.

#### HCI4D (HCI for Development)

*"The term HCI4D, indicates a subfield of ICT4D that focuses on understanding how people and computers interact in developing regions, and on designing systems and products specifically for these contexts"* [50]. Various authors [58, 86, and 96] note that the growing field of developmental studies is concerned with a variety of issues of which economic development is merely one. Others focus on people's livelihoods, personal freedoms, or improving health and learning. That said there remains a large portion of the HCI4D literature which is dedicated to economic development. A central theme in these papers aligns well with the economist Schumacher's [87] call for creating appropriate technology to suit local conditions. A variety of prosocial economic motivations feature in this genre such as the desire to enable susbsistence, increase worker mobility, develop access to markets, and empower marginalised or victimised groups to participate in more varied forms of economic exchange. Examples of HCI intervention in this genre often focus on women, examples include: Designing technologies to empower women economically in developing countries [88]; Helping to protect female sex workers through broadcasting [84]; Developing inexpensive devices for women to contribute commentary to community radio programs [91]. Other examples focus on using HCI projects to create greater economic mobility for local people either through improved transportation [1], infrastructure [17, 72], ICTs [31] or creating novel interfaces for illiterate people that want to participate in the formal economy [68, 40].

#### Limitations to genre analysis

The genres described provide a clustered basis for subsequent researchers to continue the debate about directions in the field of prosocial design within the economy. The review is not claimed to be entirely fixed nor will it remain final. Some papers that were reviewed did not fit clearly within the established genres but lacked similar examples such that they could be compared to give a lengthy analysis.

### KEY INTELLECTUAL DIFFERENCES

The following section presents an outline of some of the fundamentally different epistemological and ethical perspectives taken by researchers within the HCI community.

Many of the perspectives identified remain unarticulated or tacit within the original papers, but draw from research lineages with clearly identified theoretical positions in regards of human action. Some of the differences identified occur in the same genres as well as between genres. The purpose of the subsequent discussion is not to doggedly side with either of the many positions elaborated hereafter. The aim is to tease out the most significant conflicts present within the corpus and direct further attention to the disagreements as a subject of further meaningful inquiry.

#### Formalism VS Substantivism

There is a fundamental conflict which persists in much of the published HCI research that echoes previous thought in the social sciences. This is a rerun of the formalism versus substantivism debate between economics and anthropology, which itself emerged from the debates in 19th century Germany often referred to as the 'methodenstreit'[44]. The economy is conceived in at least two markedly different ways. One is systemic, comprising of the production, distribution and consumption of both material and non-material goods in society. This is the Substantivist view and can be tracked backwards to Karl Polanyi [74] in particular. The other perspective is actor-centered and privileges human agency above all else as the way that actors use their available means to maximize value. This view of economic behaviour is defined here as Formalism and is normally associated with neo-classical economists. The question to ask of interaction designers is whether they are trying to intervene at an individual or a collective level: are they designing for the rational 'homo economicus', designing for 'homo sociologicus' which views society through the organism metaphor, or somewhere in-between.

Boehner *et al.* [11] offer perhaps the most valuable critique in terms of relating these perspectives on the economy to interaction designers. They argue that HCI's intellectual roots derive from a philosophy of cognitivism, which posits that the mind can not only be understood it can also be modeled in computational terms. Over time various other approaches have emerged which challenge the model of human cognition as a singularly individual phenomenon and argue in favour instead for cognition as something social, cultural and embedded in our everyday practices. Arguably though, this turn towards more affective forms of cognition has been reliant on the same informational-processing model that cognitivism relies upon. Boehner *et al.* [11] draw on substantivist anthropological theory [36] to advocate an extended version of affective computing and posit emotion as a social and cultural product experienced through interactions. This is in opposition to the stance (E.g. Norman [70]) that views emotion, like cognition, as being an internal, thoroughly individual, phenomenon. Here affect is viewed as dynamic, culturally mediated, and socially constructed. It is different to the informational model of cognition insofar as it supports a different quality of communication: *"complex, ambiguous, malleable, and non-formalizable"*. Starbird [89] analyses distributed cognition in order to demonstrate how digital volunteers, through activities such as relaying, amplifying, verifying, and structuring information, function as a collectively intelligent cognitive system in the wake of disaster events.

These presuppositions of cognition can also form the base for views of economic morality. At one end of the political side is the call for economic equity (e.g. Fuchs & Obrist, [35]) where the view is that wealth is for all, living standards should be guaranteed, nobody should live in poverty, and the income gap should be reduced. At the opposite end is one of staunch individualism which views society, and indeed macro-economics, as a mere aggregation of individual actions.

#### Enabling the individual VS Nudging the individual

HCI researchers are becoming increasingly engaged with behavioural change theories from across the social sciences. Hekler *et al* [49] report that in their review of the last 10 years of CHI proceedings in the ACM Digital Library they found 136 papers that mentioned "behavior change" with 76% of these from the last four years. After considering the nature of human agency and change the philosopher Alan Watts once posed the question 'Do you do it or does it do you?' In the context of HCI it is clear that design as a prosocial intervention is seen differently depending on *what* or *who* is perceived as the doer. Behavioural economists regularly speak of bounded rationality and ways in which people can be 'nudged' to make prosocial choices [93, 57]. Given the wide varieties of interfaces now available designers are in an opportune position to present timely information and experiment with cues to try and influence and willfully change behaviour [22]. By framing information in a particular way designers can use heuristics to lead users through a sequence of interactions [63, 21, and 19]. Here then prosociality is determined by the designer and not necessarily the user. This 'we know what is best for you' approach has been referred to as libertarian paternalism [93]. As a top-down approach it raises the potential for ethical conundrums when the behaviour it tries to encourage is decidedly prosocial and therefore interpersonal rather than focusing strictly on preventing individuals from harm. Advocates of socially persuasive interfaces have previously stressed the *voluntary* nature of the persuasion techniques (e.g. Tscheligi & Reitberger, [95]); however this ethic is not evidenced by all HCI researchers in the area. Purpura *et al* [75] have gone further by drawing attention to whether it is even possible to avoid coercion within persuasion as the interventionist's aim is always seen as enforcing sublimated social goals. This debate carries the same hallmarks as the debate over the psychological possibility of altruism which has persisted for decades, perhaps most notably between Cialdini [20] and Batson [7]. Here the argument is between seeing altruism as an egoistic motivational state with an ultimate goal of increasing one's own welfare, or alternatively as an empathic motivational state concerned

with increasing another's welfare. Whether designers clearly articulate their position or not this fundamental epistemic question often divides, and is likely to influence whether HCI as an interventionist means is thought as cooperative or coercive. In direct opposition to the ideology of manipulating users through interaction participatory design studies have introduced technologies on a supporting or pedagogical basis. Various works [48, 18] have highlighted that participatory approaches can be described across a graduated hierarchy from dictatorial in their approach through to more egalitarian 'bottom-up' design. The reality of any intervention is that it is likely to involve cooperation *and* coercion, but what is important to any serious assessment is who is defined as the outsider and who is defined as the 'local'. This emic and etic tension, as anthropologists refer to it, represents the main ethical challenge for designers who specifically intervene to 'develop'. Cruikshank [23] reminds us that citizens are not simply participants in politics; they are also an effect and an instrument of political power. Thus the participatory ideal - that of empowerment – must be reflexive enough to avoid mimicking the very forms of governance that it may seek to resist.

### Globalised computing VS Postcolonial computing

As mentioned earlier many academics [5] see HCI as an interventionary measure and that its purpose is not to describe or interpret the world, but to actually change it. This drive toward change inevitably raises questions of legitimacy and power. Irani *et al* [55] coined the phrase 'Postcolonial computing' in opposition to certain elements of 'HCI4D' (HCI for Development). Gitau *et al* [38] have also sought to address the problem of stories of HCI4D research being told solely from the perspective of Western academics. Their findings have suggested emerging areas of concern to African researchers and illustrate their almost negligible representation in formal academic publications. The majority of publications which describe the democratization process are of course from mainly western sources, indeed as others [101, 76] have noted "To develop" seems congruent with fostering capitalism and democracy. Despite the altruistic and interpersonal benefits brought about by introducing technology such as mobile telephony there will also be ancillary benefits for corporations and stakeholders that place devices in the hands of as many potential consumers as possible. It would be foolish, however, to suppose that the exploitative consequences of interaction design will be limited to developing countries. Irani and Silberman's previously mentioned work [54] demonstrates how the shadow of economic benefits that technology can bring often obscures the alienating social conditions which support it. While the postcolonialists raise important issues and equally suggest innovative new methods of inquiry it is worthwhile to be wary of work that steers too close to extreme cultural relativism. As Phillip et al [73] note Postcolonial Computing is not concerned with a theory of ends based on oversimplified structuralist binaries; it is a means of examining how cultural contexts shape the design and use of technology, as well as how technology and design function as a site of cultural encounter. Anokwa *et al.* [2] recognise many of the potential challenges and ethical conflicts involved in HCI4D and suggest ways in which researchers can attempt to avoid the potential pitfalls. They suggest that researchers should try to manage the expectations of the beneficiaries of the technology rather than over-promising the project stakeholders. They also suggest that developing content is crucial to success; technology should be seen as a conduit or a means to an end rather than an end in itself. Finally they advocate planning for adoption, ownership, and long-term use of the proposed solution to ensure that the technology addresses the development goals for which it is designed. What is needed is an expansion of CSCW & HCI's focus on socio-technical systems by taking seriously socio-political and socio-economic processes respectively.

## EMERGING ISSUES AND OPPORTUNITIES FOR FURTHER RESEARCH

What are surprising about the results of the review are not the fundamentally different epistemic perspectives exhibited which often derive from positivist or phenomenological traditions, but the dearth of middle-ground approaches that have actively pursued the study of prosociality in the economy. For instance, there were no papers found from an avowedly critical realist perspective i.e. one which analytically separates social structure from individual agency so that the interplay can be investigated. Further examination of the ontological basis of agency and structure could help HCI researchers to deviate from the entirely deductivist methodologies which merely demonstrate an uncritical enthusiasm for formalism. There is not much explicit work representing significant high level alternative political ideas such as Communism, Marxism, or Anarchism as a means to prosociality although it is encouraging to see recent work addressing the potential role of HCI in economic activism [16, 83]. The central contribution of this research paper is to help draw attention to the way in which HCI research is shaped – often invisibly and unconsciously – by very specific ideas about economic life. There is substantial disagreement regarding these ideas within the HCI community and despite often remaining unarticulated they have significant practical implications for interaction designers, policymakers and users alike. In this postcolonial age of computing the most pressing issue is how HCI researchers will now conceive human agency and social structure. The authors of this paper would advocate increased attention to be given critical realist approaches, indeed there is already some formative work to suggest this approach could be fruitful for the HCI community. Drawing from Graeber's [42] historically grounded anthropological theory of value Lindtner *et al.* [64] advocate a study of values as expressed and evolving through interaction rather than seeing them inscribed into technology. Here they see value *"as the way that actions become meaningful to the actor through incorporation into some larger, social whole, real or*

*imagined."* This position accords with Fuchs and Obrist's [35] call for a universal design principle of HCI to be aimed at creating freedom: As an emancipatory force focused on human flourishing rather than a dogmatic means of pursuing unreflexive economic policies.

## CONCLUSION

The aim of this paper has been to expand the agenda for critique outwards from a single narrow focus on particular interaction designs to the state of the field overall. HCI research draws from a rich plethora of disciplinary influences in the pursuit of prosocial design, so it is essential that the emerging epistemic debates and ethical quandaries that precede economic intervention are given due consideration. There has been a preoccupation within the HCI community to examine the environmental sustainability of economic provisioning without necessarily critiquing the social conditions under which such an analysis could take place. This paper has categorised emerging genres that relate to prosocial design within the economy as well as provide analysis on some of the key intellectual differences which separate work within the discipline. Emerging issues have also been identified which raise interesting possibilities for further interdisciplinary collaboration. At a time when politicians across Europe and North America are receiving criticism for the uniformity of neo-liberal economic policy which has set in on both left and right, there is an urgent need to reinvigorate ideological debate with big idea politics. HCI researchers are in a novel position to positively intervene in a bid to create a stronger, fairer economy in which humanity can flourish.

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