



**CIRN Commons**  
Community Informatics Research Network



(image credit: Mass Observation Archives, UK)

## **17th CIRN Conference 2019**

**Whose Agenda: Action, Research, & Politics**

**Wednesday, 6 Nov - Friday, 8 Nov 2019**

**Monash University | Prato Centre, Italy**

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# BACKGROUND TO THE CONFERENCE

Since the founding colloquium in 2003, the CIRN (Community Informatics Researchers Network) conferences have been marked by informality, collegiality and interdisciplinary thinking, bringing together people from many different countries in an ideal Italian setting.

Themes have ranged across issues such as privilege, gender & sexual identities, forms of knowledge, documentation, participation & community-based research, power, ideals & reality, measurement, and the applied arts. While we have a particular theme each year we also seek papers (that include referred, work-in-progress, and non-refereed), presentations, posters, and graduate student work related to any aspect of Community Informatics, Community Archiving, Development Informatics, Art, Archives Memories, and ICTs field.

We are particularly interested in papers from researchers and practitioners that can address the challenges of locating community-focussed research within wider theoretical and practice frameworks. We also have a research student (masters and doctorate) presence and encourage the submission of current or planned work in colloquium sessions. This is a great opportunity for interaction with other students in an international setting. More generally, CIRN conference is a highly social event in a small and culturally-rich part of Italy.

## OUR (INTER-)DISCIPLINARY FRAME & APPROACH

**Community Informatics** is primarily concerned with improving the well-being of people and their communities through more effective use of ICTs. Community Informatics foregrounds social change and transformative action in emergent social-technical relationships rather than prediction and control and likewise, Development Informatics or ICT4D is concerned with ICTs in the international development context. This orientation also has much in common with **Community Archiving**.

Community-centric archival research, education and practice are concerned with empowering communities in support of such desirable objectives as democracy, human and civil rights, self-determination, sustainable development, and social inclusion. Recordkeeping and archiving are fundamental infrastructural components supporting community information, self-knowledge and memory needs, thus contributing to resilient communities and cultures and supporting reconciliation and recovery in the aftermath of conflict, oppression.

**Development Informatics** (also called ICT4D) is involved with the use of ICTs in international development settings. The purpose of International Development is heavily contested, and thus, the use and interpretations of ICTs in that space is also subject to a wide variety of interpretations. More recently, those in the Art, and Archives Memories and ICTs have been participating with us in an exploration of how the media, dance and other forms of arts interested in ICTs intersect with community development, community memory and archives.

[For the proceedings past events, archives etc, please see <https://www.monash.edu/it/hcc/research/cosi/prato-conferences>. For past websites/events (services have closed down, no one hand-crafts sites anymore. 😞) look for ccnr.net between 2002 -2010 as well as cirn.wikispaces.com 2009-1018 on [archive.org](http://archive.org).]

## 2019 THEME: ACTION, RESEARCH, & POLITICS

**ABOUT THE THEME:** What is our role as researchers and practitioners in fields committed to the well-being of people and their communities? Against a backdrop of international data oligopolies, how is technology challenging our understanding of community dynamics and information sovereignty? Alternatively, how can technology and research engagement be refocused to empower individuals and communities in addressing social inequalities? The 17th annual CIRN conference, *Action, Research, & Politics*, aims to address these questions and more.

**WHO IS IN ATTENDANCE:** This year's conference welcomes academics, practitioners, and researchers working in Community Informatics, Information & Communication Technologies for Development (ICT4D) Informatics, Participatory Information Governance, Recordkeeping Informatics, Community Archives, Cultural Informatics, and beyond (e.g., Health Informatics) to listen, learn, and discuss research and practice in international and domestic politics, policy, and advocacy.

## CONFERENCE REFLECTION

Vanessa Rhinesmith

*Technology and Social Change Project (TaSC), Shorenstein Center on Media, Politics and Public Policy, Harvard Kennedy School*

In November 2019, researchers and practitioners from around the world met at Monash University's satellite campus in Prato, Italy for the 17th annual Community Informatics Research Network (CIRN) Conference titled, *Whose Agenda: Action, Research, & Politics*.

The 2019 conference welcomed researchers and practitioners working in Community Informatics, Information & Communication Technologies for Development (ICT4D) Informatics, Participatory Information Governance, Recordkeeping Informatics, Community Archives, Cultural Informatics, Health Informatics, and beyond to listen, learn, and discuss research and practice in international and domestic politics, policy, and advocacy.

The theme of action, research, and politics set the backdrop for an exploration of the role of researchers and practitioners in fields committed to the well-being of people and their respective communities. The theme raised the question, *How can technology and research engagement be refocused to empower individuals and communities in addressing social inequalities?* The 2019 call for submissions encouraged research and exploration that examined the intersection of policy and politics, research and scholarship, and advocacy and action in relation to Community Informatics, Community Archives, ICT4D Informatics, and other related fields of scholarship.

The three-day conference was grounded in several opening keynotes including Brandi Collins-Dexter on "The Fight to Build a Social Contract for the Digital Age" and Dr. Ruth de Souza on "Participatory Research and Culturally and Linguistically Diverse Communities,"

as well as an interactive art installation titled, “The Myth of Agency,” by Sarah Newman and Jason Millar.

Each presentation, installation, workshop, and conversation set the tone for the days ahead. The 2019 CIRN conference provided an inclusive space for the community to reflect on the role and responsibility of researchers and practitioners to question the place of emergent technologies, collaborate with - and learn from - communities, develop research questions and ethics that challenge existing power dynamics, and present evidence to inform policy recommendations.

The conference fostered important discussions about how researchers and practitioners can steward social, political, and environmental change through their respective work. As the theme explored the intersection of policy and politics, research and scholarship, and advocacy and action within the fields of Community Informatics, Community Archives, and ICT4D it also nudged a much larger question, *When and how do researchers and practitioners ignite change? How do researchers and practitioners move their evidence-based work from research into action?*

Technology is challenging. It reinforces existing structures of power. The fields of Community Informatics, Community Archives, ICT4D, and complimentary research areas are uniquely positioned to leverage research to challenge these assumptions. The field is positioned to investigate what technology is needed, what it can and cannot do, and the opportunities it presents. And, perhaps more importantly, the field is uniquely positioned to examine the risks that technology presents to a community. The 2019 Community Informatics Research Network Conference surfaced that while the attendees were researchers and practitioners, they were also advocates and stewards of communities they engage with and learn from.

In closing, the following proceedings provide a glimpse into these three thoughtful days of discussion and learning. The proceedings offer the depth of research and examination, which grounded the many conversations and reflections presented here in the pages that follow.

## **KEYNOTES**

Dr. Ruth De Souza

*Confronting power in digital health: Participatory research and culturally and linguistically diverse communities.*

Brandi Collins-Dexter

*All Watched Over by Machines of Loving Grace - the fight to build a social contract for the digital age.*

## **2019 CONFERENCE COMMITTEE**

Sue McKemmish, Monash University (*Conference Chair*)

Larry Stillman, Monash University (*Conference Co-organiser*)

Vanessa Rhinesmith, Harvard Kennedy School (*Conference Co-organiser*)

Tom Denison, Monash University

Vince Dzekian, Monash University  
Joanne Evans, Monash University  
Anne Gilliland, University of California, Los Angeles  
Kiera Ladner, University of Manitoba  
David Nemer, University of Virginia  
Safiya Noble, University of California, Los Angeles  
Gillian Oliver, Monash University  
Colin Rhinesmith, Simmons University  
Mauro Sarrica, Sapienza University, Rome  
Martin Wolske, University of Illinois at Urbana-Champaign

## **PEER REVIEWERS**

Misita Anwar, Monash University  
Tom Denison, Monash University  
Manuela Farinosi, University of Udine, Italy  
Mark Gaved, Open University, UK  
Janis Meissner, Newcastle University, UK  
Aldo de Moor, Community Sense, Netherlands  
Colin Rhinesmith, Simmons University  
Greg Rolan, Monash University  
Larry Stillman, Monash University  
Martin Wolske, University of Illinois

## **PEER REVIEW STATEMENT**

The Conference Proceedings contains referred, non-refereed and PhD colloquium papers and Powerpoints from the conference.

- All full papers in the refereed category were subject to blind peer review by at least two reviewers, and reviewers' comments returned to the authors. Authors were then required to make changes and if necessary, a further review conducted before final approval.

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# CIRN PRATO 2019

## Graduate Paper

**Agmon, Yair, UCLA, United States of America**

### **CAN COMMUNITY ARCHIVES ARCHIVE IN ISRAEL AND PALESTINE?**

**Keywords: Community Archives, Israel Palestine, Civil Law, Regulation, Legislation**

Keywords: Community Archives, Israel Palestine, Civil Law, Regulation, Legislation" The community archives movement of the past twenty years has enabled marginalized and oppressed groups in certain locations and contexts to exercise autonomy over their communities' record. This has resulted in new voices narrating silenced histories, promoted human rights accountability, and has helped to generate a more fair and equitable representation of groups that have been historically excluded. These gains – and parallel academic scholarship on the topic – have not been equally distributed across nations and communities. Flourishing in Common Law countries, community archives have struggled to establish the same kind of footing in other juridical and archival jurisdictions and less open political systems. Conducted in Croatia, Gilliland and Stefanac's research provides data on why some organizations that are carrying out community archives-type roles and activities remain unrecognized and unsupported by the professional field and legal and regulatory infrastructure for archives. While groundbreaking, their work addresses the specific geo-political context of Croatia, and much more work is needed in order to establish empirical data from other non-Common Law, post-colonial and non-western countries if we are to arrive at an answer as to obstacles facing the community archives movement in those contexts.

In the context of Israel and Palestine, community archives could potentially address many pervasive issues of records disenfranchisement. This would include widespread Bedouin evictions due to a demand for 'official' land ownership records (incommensurable with the nomadic way of living), the disavowal of Palestinian occupancy of properties as a result of inaccessible records, and the cultural exclusion of Mizrahi Jews whose records remain scarce, dispersed and in private hands. Many of these complex issues would benefit greatly from communities establishing their own priorities for appraisal, retention, and description, with support and recognition from the professional class. This rings especially true given the political tensions that characterize minorized ethnicities in Israel due to the historical conflict between the Jewish and Arab peoples. However, this is not to say that communities in Israel and Palestine have not been engaged in memory and data activism, records collection, or even alternative historical narrativization of archival holdings. Such organizations are very much active. While not operating under the flag of an officially designated or recognized archive, or working within the fold of the community archives movement, organizations such as Be'tselem, Breaking The Silence, ActiveStills, and Zochrot are successfully employing archival-like practices much in line with the values of the community archives movement.

This paper, following the methodological approach used by Gilliland and Stefanac, seeks to extend further community archives scholarship to new geopolitical contexts and gain a better understanding of how local communities might benefit from practice and scholarship elsewhere. Reporting on a regulatory and legal analysis and data gathered through interviews and fieldwork in community organizations in Israel and Palestine, the paper will discuss how these organizations currently engage in archival-like activities, and might define or situate themselves in relationship to both community archives and to professional and state oversight. The ultimate goal of this research is to understand what framework can, or should be constructed, to best facilitate the work of accountability, records autonomy, and memory self-determination in the specific context of Israel and Palestine given the current political climate and the messy interweaving of legal frameworks inherited from Ottoman, British and Hebraic traditions.

ABSTRACT ONLY

**Refereed Paper**

**Anwar, Misita <sup>1,2</sup> <sup>1</sup> Monash University, Australia <sup>2</sup> State University of Makassar, Indonesia**

**THE REAL HOUSEWIVES OF MAKASSAR: WOMEN MICRO-ENTREPRENEURS SOCIAL MEDIA STRATEGY.**

**Keywords: Mobile Phone, Social Media, Women Micro Entrepreneurs, Digital Culture**

The study of mobile phones and their impact in unlocking the financial success of the women entrepreneurs globally has been widely observed and quite vital to a new generation of gender-based ventures that are digitally driven through the use of mobile technology. This type of development through which women adapt and utilise social media platforms like Facebook promotes the creation of a new revolution of modern digital entrepreneurial culture.

Informal women-owned ventures are adopting social media platforms such as Facebook to grow their communities as a medium for keeping in touch and getting current and ground feedback on products or services from existing and prospective clients.

As an emerging technology, we have only starting to uncover the role of social media in supporting small business operations. Research needs to explore more closely the many ways in which apps like Facebook are being appropriated. This paper will explore how women micro-entrepreneurs are using social media to extend their network for marketing beauty care products such as skin whiteners and feminine products and other support for their businesses. These activities need to be understood via local cultural complexities and the construction of race and the body rather than Western models. The findings illustrate the idiosyncrasies of techniques that these women use to enhance business through social media.

ABSTRACT ONLY

## **Graduate Paper**

**Armouch, Sarah, Open Lab, Newcastle University, United Kingdom**

### **'INSTITUTIONING' PARTICIPATORY DESIGN WITHIN INTERNATIONAL DEVELOPMENT AGENCIES**

**Keywords: Participatory Design, Participatory Development, Youth, Social Innovation**

Participatory design (PD) stems from 'democratic' and 'participatory' cultures, especially as it is rooted in Scandinavian settings. It revolves around empathy, creativity, politics, ethics and criticality in the design of contextual and sustainable digital technologies to respond to pressing needs and social issues. In contrast, international development agencies often mimic existing hegemonic power dynamics when working with local communities. Approaches and processes adopted are mostly top-down even when it comes to innovation and do not necessarily echo the needs of community members. While social innovation might be already occurring within the local contexts in question, such agencies often fail to acknowledge and build on this when thinking about digital innovation. As a result, pushing for a PD agenda can be problematic and comes with its own set of challenges and tensions. The essence of PD relies on building a network, which brings in multiple stakeholders around common values and ethics, to ensure more structured and sustainable social innovation through digital and offline mediums within local communities. In this paper, I discuss three case studies conducted with youth volunteers from national organizations in Ethiopia, Lebanon and Denmark, which fall under the governance of an international development and humanitarian agency. While these contexts are strikingly different, they reflect parallels when it comes to challenges around participatory culture, with their own set of distinct features. From these case studies, I extrapolate key lessons for establishing a PD culture within such agencies and highlight tensions and limitations.

PAPER

## Refereed Paper

**Arnold, Patricia; Halic, Belma, University of Applied Sciences Munich, Germany**

### **WHO SETS THE AGENDA? SUPPORTING REFUGEES? PATHWAYS TO HIGHER EDUCATION**

**Keywords: Online Learning, Refugees, Equity In Education**

Worldwide, refugees' access to higher education is severely limited. Over the last decade several online learning initiatives have been developed to ease refugees' pathways to higher education and to increase equity in this matter. Against this backdrop, the paper presents results from a research project that investigated refugee students' uptake of one of these online learning initiatives.

Kiron, an NGO based in Germany but operating worldwide, provides refugees with a low-threshold online learning offer. It bundles Massive Open Online Courses (MOOCs) into full online curricula in different study tracks, with the aim to ease refugees' access to universities in host countries. The learning offer is accompanied by various support measures. Research results, based on combining participant data analysis (N=1375), a survey (n=180), and semi-structured interviews (n=25) in a mixed methods approach, reveal some of the intricacies of online learning offers as well as the design of support measures in this context.

The uptake of the online learning offer in terms of MOOCs started and completed is rather low. The uptake of support services is high; and, at first glance surprisingly, participants use support measures independently of the offered online curricula, rather in correspondence with their overall individual needs and life challenges. They value the existing support but also highlight the need for more one-on-one support and opportunities to improve their language skills.

On a more aggregated level, the results raise the question of who sets the agenda when designing (online) learning offers to increase equity in higher education.

PAPER PPT

## Keynote

**Collins-Dexter, Brandi, Color Of Change, USA**

### **ALL WATCHED OVER BY MACHINES OF LOVING GRACE - THE FIGHT TO BUILD A SOCIAL CONTRACT FOR THE DIGITAL AGE.**

**Keywords: Social Media, Governance, Community Empowerment, Digital Equity.**

At the dawn of the Internet age, social media platforms appeared to be powerful new tools in the fight for equity and dignity for marginalized groups. Facebook, Twitter and YouTube were heralded as vehicles for decentralizing media voices and providing digital oxygen to emerging movements from Arab Spring to Black Lives Matter. Yet not even a decade later, the promise of new forms of ownership, governance, and community empowerment have been undermined by corporate concentration and rampant, unchecked manipulation and disinformation campaigns. As we look towards the next wave of high stakes political elections, what are some of the barriers and potential pathways forward to achieving tech accountability and digital equity on a global scale?

Brandi is Senior Campaign Director at Color Of Change and oversees the media, democracy and economic justice departments. Brandi is a regular commentator in the media on racial justice. Brandi is a 2019 Joan Shorenstein Fellow at the Shorenstein Center on Media, Politics and Public Policy at Harvard Kennedy School. Brandi holds a J.D. from University of Wisconsin-Madison Law School.

ABSTRACT ONLY

**Non-refereed paper/practitioner report/talk**

**Craig, Barbara, Victoria University of Wellington, New Zealand**

**DIGITAL INCLUSION ALLIANCE AOTEAROA MEASURING DIGITAL EXCLUSION IN DISADVANTAGED COMMUNITIES IN NEW ZEALAND.**

**Keywords: Measurement, Qualitative Research, Digital Inclusion, Community**

The focus of this presentation is reporting on initial research findings trialling a methodology for measuring and monitoring digital inclusion (not just internet access) in communities that are known to be digitally disadvantaged. An earlier research review (Pulse of our Nation, 2017) identified 6 groups most likely to be digitally excluded. This project investigates one of these groups, seniors (+65), and using focus group methodology interviews seniors in a range of rural and urban settings (retirement villages, living alone, living with family, in social housing) to build a profile of who uses or does not use the internet in their everyday life. Preliminary analysis suggests seven digital inclusion archetypes with distinct characteristics. This analytic framework serves to identify the specific needs of each archetype and the kind of support these groups of seniors require to fully participate digitally. Fieldwork is still ongoing. Initial analysis identified ethnic groups that were underrepresented in the first round of interviews and organisations representing those ethnicities have assisted in identifying new groups of seniors to participate. A second stage of fieldwork will test this methodology and framework by seeking critical feedback on these archetypes from professionals who work with the other 5 disadvantaged groups and workshops to determine how to apply this methodology to communities delivering digital inclusion initiatives.

The context for this research is the New Zealand Government Digital Inclusion Blueprint, Te Mahere mō te Whakaurunga Matihiko (the Blueprint), launched in March 2019 as a whole of government approach to making sure everyone in New Zealand can conveniently and confidently access and use digital devices and the internet. The Blueprint is concerned more with enabling non-users and sporadic users of the internet to become digital citizens, than it is on upskilling people who already access and use the internet in their everyday life. It is also part of this government's focus on wellbeing and in context of a growing body of international research indicating digital inclusion plays an important role in lifting the wellbeing of individuals and communities. There is also work underway on developing a national measurement framework for digital inclusion to track progress.

Subsequent to the Blueprint the government published its digital inclusion research agenda (July), identifying 6 key research questions for NZ research on digital inclusion. Our research addresses 2 of the 3 top priority questions, first which groups are digitally excluded and why and second how does digital inclusion relate to wellbeing. Our research predates the launch of the government vision for digital inclusion but is recognised as a project capable of delivering outcomes that will inform national policy direction and decisions about delivering digital inclusion initiatives.

This project is a collaboration between the School of Government at Victoria University in Wellington, NZ and a non-profit Digital Inclusion Alliance Aotearoa (DIAA) and it is funded by InternetNZ, a non-profit organisation that secures and promotes the internet. The university provides research expertise, while DIAA can offer ongoing relationships and the trust of communities to invite research participants. DIAA is a new non-profit organisation that brings together an alliance of digital inclusion providers and advocates. This model finds favour with the current government as it coordinates what is already happening in communities that have been operating in isolation. Central government recognises it can only achieve its vision by working across government and agencies.

This report is concerned with developing a qualitative measurement framework that disadvantaged groups and communities use to assess levels of digital inclusion among their members and apply appropriate interventions to meeting the needs of those they work with at the local level.

ABSTRACT ONLY

**Works in progress and more speculative pieces**

**de Moor, Aldo, CommunitySense, Netherlands**

**CITIZEN SENSING COMMUNITIES: FROM INDIVIDUAL EMPOWERMENT TO COLLECTIVE IMPACT.**

**Keywords: Citizen Sensing, Citizen Science, Empowerment, Collective Impact**

Citizen sensing offers much promise in engaging citizens for the common good, such as working on wicked problems like climate change or air pollution. By citizens becoming involved in citizen sensing communities, they can increase their impact. To get truly empowered and reach collective impact, citizen sensing communities need to build effective working relations with institutional scientific and regulatory powers. One way to do so is through citizen science collaborations. However, collecting, vetting, and analyzing data is not enough: in many cases, the insights derived from the data lead to calls for political action. This is the weakest link in the collective impact chain, especially when citizen sensing results suggest collective (political) mitigation of causes instead of just individual adaptation to effects of wicked problems. We illustrate these notions with various cases and end with a tentative reconstruction of citizen sensing empowerment.

PAPER

**Keynote**

**de Souza, Ruth, [www.ruthdesouza.com](http://www.ruthdesouza.com)**

**Confronting Power In Digital Health: Participatory Research And Culturally And Linguistically Diverse Communities.**

**Keywords: Health Informatics, Diversity, Culture, Power**

Health care services are hierarchical, diverse and complex organisations serving people who are often vulnerable and dependent. “Mass production”, “mass-customisation” and “mass-collaboration” (Freire and Sangiorgi 2010), represent three paradigms that co-exist in western health services reflecting different relationships with health care consumers. In the latter paradigm, media technologies that support health communication are proliferating and rapidly transforming models of care in health and potentially shifting, power and information asymmetries. For example, new visualisation techniques available on smartphones and mobile devices can enhance health literacy, consumer participation, cultural responsiveness and shared decision making. However, technologies are not race neutral and can encode inequity (Benjamin, 2019). The quality, health literacy and the cultural and linguistic appropriateness of health-related applications designed for behavior change through “mobile persuasion” can be variable given that they are designed either with an imagined ideal service user that is “wealthy, worried and well” (and white), or with minimal input from target end users.

In this presentation, I present three pilot studies conducted in a community health centre in a culturally diverse neighbourhood in Melbourne, Australia. The goal of these projects was to explore questions of appropriate design by considering how information technology was used in different cultural settings. We used design probes to facilitate discussions about privacy and sharing of data in health among perinatal women from migrant and refugee backgrounds; provided broader community education sessions about how phones could be used as tools for health promotion and hosted an inter-generational ‘genius bar’ for engaging older adults. Our pilot studies revealed the value of creative methods for researching digital health literacy with groups who are typically viewed as being digital “have nots”. We found these three methods of engagement were effective both in enabling participants to develop new skills and knowledge, and participating in extended discussions on the implications of digital health technologies. As the technologies underpinning digital health change as rapidly as the cultural makeup of our communities, we feel compelled as researchers to make our own methods more participatory, creative and responsive to meet this new conjuncture. We expect more of the methods associated with professional design practices to influence both health care practices and academic work in the future.

Ruth is Academic Convenor of The Data, Systems and Society Research Network (DSSRN), a collaborative research network across the University of Melbourne. She is also an Honorary Senior Research Fellow at The Health and Biomedical Informatics Centre (HaBIC), co-supervising a PhD about the Quality management of patient generated health data (PGHD) from wearables for clinical use.



Prior to taking up this role, she was the Stream Leader of Research, Policy and Evaluation at the Centre for Culture, Ethnicity and Health (CEH) at North Richmond Community Health from 2015-2018. Prior to moving to Australia, she was at AUT University, Auckland (2005-2012) and At Unitec (1998-2004) she developed and taught the National Certificate in Mental Health Support Work. Prior to working in education, she was a clinician in mental health and maternal mental health.

ABSTRACT ONLY

## Poster Session

**Dutilloy, Jo, Simmons University**

### **OPEN ACCESS ADOPTION IN ACADEMIC INSTITUTIONS: LIBRARIAN PERSPECTIVES ON METRICS**

**Keywords: Open Access, Academic, Publishing, Librarians.**

This poster presentation intends to examine existing OA data recording policies of libraries at academic institutions, consult librarians about their experience of encouraging OA in institutions, gather perspectives on the gap between libraries and publishers, and help OA advocates better appeal to the publishing for library needs.

Articles and studies already exist based on OA publishing trends to study how people are publishing and how much publishing costs. What the sources for these studies show is that there are not open, consistent, and reliable sources of data collection about open access which can be applied to particular academic institutions. Data is often accessed through publishers, aggregators, or individual academic institutions and can only demonstrate the development of Open Access in one university, country, or field of study at a time. The result of this is that using these numbers can paint a less than full picture. Recently, a presenter from University of Nevada, Reno was using number from DOAJ to demonstrate how the university was publishing but when looking at the results more closely, there is missing data in that aggregation.

This study would build on the information about what data is accessible and accurate to advocate for better and more open data collection by publishers and institutions on their Open Access publication so that special permission or expertise is no longer a requirement for demonstrating the use of Open Access.

I will collect information about how and why institutions collect data on open access publishing. Through interviews I will start determining what information is most interesting to scholarly communications librarians when determining open access resources to recommend and advocating for open access publication by scholars in their institution. For example, what do scholarly communications librarians think the Provost would want to know about Open Access adoption at their university?

I am spreading my research into three lanes of research.

My priority outreach is with scholarly communications librarians to learn more about how they measure and advocate for open access publishing. I am looking to learn more about what information they collect, what information they have access to, and what information they don't have that they would find useful to advocate for their services and for open access publishing options.

I am also looking into the Open Access publications themselves and attempting to use their website search engines to attempt to determine information about Open Access uptake. For this particular project I am focusing on the year on year output from a particular university affiliation. Where possible, I will also be in touch with someone from the publisher to talk to them about if they organize their data to search by affiliation and why they choose to organize their search engine in this way.

Lastly, I am reaching out to other organizations that are presenting a model for finding open access articles and journals online like DOAJ for example. These organizations do not have the primary purpose of tracking year-by-year, publisher-by-publisher, affiliation based records on how institutions are adopting open access publishing but it is possible that their aggregations already allow for a method of finding this information.

The goal of this research is to enable Open Access advocates without an academic library background to better speak for librarians to publishers and to better demonstrate to academic libraries how authors are publishing OA and where.

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ABSTRACT ONLY

## Refereed Paper/Artwork

Gaved, Mark<sup>1</sup>; Calderon Luning, Elizabeth<sup>2</sup>; Unteidig, Andreas<sup>2</sup>; Davies, Gareth<sup>1</sup>; Stevens, James<sup>3</sup>, <sup>1</sup> The Open University, United Kingdom; <sup>2</sup> Weizenbaum Institute, University of the Arts Berlin, Germany; <sup>3</sup> SPC.org, United Kingdom

### **POWER, ROLES AND ADDING VALUE: REFLECTING ON THE CHALLENGES OF BRIDGING ACROSS RESEARCH AND ACTION ON AN INTERNATIONAL COMMUNITY NETWORKING PROJECT**

**Keywords: Roles, Transdisciplinarity, Community Networking, Civil Society, Guises.**

In the conference we will demonstrate a running 'mazizone', a Raspberry Pi computer running the software developed by the MAZI project ([www.mazizone.eu](http://www.mazizone.eu)). This will be on display/operation during the conference in Sala Caminetto. Combined with our conference presentation (Gaved et al. - Power, roles and adding value: reflecting on the challenges of bridging across research and action on an international community networking project), we will introduce the project concept and bring a demonstrator machine and a poster.

The three year EU-funded MAZI research project ([www.mazizone.eu](http://www.mazizone.eu)) brought together universities, civil society groups, and neighbourhood groups to design, develop and trial a digital toolkit for supporting neighbourhood sustainability in four European countries. Funder constraints, partner ambitions and community needs had to be balanced to both adhere to academic research protocols while making a difference in the neighbourhoods where research and action took place. These sometimes-conflicting ambitions caused partners to question whose agendas were best being served by the project activities.

The partners (four universities and five small, community embedded civil society groups) had to confront asymmetries of power, capacity, and credibility both within the consortium and within the community settings. Local circumstances changed; partners had to negotiate new, unfamiliar, and changing roles; and guises had to be adopted to progress sometimes conflicting ambitions. The consortium had anticipated that such tensions were likely to happen and built in a set of formal, periodic, self-reflective exercises throughout the project's duration. Combined with necessary readjustments in the field and partner conversations, a record of the challenges and key issues faced were generated. From these observations, the consortium worked together to identify and utilise a set of strategies and tactics to better enable fulfillment of the research objectives while remaining true to the interests and ambitions of the host communities.

In this paper, we report on the challenges encountered in two of the pilot locations, Berlin and London. These two pilots were similar as they consisted at the outset of a university partner previously unconnected to the locality, working with a civil society partner that was deeply embedded in the setting though long term engagement. In both cases, the pairings sought to work closely together both on the ground and in research tasks. Finding acceptable compromises stimulated considerable self-reflection and required ongoing negotiation.

We offer insights on the potentials and pitfalls of civil society activists and academic researchers collaborating within a research framework from the perspectives of both, with the goal of building a bridge of understanding between these two viewpoints.

PAPER, INSTALLATION

## **Works in progress and more speculative pieces**

**Grunewald, Philipp**<sup>1</sup>; **De Liddo, Anna**<sup>2</sup>; **Hedges, Mark**<sup>1, 1</sup> **King's College London**; <sup>2</sup> **The Open University, United Kingdom**

### **CAPACITIES FOR PEACE: VIDEO REPLAY TECHNOLOGY RESEARCH AND EMPOWERMENT**

**Keywords: ICT4Peace, ICT4D, Audience Feedback Technologies, Critical Thinking, Peace Building, Video Replay Technologies.**

In 1994 Rwanda experienced large scale genocide. Since then the society has attempted, via various approaches, to work with this experience and attempt to prevent a repetition of such an event. Archival materials are part of the collective memory and Aegis Trust, an NGO that works locally, uses these materials, and new materials that they produce to prevent genocide and build peace. Key peace builder competencies identified in peace building theory, and goals of Aegis Trust programming, are critical thinking and active listening. In this paper, we introduce Democratic Reflection, an audience feedback technology to promote active listening, deeper reflection and personal learning of video replays. With the help of Aegis Trust we engaged 44 citizens in a study that tests how the replay technology can support the enhancement of critical thinking and active listening capacities, as well as influence understanding of the contents and emotional engagement with audiovisual materials. By critically reflecting on the project we elaborate how the technology and the research process influence dynamics of empowerment and (in)equality. We also reflect on the methodological and pragmatically challenges of using this digital tool with communities.

ABSTRACT ONLY

## **Refereed Paper**

**Herlo, Bianca**<sup>1</sup>; **Paola Pierri**<sup>2</sup>; **Jennifer Schubert**<sup>3</sup>, <sup>1</sup>**Berlin University of the Arts, Weizenbaum Institute, Germany**; <sup>2</sup>**University of the Arts London, England and Weizenbaum Institute, Germany**; <sup>3</sup>**Free University of Bolzano, Design and Art, Italy**

### **CIVIC DESIGN THROUGH THE LENS OF SOCIAL LIVING LABS**

**Keywords: Design Research, Living Lab, Social Design, Civic Tech, Design Interventions**

This proposal reports on practice-led design research projects that rely on the concept of “social living labs”, conducted by members of the research cluster Civic Infrastructures at the Berlin University of the Arts\*. It aims at contextualizing the projects’ processes and outcomes in the context of the currently renewed discourse on design’s political agency and its potential for shaping local practices through a more inclusive, democratic urban development (Manzini 2014). The projects address issues of plurality and diversity, access and authorship of technology and digitalization within the urban. The focus lays on the relationships between participatory design, technology development and their political and social implications.

Digital technology is increasingly interwoven with everyday life and has a strong impact on the socio-cultural transformation of today’s urbanity. Urban spaces become inherently hybrid since ICT act as mediators for novel types of communication and interaction. Focusing on communities of practice (Wenger et al. 2002), we developed a framework for designing experimental and contextualized tools for urban explorations by challenging the “top-down” city with small-scale spatial appropriations. The main methodological approach in these participatory design processes was the socially oriented living lab (Franz 2015). We built on an open reading of the living lab approach (Ehn 2009), which aims to create a transdisciplinary setting (Burger et al. 2000) embedded in actual living environments, as well as for the experimentation with open-ended processes. Social living labs stress the importance of considering the local context by developing a space of encounter and implementing a set of participatory design processes.

Locating the research within a mindset of a politically engaged design practice, we ask the following questions: How can design enhance communities with hybrid (physical and digital) collaborative platforms and tools? The main

approach was to develop socio-material infrastructures that build on and extend already existing local structures, in order to counter the digital divide (cf. Schenk et al. 2013; UN 2018). In this stance, a normative concept of inclusion was followed, that emphasizes the importance of democratic values being embedded in these hybrid urban spaces. Especially against the backdrop that more and more societal, political and cultural processes become digitized, we address questions about who gets to shape and to take part in these processes, and who determine the way we communicate or have access to information.

By implementing social living labs, we not only provide tools for collective and transformative practices, but also emphasize a mindset that considers inclusion, discourse and the ability to deal with each other's differences in a respectful way. Focusing on the socio-political aspects of design research and their impact on the urban space, allowed us to address questions about how democracy, ideology and memory are manifested in the city. The transdisciplinary processes – made possible by the social living lab approach and assisted by civic tools and interventions – engaged us critically in the urgent question of design's agency within a mixture of practical, factual, theoretical and normative stances, vis-à-vis the context of overarching change processes influenced by digitalization.

\* "Community Now?" (2013-2016), a cooperation between Berlin University of the Arts, the German Society for Design Theory and Research and the Bezalel Academy Jerusalem, funded by the German-Israeli Future Forum Foundation (DIZF) and the Federal Agency for Civic Education (bpb): [www.community-now.org](http://www.community-now.org); "Mit-Mach-Stadt Brandis" (2016-2017), a cooperation with the municipality of Brandis, funded by the Ministry of Interior in Saxony: [www.mit-mach-stadt.de](http://www.mit-mach-stadt.de); "Citizens connect neighborhoods – community development harnesses digital transformation" (2016-2018), a cooperation with the Quartiersakademie NRW, IFOK, NRW.Urban and 14 civil society initiatives; funded by the State of North Rhine-Westphalia: [www.modellproject-nrw.de](http://www.modellproject-nrw.de).

PAPER

#### **Refereed Paper**

**Johanson, Graeme<sup>1</sup>; Layton, Natasya<sup>2</sup>; Anwar, Misita<sup>1</sup>; Bingley, Scott<sup>3</sup>, <sup>1</sup>Monash University, Australia, <sup>2</sup>Swinburne University of Technology, Australia, <sup>3</sup>Victoria University, Australia**

#### **REDUCING THE CAPABILITY GAP OF SMALL BUSINESSWOMEN WITH A DISABILITY WITH MOBILE DEVICES AND SOCIAL MEDIA WITH DISABILITIES**

**Keywords: Small Business, Women, Disability, Social Media, Mobile Devices, Information And Communications Technologies, Assistive Technology, Australia.**

This paper investigated the mobile phone and social media habits and behaviours of businesswomen living with disabilities, and identified effective uses of information and communications technologies. It explored the transformation of the work lives and home lives of Australian small businesswomen with a disability, and described how mobile devices reduced limitations imposed by disability.

The research employs qualitative research methodologies. A literature review informed the selection of theoretical frameworks with which to identify and explore the social, technical and business-related impacts of mobile technologies. These theories included the Capability Approach and the LIAISE Framework, within a grounded approach. Mobile devices improved work and personal communications to the extent that they diminished disability to a secondary consideration in participants' lives, and they improved business efficiency. The LIAISE Framework was demonstrated to be a relevant tool for operationalising the enabling business features of mobile devices, and the broader digital sector is encouraged to take advantage of both theoretical frameworks in further research and development work.

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An achievement of this research is that it used the pre-existing paradigms in fresh ways, extending them in the process. It also expands the very meagre amount of existing knowledge of the digital lives of small businesswomen with a disability.

PAPER

#### **Refereed Paper**

**"Kamarudin, Hanis<sup>1</sup>; Denison, Tom<sup>2</sup> ; <sup>1</sup>Universiti Teknologi MARA, Indonesia; <sup>2</sup>Monash University, Australia**

#### **ORAL HISTORY AND MEMORY-MAKING IN MALAYSIA**

**Keywords: Oral History, Mediated Memories, Malaysia**

This research aims to better understand oral history practices from the perspectives of oral history practitioners and cultural institution professionals in Malaysia. The shortage of written documentation from previous authorities and colonial powers has accelerated the need for oral history as a method to capture valuable untold community stories. Despite this, local content concerning the community in Malaysia is still not being sufficiently captured and preserved. This study also aims to investigate how cultural institutions can reframe and transform themselves to enrich local community oral history collections. Using the Mediated Recordkeeping Culture-as-Evidence Model as a theoretical framework, the study examines current practice and identifies areas for improvement. The focus on the participation of the oral history practitioners and the current initiatives undertaken by cultural institutions contributes to the uniqueness of the study. These connections are significantly under-explored and under-addressed.

PAPER

## Refereed Paper

Levy, Dalit<sup>1</sup>; Shafirri, Yuval<sup>2</sup>; Alef, Yael<sup>3</sup>; <sup>1</sup>Zefat Academic College, Israel; <sup>2</sup>Tel Aviv University, Israel; <sup>3</sup>Bar Ilan University, Israel

### COMMUNITY PLACE-MAKING USING UNIQUE MOBILE APPLICATIONS: A MULTIPLE CASE STUDY

**Keywords: Blended Spaces, Environmental Knowledge, Mobile Learning**

The concept of 'place' is defined as a meaningful location. This definition encompasses the engagement of people with placemaking and the human need for a 'sense of place'. Technologies such as mobile field survey, augmented reality (AR), location-based games and digital objects embedded in the place, enable strengthening the attachment to the place for both individuals and communities. Such technologies help in making places and their values more accessible while creating new formal and informal learning opportunities. As a result, the processes of giving meaning to places have also changed. These processes not only document and teach *about* the place in which the community operates, but also act and interact *within* the place. The variety of interactions might change both the relations with the place and the meaning given to it, in addition to actual changes (physical and digital) in the environment. The presentation will outline these new possibilities through the pedagogical lens of "Discover, Imagine, Change" abbreviated as DICE.

The elements of the pedagogical process are based on the results of a prior research which aimed at constructing a 'uniqueness profile' of mobile applications for learning. The research focus was solely on those learning processes and learning outcomes that are made possible only when using mobile apps, and defined a 'unique mobile application' as an application with potential added value when integrated into a learning environment, which would not be feasible using non-mobile desktop systems. Such benefits are also unattainable in traditional outdoor learning environments, when no digital technologies are involved. The results include five emergent themes of uniqueness of mobile apps, all sharing a common experience of learning in *blended spaces*. This primary pedagogical principle leads to additional principles such as embodied cognition, the device as a discovery machine, and open playful design. Taken together, these pedagogical principles draw an overarching uniqueness profile of mobile applications that supports deep understanding of the environment in which the unique mobile app operates.

One implication of the uniqueness profile is the importance of environmental context (physical, human, and virtual) in the design process. Designers, researchers, teachers and students alike should understand not just the affordances of the mobile technology, but also the environmental ones. The DICE novel pedagogy emerged out of such awareness and has been tried out within the context of cultural, geographical, and archaeological heritage in four different communities of learners in Israel, using collaborative mobile learning activities and applications. Through participating in DICE activities, learners uncover the invisible in familiar places and become more aware of their surroundings, while the place becomes a powerful object to learn with. The presentation will discuss the DICE model and its main characteristics through data gathered from the four cases.

PAPER



## Workshop

MacNeil, Heather <sup>1</sup>; Foscarini, Fiorella <sup>1</sup>; Douglas, Jennifer<sup>2</sup>; <sup>1</sup>University of Toronto, Canada <sup>2</sup>; University of British Columbia, Canada

### LISTENING TO COMMUNITIES

**Keywords:** Workplace Communities, Indigenous Information Sovereignty, Grief Work and Recordkeeping

In this session we present three variations on the theme of listening to communities. The papers touch on three of the identified conference themes, i.e., the role of technology in shaping community dynamics; issues of information sovereignty; and the role of researchers and practitioners in fields committed to the well-being of people and their communities

1. Fiorella Foscarini will discuss some of the initial findings of her research involving listening to organizational actors while they interact during business meetings. Meetings are one of the most frequently invoked collaborative practices in organizations. In the past decades, the technological options enabling them have expanded considerably, in part as an answer to a need for collaboration to work across time and space. In her presentation, she will address questions such as: Why do people meet? How do meetings contribute to construct workplace communities as cohesive and stable, and at the same time, continuously evolving and contested spaces? And, how is the online environment changing the nature of meetings?

2. In her presentation Heather MacNeil will examine a particular community coming to terms with a traumatic past through the lens of a court case. In October 2017, the Supreme Court of Canada ruled that Indigenous people who suffered physical, sexual, and psychological abuse at residential schools could choose to destroy their testimony. The decision means that as many as 38,000 witness accounts, given by Indian Residential School survivors as part of the settlement process, could disappear by 2027. MacNeil will walk through some of the steps leading up to that decision to show how the competing imperatives of historical accountability and information sovereignty were articulated in that case, and what the decision implies about the complicated role of memory and silence in communal recovery.

3. The archival discipline and profession have particular ideas about what a record is and how to care for one; sometimes, however, those ideas are not unanimously shared by all stakeholders. In this presentation, Jennifer Douglas will discuss the ways in which a particular community talks about records, recordkeeping and care in interviews she conducted as part of a research project exploring recordkeeping, grief and loss. The interviews were conducted with bereaved parents and asked questions about the role(s) of records and recordkeeping in processing grief and bereavement. Douglas will consider how the bereaved parents she interviewed conceive of the nature and value of records (i.e., what is a record and why) and how they define care for records (i.e., who should provide it and how). She will also briefly discuss the initial findings of a second set of interviews, conducted with professional archivists, about their experiences of grief at work (i.e. working with records, with record creators and donors, and/or with researchers). Listening to communities in these contexts suggests that the archival discipline needs not only to expand its definition of record – a common refrain of the last several decades – but also to reconsider its fundamental assumptions about a record's preservation; this type of reorientation, she will argue, centres the well-being of communities (archival communities and creator communities) and of the relationships that form between them.

## Graduate Paper

Meissner, Janis Lena <sup>1,2</sup>; Strohmayer, Angelika <sup>2,3</sup>; <sup>1</sup>Open Lab, Newcastle University, United Kingdom; <sup>2</sup>fempower.tech; <sup>3</sup> School of Design, Northumbria University, United Kingdom

### DOUBLE DABBLE: SPECULATIONS ABOUT RE-DESIGNING CONFERENCES TO EMBRACE DIVERSE AGENDAS OF ACTION AND RESEARCH

**Keywords: Conference Format, Diverse Agendas, Impact**

CIRN is a vibrant network that consists not only of researchers, but also of archivists, artists and activists. The network takes pride in bringing such a diverse group of stakeholders together to foster productive discussions around their shared concern for the well-being of people and communities through more effective use of ICTs. CIRN is an attractive space to exchange experiences of facilitating transformative action in communities, to spark new project ideas, and form new powerful alliances in resource-constrained contexts. However, by framing this network as an academic conference we are bound to still operate within the confines of academia and its definition of ‘impact’ (at least to a certain degree). The format of an academic conference centres the needs of researchers regarding producing academic ‘impact’ and sets the focus on publishing papers. In turn, this runs the risk of primarily serving agendas of academia, rather than centring the needs and concerns of CIRN members in professional roles other than academic researchers.

For the purposes of this paper, we refer to these non-academics as practitioners. We are aware that this term dramatically over-simplifies their vast diversity of practices and agendas, however, it also lets us as authors (re-)consider our own situatedness in this context, being (doctoral and early career) academic researchers ourselves. This awareness is not to consolidate a paternalistic distinction between “us” and “them”. Rather, we want to express our genuine respect for practitioners as our invaluable allies, collaborators, and co-researchers in our community-based work and thus wonder openly how we can ensure that our discourse also serves their agendas. We (as academics) ask ourselves and CIRN as an interdisciplinary and community-oriented network: How important are these academic publications to the practitioners among us? Are practitioners’ interests, needs, and skills met and represented in this kind of dissemination of work? Or are there different formats we could use to better make use of the diverse capacity and rich interconnectedness of our network? Ultimately, we ask ourselves, in what ways can we re-imagine conferences like CIRN to more equitably accommodate the needs and impact agendas of practitioners and academics?

In this paper, we speculate about an alternative format that might add value to community-based research venues like CIRN. We present “Double Dabble”, a concept we developed as part of the fempower.tech collective, and describe how we organized a ‘feminist day of making’ in a public museum. The event brought together theorists, practitioners and the public around a shared interest in feminisms and hands-on making. Collectively, we bridged the gap between feminist theory and practice by using an anti-hackathon model that paired people from different backgrounds for in-situ collaboration. The paper begins with a brief critical introduction on the boundaries of academic conferences (such as CIRN or its sister conference Communities & Technologies) and their challenges to involve communities, practitioners and activists. We then explain in detail how we came up with the idea of “Double Dabble” and how it was implemented for the specific context of a ‘feminist day of making’. After this description, we reflect on the outcomes of the day. Finally, we speculate on the implications this concept could have for academically framed venues around transformative, community-based agendas such as CIRN. We conclude that a reduced focus on publications could be in favour of fostering cross-disciplinary exchange, deeper discourse, and more productive action while supporting network members in individually shaping their participation. In this way, we re-centre the needs of practitioners and engage novel ways of exchanging ideas.

PAPER

## **Workshop**

**Millar, Jason Lee; University of Ottawa, Canada**

### **SOCIAL FAILURE MODE ANALYSIS: FOLDING THE ETHICAL INTO THE TECHNICAL TO PROMOTE ETHICAL CONSIDERATIONS IN DESIGN**

**Keywords: Social Failure Mode Analysis, Ethics, Ethical Engineering**

Those of us who research the ethics (i.e. social implications) of technology, which currently includes such topics as inclusive and participatory innovation, bias, fairness, and accountability, may have encountered challenges when trying to convince engineers and computer scientists that such issues should be at the core of their design activities. Put another way, engineers and computer scientists are often interested in the ethical issues their technologies raise, but consider addressing those ethical issues someone else's job. The reasons for this are complex, but two facts certainly contribute to the current state of affairs. First, existing engineering curricula and practice tend to socialize engineers to consider so-called "soft" issues—e.g. ethics, policy, and politics—as existing "outside" of the core of the engineering discipline. Second, and exacerbating the first, those of us studying the ethics of technology tend to deploy our arguments using language that is relatively foreign to engineering, further widening the conceptual gap between "what ethicists do" and "what engineers do."

In this provocative, playful, and highly interactive workshop, participants will learn how to close that conceptual gap by reframing ethical issues as technical issues, thus making it more difficult for engineers to treat them as foreign to their practice. More specifically, participants will learn how to frame ethical issues as "social failures" of technology, akin to physical failures like "buckling" or "shearing." The primary conceptual and analytic tool I introduce to participants is the "social failure mode," a novel concept that has been purpose-built for this job. Social failure modes frame human-technology interactions in terms of social norms, and describe how a technology can either reinforce or undermine those norms, thus leading to varying levels of adoption and acceptance in society.

Working in small groups, participants will conduct a guided, case-based, social failure mode analyses of a technology, such as Microsoft's failed chat bot, "Tay", and Google's Glass. I will first introduce participants to the analytic framework that describes social failure modes, then I will show them how to use it to construct a "social failure mode analysis".

The overarching goals of this area of research (and the workshop) are twofold. First, it aims to provide a new analytic tool that empowers humanities researchers and other traditionally "non-technical" groups to engage technologists on a more level ground by framing ethical/social issues as fundamentally technical. Second, it aims to provide a proof-of-concept of how humanities researchers or civil society can shape their critical language to help bridge the conceptual gap between the social and technical aspects of technology. The corollary is that it also provides a model for engineers to understand how ethical issues are fundamentally technical in nature—that distinguishing between what is "social" and "technical" is a choice. Participants will leave the workshop with a practical tool they can use when interacting with engineers and computer scientists on ethical issues, one that reframes ethical issues as technical issues and brings the social and technical into close contact with one another.

Logistics: Ideally this workshop would be 90 minutes in duration, but could be delivered as a rapid workshop in an hour. No special materials are required. The room need only contain an overhead projector for the guided slideshow content.

## **Installation**

**Newman, Sarah; metaLAB at Harvard University**

### **THE MYTH OF AGENCY**

**Keywords: Autonomy, Agency, Surveillance, Data, Philosophy**

I am an artist and researcher, and my guiding research interest has always been in learning about ourselves as humans, which cuts across many domains: philosophy, psychology, neuroscience, and beyond. I am interested in what makes us who we are, what influences how we act, and how can we learn about ourselves to be more honest and do better -- both now, and in the future. *\_the myth of agency\_* is my new project, which aligns with several of the conference topic areas, but most acutely with "information sovereignty in a world of proprietary surveillance and datafication." Essentially it is flexible and site-specific installation that involves surveillance, autonomous agents, "chance" events, and an ambient audio track; viewers, by entering the room, trigger a series of philosophical reflections that question their underlying agency related to things both big and small. These experiences are coupled with surveillance feeds and the viewers' "participation" in the piece happens automatically, merely by entering the space.

The project directly follows my most recent work, *\_Moral Labyrinth\_*, which focused on the value alignment problem in AI. Essentially, the value alignment problem, and the moral questions which it considers, are all grounded on certain assumptions -- essentially about assumptions that we, as humans, choose our behaviors. *\_the myth of agency\_* explores the metaethical questions about *\_whether we have choice at all\_*. The project will look at computational, neuroscientific, and philosophical work in this area (both historical and contemporary) and the installation includes autonomously moving robots and humans sharing a space, where certain human "actions" trigger other events to take place, and then will juxtapose the actions of the robots with the "actions" of the humans. The sound component includes a number of computer voices that come from the dark space above and ask rhetorical, cryptic, or philosophical questions of the people in the room. They also sometimes make sounds that the human participants cannot comprehend. In particular, the goal is to promote critical reflection about our own autonomy and responsibility in the current technological landscape.

I exhibit my work in diverse locations and venues, but one thing that is particularly exciting to me is bringing the work into academic contexts (such as the CIRN conference) where other scholars are contending with related ideas but in wholly different ways. Installations of my recent work (*\_Moral Labyrinth\_*) have shown, most recently, at Mozfest (London, 2018), Ars Electronica (Linz, Austria, 2018), and WeRobot (Miami, 2019). I adapt my work to each site that I bring it, so in the case of Prato, I would design the work to fit the space available, and the audio component, in particular, would incorporate some of the conference themes and research questions.

## **Works in progress and more speculative pieces**

**Oliver, Gillian; Monash University, Australia**

### **SELF AS A COLLECTIVE CONCEPT: IMPLICATIONS FOR INFORMATION SYSTEMS AND SERVICES**

**Keywords: Archives and Memory**

Although the concept of collectivism has been recognised as a cultural dimension, there is relatively little evidence of acknowledgement of it in the design of information systems and services. For instance, technological devices such as mobile phones are designed for individual use, but do not take into account different understandings of 'the individual', in particular where individuals define their sense of self to include kin and family groups. This situation has major implications for understanding the nature of privacy, for implementing cybersecurity, and for promoting digital literacy; furthermore, those affected are often members of marginalised or minority populations.

**Power, Megan E; Monash University Australia**

**YOU WOULDN'T KNOW HALF THE WORLD WAS FEMALE: SKIRTING THE INSTITUTIONAL FIELD TO ACHIEVE GENDER EQUITY IN SCIENCE**

**Keywords: Institutional Theory, Gender, Research Policy, Research Culture**

How should a researcher who has nestled herself safely in 'institutional theory' respond when an overwhelming thread from 'her' research participants relates specifically to gender? Should she press on with her research plan, perhaps knowing that gender warrants specialist attention, or stop and take stock? This paper sets out some findings and reflections on how perspectives shared by 22 research and professional leads of Australia's ARC Centre of Excellence (CoE) Program, brought my focus around to face questions of gender in science and research management.

Tracey and Creed propose the real challenge to researchers of institutional theory is to attend to the truly big institutions of gender, class and race (Tracey and Creed 2017: 163). While 'gender' alone seemed too large a challenge to tackle, their follow-on note to consider "institutional aspects of legitimacy, temporality and the related norms inherent in social construction" made sense.

This prompted me to ask - Why is gender of particular interest for CoEs and why should an interest in this question by senior research leaders be surprising? That under-representation of women in science and technology continues to be a challenge in the 21st Century institution is a well cited fact, but why were people in research leadership roles in these well-funded Centres telling me about this challenge and, more specifically, why were they enthusiastically relating what were they doing about it?

This paper outlines how 'gender' within the CoE potentially provided an allowable (legitimate) area of policy development at a time of relatively under-developed institutional policy (temporality). From development of new approaches to gender representation in the 2011 Centres to establishment a requirement for all ARC CoEs to have an Equity and Diversity Plan by the 2017 funding round (a norm), this paper proposes underlying institutional and network-like effects are at play in the gender story.

This discussion could be of wider importance in recognising how and why 'gender' focussed initiatives are developed in institutional settings.

**Refereed Paper**

**Rhinesmith, Colin <sup>1</sup>; Dutilloy, Jo <sup>1</sup>; Kennedy, Susan <sup>1</sup>; McCann, Laurenellen<sup>2</sup>; Ritzo, Chris <sup>3</sup>; Bullen, Georgia <sup>3</sup>; Stenberg, Stephanie<sup>4</sup>;**

**<sup>1</sup>Simmons University School of Library and Information Science; <sup>2</sup>Build With; <sup>3</sup>Measurement Lab; <sup>4</sup>Internet2**

**CO-DESIGNING AN OPEN-SOURCE BROADBAND MEASUREMENT SYSTEM WITH PUBLIC LIBRARIES**

**Keywords: Participatory Design, Public Libraries, Open Source, Broadband, Open Data**

This paper presents findings from a participatory design workshop with public librarians and information technology practitioners to gain their insights on the development of an open source broadband measurement system for public libraries across the United States. Participatory design has been a key strategy in community informatics to engage users in the design, implementation, and evaluation of information and community technology (ICT). This engagement assumes that those most impacted by ICTs should be involved in making decisions about how these technologies are developed. While findings from previous studies have shown the value of using participatory design in community informatics projects, fewer studies have investigated how such design processes might be used to develop open-source technology systems with public libraries. Our study seeks to address this gap in the literature by focusing heavily on the participatory design elements in our data collection and analysis. Findings from our qualitative analysis of the workshop data reveal that public libraries want more knowledge of their broadband networks to better communicate with their patrons, respond to their communities' digital needs, and justify the importance of robust internet connectivity to their funders. We believe these findings show the value of using participatory design in community informatics with public libraries, as well as the benefits of sharing co-design techniques with researchers and practitioners in the field.

PAPER

**Graduate Paper**

**Seiter, Alessandra E.; Simmons University, USA**

**SMART CITIES AND PARTICIPATORY PLANNING: A CAUTIONARY COMPARISON**

**Keywords: Smart Cities, Urban Planning, Participatory Planning, Democracy**

In the past decade, two distinct approaches to urban planning have grown in influence alongside one another: the smart city approach, and the participatory planning approach. Broadly speaking, the smart city approach relies on public-private partnerships to build – sometimes from the ground-up – urban areas which use the data collection of residents’ everyday actions to drive algorithmic infrastructure processes and decisions. Also generally speaking, the participatory planning approach applies information and communication technologies (ICTs) to various aspects of urban life in the hopes of empowering community residents (as cited in Staffans & Horelli, 2014) to collectively determine the operations and development of the places and spaces they inhabit (Gurstein, 2014). While each of these working definitions are actively contested and operationalized in a wide variety of ways, common to all interpretations of both approaches is a promise of bettering the daily lives of city residents in individual and communal ways.

This paper critically explores the humanitarian promises of both smart cities and participatory planning in their various iterations, seeking to clarify a way forward for urban planning that incorporates technology in service of alleviating – rather than exacerbating – existing societal inequities. To do so, the paper will first outline a brief history of smart cities and describe the wide array of definitions that have been applied to them, then proceed to raise and discuss points of concern regarding the past and future consequences of a smart city approach to urban planning. The paper will then propose participatory planning as a tentatively more equitable alternative to smart cities, highlighting case studies in the approach that have succeeded in centering and empowering community residents. However, in order to caution against the very real possibility of the participatory planning approach functioning in similarly exploitative ways as the smart city approach, the paper will also present participatory planning projects that have fallen short of centering or empowering community residents. The paper will conclude by summarizing an urban planning framework that avoids the pitfalls of the smart city approach while maintaining the most promising aspects of the participatory planning approach.

PAPER

**Refereed Paper**

**Skill, Karin; Francisco, Marie; Linköping University, Sweden**

**A DIGITAL ANTI-POLITICS MACHINE? EXPECTATIONS FOR ARTIFICIAL INTELLIGENCE AND DATA TO SOLVE COMPLEX SUSTAINABILITY CHALLENGES**

**Keywords: Artificial Intelligence, Sustainable Development, Politics, Participation, Twitter**

This paper analyzes expectations expressed in policy texts about a relationship between artificial intelligence (AI) and sustainable development goals (SDGs). Focus is on the optimistic expectations loaded into the technological package of AI and data to solve complex sustainability problems. The material takes its starting point at the social media Twitter, where international actors publish tweets about AI and sustainable development, and direct attention to interlinked information and policy documents. The use of Twitter is further motivated by a collaboration between a UN initiative called Global Pulse, and the social media. AI is expected to solve sustainability problems ranging from global climate change to diagnosis of illnesses, and big data is expected to contribute with better informed decisions among politicians. As an example, a UNDP tweet describes AI as a “formidable tool” for governments and the public sector to achieve the SDGs. The material will be analyzed with theories from studies of digitalization and digital participation, environmental justice and distribution of risks and resources, and critical analysis of development. The results from the study will be relevant for actors who work with digital inclusion, civic tech, environmental information and ICT4SDG. Research questions deal with consequences for politics and civic participation. The analysis discusses how the expectations for AI to solve complex sustainability issues is a form of digital anti-politics machine, since conflicts of interests are neglected and the digital world is portrayed as a level playing field, in relation to James Ferguson’s classic work on development.

PAPER



**Work in Progress/Panel**

**Caitlin Doogan<sup>1</sup>; Larry Stillman<sup>1</sup>; Mark Howard<sup>1</sup>; Steve Wright<sup>1</sup>; Eduardo Villanueva Mansilla<sup>2</sup>; <sup>1</sup> Monash University, Faculty of IT, Melbourne Australia; <sup>2</sup> Pontifical Catholic University of Peru**

**POWER AND DIGITAL TECHNOLOGIES: A TRANSDISCIPLINARY DISCOURSE**

**Keywords: Surveillance, Capitalist Formations, Critical Theory, Theory, Practice**

We grapple with the grand challenge of increasingly mutating and rhizomic ICTs systems as forms of 'power container of modernity' (Giddens) or power-knowledge (Foucault) that can both enable and constrain our ways of thinking and acting in the world.

( Draft) This panel reflects a transdisciplinary conversation between researchers coming out of very different disciplinary paradigms - an engineer, a cognitive scientist, journeyman-sociologists/historians with action orientations and a philosopher. Can we develop a common language or metaphors? Or in fact, is the problem one that is continual because digital technologies and their effects continue to evolve and impact in as things in themselves as agents in the world and even reaching comment understandings is a Sisyphean task?

Each of us has written a position statement with ripostes and rejoinders from the others [still do be done/worked out]. We have everything in common as humans, but in some ways, our intellectual orientations and limitations fragment us.

What are our intellectual and practical concerns? What can do we bring them together to influence what we think is important?"

PAPER

## **Work in progress**

**Stillman, Larry <sup>1</sup>; Farinosi, Manuela<sup>2</sup>; Biswas, Monisha <sup>1</sup>; Ahmed, Nova<sup>3</sup> ; <sup>1</sup>Monash University, Australia;<sup>2</sup>University of Udine, Italy;<sup>3</sup> North South University, Bangladesh**

## **Facebook, Community Learning and Authority**

**Keywords: Facebook, Community Learning, Networks, Participation, Authority**

This presentation reviews ongoing activity in researching villager reactions and preferences in using Facebook as part of the PROTIC (Participatory Research and Ownership with Technology, Information and Change) project in two different areas in Bangladesh. This is a research and development collaboration between Monash University and Oxfam

Findings about villager and community preferences, based on analysis of posts, including photos, text, likes/tags and comments over a one-year period will be discussed.

The use of Facebook by a village community raises many issues:

- \* The complexities of implementing community-based research in a traditionally-oriented, gendered, traditional, socially and institutionally hierarchical environment.
- \* The limitations of Facebook as a research platform despite its huge reach.
- \* Issues of power, control and authority as they play out in such a platform as Facebook.
- \* The representation and presentation of 'community' in a Facebook group for the purposes of demonstrating innovation with technology.
- \* The use of Facebook to demonstrate community competency with ICTs.

PDF of PPTS

## Refereed Paper

**Wolske, Martin; School of Library and Information Science, University of Illinois, United States of America**

### **Networked Information Systems As Generative Words: A Freirean Critical Pedagogy Template**

**Keywords: Critical Pedagogy; Culturally Sustaining Pedagogy; Information Science Education; Community Informatics Practice**

In 1997 I began teaching the Library and Information Sciences master's course "Introduction to Networked Information Systems". In 2000, as part of a participatory action research program agenda identified by grassroots community partners, the students in this course became my army addressing the digital divide through a service-learning component.

In 2008, Junghyun An shared her extended case study of the course as part of her doctoral dissertation, Service learning in postsecondary technology education: Educational promises and challenges in student values development. In it, she found the service-learning component of the course provided a valuable extension to the course itself. However, it only advanced critical student values development when students entered the course primed to advance their understanding of the deeper socio-cultural agendas related to the digital technologies and the Internet. To address this, over the last eight years the course has progressively been restructured to increasingly incorporate critical constructivist and culturally sustaining pedagogies.

In 2017 the service-learning component was removed to further advance a Freirean conscientization as a primer for progressive professional library and information science community actions centering people rather than things. This paper will introduce a new teaching template in which the teacher-student uses "networked", "information", and "systems" as generative words, and uses digital storytelling and counter-storytelling as codifications and situation-problems. Through readings, recordings, small group discussions and professional journal reflections, and through hands-on activities with a Circuit Playground Express microcontroller and Raspberry Pi microcomputer, student-instructors work to identify and decode these situation-problems by working as innovators-in-use and sociotechnical meta-designers.

Learning outcomes sought include:

- Questioning who is shaping the design, creation, distribution, selection, and implementation of the many different information and communications technologies we use as a daily part of our personal and professional lives, and for what agendas?
- Questioning who WE are shaping in our selection, appropriation, and implementation of information and communication technologies within our work as information professionals, and for what agendas?
- Actively working as ally's and co-conspirators with the marginalized and oppressed, beginning with their agendas as guiding points, to advance the current capability set objectives of individuals and communities, and to more broadly counter the community's intersectional webs of oppression that have become part and parcel of so much of the problematic political agendas based on hyper-individualism, neoliberal capitalism, and technological utopianism.

ABSTRACT ONLY

# 'INSTITUTIONING' PARTICIPATORY DESIGN WITHIN INTERNATIONAL DEVELOPMENT AGENCIES

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**Abstract:** Participatory design (PD) stems from 'democratic' and 'participatory' cultures, especially as it is rooted in Scandinavian settings. It revolves around empathy, creativity, politics, ethics and criticality in the design of contextual and sustainable digital technologies to respond to pressing needs and social issues. In contrast, international development agencies often mimic existing hegemonic power dynamics when working with local communities. Approaches and processes adopted are mostly top-down even when it comes to innovation and do not necessarily echo the needs of community members. While social innovation might be already occurring within the local contexts in question, such agencies often fail to acknowledge and build on this when thinking about digital innovation. As a result, pushing for a PD agenda can be problematic and comes with its own set of challenges and tensions. The essence of PD relies on building a network, which brings in multiple stakeholders around common values and ethics, to ensure more structured and sustainable social innovation through digital and offline mediums within local communities. In this paper, I discuss three case studies conducted with youth volunteers from national organizations in Ethiopia, Lebanon and Denmark, which fall under the governance of an international development and humanitarian agency. While these contexts are strikingly different, they reflect parallels when it comes to challenges around participatory culture, with their own set of distinct features. From these case studies, I extrapolate key lessons for establishing a PD culture within such agencies and highlight tensions and limitations.

**Keywords:** Participatory design, participatory development, youth, social innovation

## **Background: Intersection between participatory development and participatory design**

There has been a paradigm shift within the development sector from the interventionist perspective towards a more localized and community-driven mandate. This has manifested by engaging with communities through participatory methods such as participatory rural appraisals (PRA) (Chambers, 1994) and photovoice (Wang & Burris, 1997). This shift towards more localized projects, coined as 'participatory development' has led to the emergence of various local organizations that aim to fulfill the agendas of international development agencies especially within what is referred to as the 'Global South' (Mohan & Stokke, 2000). Participatory development supports the creation of relevant and representative knowledge and content within local communities, aiming to empower them as agents of change (Frohlich et al., 2009). The focus on knowledge production and associated processes renders it more of a product that participatory research delivers for the sake of the development mandate (Mohan, 1999). As such, power dynamics within contexts of interest are mostly downplayed and participatory research dismisses the processes that led to their underdevelopment in the first place (Mohan & Stokke, 2000). This is problematic. Knowledge in itself is not enough for the empowerment of communities if they do not build up the agency to enact change by challenging existing social, economic and political structures and by re-defining existing power dynamics. One has to acknowledge that if local actors and researchers within the development sector are positioned as catalysts for radical change, it could have critical repercussions, especially within political systems that do not necessarily endorse democratic processes and change. Additionally, participatory development and participatory research often view community members as homogenous, failing to realize the striking differences

across them (Goebel, 1998) and to find ways to bring different stakeholders together to achieve more sustainable change.

The current development agenda revolves around the advancement of digital innovation through projects that push for the adoption of information and communications technology (ICT) to fulfill development goals. While participatory research seems to have anchored itself within the development sector, research around ICT for development still does not properly engage communities in the design process of technology. Various ICT projects include linguistic and cultural tweaks to render them more contextualized (Dearden & Rivzi, 2008; Bartindale et al., 2019). Nonetheless, members of communities of interest often find themselves pressured into using digital tools developed by agencies and organizations, that have failed to develop a clear understanding of the usability, usefulness and sustainability of such tools (Dagron 2003). According to Zamenopoulos et al., (2019), if people are actively involved in the design process, it enables them to have more control, become critical of their surroundings and develop skills and capabilities which are needed to properly shape the environment in which they live. As such, rather than being project-focused, the whole endeavor becomes transformational.

Taking into consideration the aforementioned, participatory design (PD) is a space that needs further exploration within development work. Rooted in Scandinavian settings, PD's agenda aims at 'democratizing innovation' by providing people from different backgrounds with the tools and mediums to support them in research endeavours related to issues that concern them (Björgvinsson, Ehn, & Hillgren, 2010; Von Hippel, 2005). Current research on PD aims to transfer design from confined spaces and silos into more public and contested spaces (Björgvinsson, Ehn, & Hillgren, 2012), to expand participation and achieve more transformational socio-political change. Manzini (2014) echoes this by emphasizing the need to create coalitions among various actors to properly trigger design capacity into action. Those actors should have diverse 'competences'; they could be design and technology experts or possess other valuable skills that could inform design. Manzini also defines a range of motivations and expectations in regards to design; those fluctuate between sense-making and problem-solving. From that lens, development agencies often fail to capture those nuances when it comes to the design and promotion of digital technology for innovation purposes. They often also fail to notice social innovation organically occurring within their contexts of operation. Social innovation as defined by Manzini (2014) is:

*a process of change emerging from the creative re-combination of existing assets (from social capital to historical heritage, from traditional craftsmanship to accessible advanced technology), the aim of which is to achieve socially recognized goals in a new way.*

Development agencies and organizations could benefit from participatory design and its ethical and value underpinnings to develop projects. As such, research interests would revolve around the 'institutioning' of participatory design within that realm. Institutioning as coined by Huybrechts, Benesch, & Geis (2017) encapsulates processes that gradually aim to reform, consolidate or challenge existing frames within institutions. From that standpoint, using my own reflections, this paper builds on the idea of 'institutioning' PD within international development agencies by highlighting underlying tensions and elements needed for such an endeavor.

## **Methodology**

I had undertaken the role of a research fellow within the innovation team of an international development and humanitarian agency. Based on the literature and my own research interests, I was particularly intrigued to explore in-depth the space for PD within that setting. The process started by finding an intersection between my own research interests and the interests of the team I was working with at the international agency's headquarters. While they were interested in exploring global insights from young volunteers around youth

volunteering and mobilization for strategic purposes, I was trying to investigate the possibility of developing participatory processes which could endorse a PD agenda; knowing that the team wanted to promote digital innovation within national organizations that fall under the umbrella of their agency. Three contexts were selected by the team and myself: Ethiopia, as it has a large pool of young volunteers and is undergoing deep political changes; Lebanon, as the setting for my doctoral research and being a Lebanese citizen myself; and Denmark, for comparative reasons between developed and developing settings. For both Ethiopia and Denmark, the team wanted the engagements conducted within a short time-frame. In contrast, Lebanon was a more immersive experience as the national organization was already a collaborator for my PhD study. In Ethiopia, I conducted four workshops with youth volunteers with the support of a staff member who accompanied me, and three interviews with staff members from the Ethiopian national organization. In Denmark, one workshop was held with volunteers, five interviews with staff members and two interviews with other key informants from other organizations. In Lebanon, I conducted three group discussions with staff members of a specific department within the national organization. In all three case studies, the participants were selected by key staff members of the three respective national organizations. As a researcher, I didn't have any control on who gets to participate in the process.

The workshops conducted had a similar structure for consistency and to document how the same process could be interpreted differently in different contexts. Each workshop included a priority-setting exercise which consisted of a spiral drawing in which volunteers organized what they perceived as their priorities in descending order: from most important (in the center) to least important (on outer layers) (Image 1). The second part of the workshop involved building a journey map (Image 2) for a project of the groups' selection, highlighting main challenges encountered, assets and tools used. Building on the journey map, challenges were gathered and volunteers were asked to suggest a list of recommendations for their own local center, the national organization which oversees the center and the international agency which oversees the national organization. As for the interviews, the guide was developed based on the interests expressed by the innovation team at the headquarters of the international agency. It was primarily targeted at capturing current practices, challenges and tools used by staff and volunteers of the different national organizations. It also included more focused questions around processes within the organizations (i.e. inclusion of young volunteers at the decision-making level), perceptions towards digital technology and its future use and recommendations that could feed into the future strategy of the international agency. All conversations from the engagements were audio-recorded. The discussions from Denmark and Lebanon were conducted in English and Arabic, transcribed verbatim and translated into English where needed. For the discussions held in Ethiopia, they were transcribed verbatim when speakers talked in English, otherwise the ongoing translation of the staff member who accompanied me was transcribed. At a later stage, a thematic analysis was conducted to extrapolate main findings.



Image 1: Example of Spiral Priority Setting Exercise



Image 2: Journey Map

## Key reflections

The activities and interactions that occurred were primarily targeted at understanding the situation on the ground for youth volunteering, mobilization and digital innovation within diverse local/national organizations that operate under the governance of the international agency. However, the findings reported here concern reflections and conclusions made from these engagements around the potential of advancing a more participatory culture and promoting PD within the context of international development.

## Tensions and challenges influencing the PD agenda

Various tensions exist within the different local organizations explored. Power dynamics and hierarchies are at the forefront in developing countries such as Lebanon and Ethiopia, as organizational culture mostly mimics prevailing political systems. Nonetheless, power dynamics are still manifested in democratic contexts such as Denmark, but are rather subliminal. Participation is exemplified in a country like Denmark as the space is more open for young people to be vocal and involved in the design of projects and tools. However, despite having young people in key positions within the organization I worked with, the underlying structure and processes were still criticized. Young volunteers mentioned issues around inclusion: referring to the need to have a more diverse group of young volunteers, including those who are usually marginalized in society, and have more flexibility at the decision-making level. They confirmed that having participatory sessions like the one that was conducted were much needed to echo their concerns and for them to feel heard. In contrast, staff members were certain about their support for participation of young volunteers and noted that they develop programs for those who are vulnerable members of the society. Yet, those members were rather portrayed as beneficiaries rather than being actively engaged from the inception phase.

In Ethiopia and Lebanon, the hierarchal, top-down structures were more explicit. It was evident that trying to push for a more participatory direction was problematic. I was faced with responses alluding to the idea that European methods do not match current processes within developing settings. While I tried to explain the importance of involving volunteers in the process of designing online and offline tools to facilitate mobilization and service delivery, the reality on the ground was different. The volunteers who participated in the workshops were assigned by higher management, ensuring their control over who was able to participate. In one of the countries, heads of centers were adamant on being part of the session, which I had to refuse to enable the participants to freely express their opinions and reflect their concerns. The threat would have been to have curated content that does not

necessarily reflect the realities on the ground nor the actual expectations, needs and capabilities of those who are not in a position of power. This in itself reveals the challenge of exploring PD processes in spaces where people in power might impose their own views under the pretext of 'knowing what it is best for their people/communities'.

Another point of tension that emerged especially in the context of Ethiopia was the language barrier. Throughout the engagements, I always made sure that I was able as a researcher to run the sessions. Considering that this research was commissioned by the head organization, which is based in a European country, and was time-bound, it prevented me from familiarizing myself with the contexts of Denmark and Ethiopia. Being Lebanese myself, the interactions with the Lebanese organization were different as I was fully aware of the realities on the ground and was able to have a more immersive experience. In Ethiopia, for all the sessions with young volunteers, a staff member accompanied me for translation purposes and to build rapport. The limitation was my inability to control the flow of the session or content as I was not certain of the translation and what was being told to the participants. It was obvious at instances that the discussion was shifting from the original purpose, making it difficult for me to steer it back to the points of interest. This put me in a position where I was trying to achieve a balance between maintaining the essence of a participatory process and fulfilling the assigned research agenda, while being parachuted into an unknown context.

In Lebanon and Ethiopia, members of the organizations conveyed that they are often placed at the recipient end of the spectrum, as projects are usually transferred from national/local organizations based in Western countries. This was evident, as the volunteers and staff from the Denmark organization had stated that they conduct international projects in various developing countries including Ethiopia. This was also confirmed by staff working in the Ethiopian organization. Consequently, while this is framed as experience and learning-exchange, which is the predominant culture of the international agency, ownership of the projects is often blurred and inclusion of local knowledge into the design of projects and digital tools is disregarded.

As a researcher, I did not want to replicate existing ways of operation within development work. I was avoiding the idea of convincing participants of a pre-defined agenda that aims to promote digital innovation into spaces that do not necessarily have the social, cultural and infrastructural requirements. In all three contexts, digital innovation was perceived as important but not necessarily needed due to an array of barriers related to digital literacy, physical infrastructure and culture. In Denmark, which is more advanced digitally, members of the organization were reluctant about the adoption of digital technology including social media despite being it something commonly relied on. They perceived that live interactions within the organization are far more important. Some stated that they are themselves trying to distance themselves from social media platforms on a personal level and do not wish to deal with it on a professional level. Yet, for others and especially younger members, this was not the case. They emphasised the importance of maintaining the physical interaction but wanted to have more visibility and take advantage of what digital technology has to offer. This in its turn highlighted the inter-generational differences that could influence the course of digital innovation. In Ethiopia and Lebanon, a major obstacle mentioned was digital literacy, considering that those organizations bring together various age groups and socio-economic backgrounds. In the case of Ethiopia, a large number of young volunteers are themselves from deprived communities that benefit from services of the organization, meaning that they also lack the required digital literacy. Another hindrance is the lack of infrastructure which was alluded to by members of the Ethiopian and Lebanese organizations. Those organizations oversee centers that often lack equipment such as computers and smart mobile phones or do not have access to internet due to cost or lack of coverage. Interestingly, while discussions were triggered around the creation of virtual platforms for communication and exchange in all three contexts, staff seemed to agree that having a physical space for people to convene and collaborate was more important and effective than any virtual space.

In all three contexts, participants agreed that partnerships with other stakeholders were essential and already occurring, yet processes to establish such partnerships were not very



clear and relations were often problematic. Issues of duplication, competition and lack of communication and coordination were raised as key challenges. These were attributed to the fact that certain stakeholders perceived the local/national organizations as being very top-down and non-participatory in their approach. Young volunteers in particular noted that as a consequence of the rigid organizational structures, their organizations might be missing out on interesting ideas and innovative modalities of operation and service delivery that other groups or actors might be engaging in. It was only in Ethiopia that a staff member described a pilot project aiming at establishing networks within local communities. The aim would be to engage different actors on the ground and grant ownership to the youth to lead on the community projects. However, this was not the general direction of the organization and it was not supported by resources that the head agency could offer.

All the challenges and limitations identified pose a dilemma on how would it be possible to promote PD as an approach for such organizations, especially with their interest in advancing digital innovation.

### **Implications on the ground**

Based on this research and the accompanying literature, it is quite evident that organizations mimic existing power structures within a country. Even if the organization is operating within a democratic context, hierarchal structures still exist but are not visible. Additionally, large institutions inherently possess a vertical structure in contrast to smaller or grassroots organizations, where a horizontal structure is easier to establish and maintain due to the smaller number of actors. There are key lessons and implications that need to be considered when looking at the 'institutioning' of PD:

1. PD as an approach needs to be explained to members of development agencies. As researchers, we must ensure they understand that it has to be contextualized rather than a one-size-fits-all solution. Even if a process is perceived to be participatory by such agencies, it does not necessarily qualify as PD. Within the context of development work, various pre-requisites need to be instilled to push for such an agenda.
2. Contending that participation is essential within PD, it is important to understand it from the lens of the context being explored. While in certain settings participation is somehow inherently democratic and inclusive, in others it has to be instigated by certain individuals within organizations. As researchers, we are compelled to accept that we do not always have the choice to steer the research agenda, who gets to participate or outcomes of the activities on the ground. We need to adapt our tools and practices to the surrounding environment, while creating safeguards for participants to trust us and feel the space we created is safe for them to share their views.
3. PD is built upon the foundation of being driven from the bottom-up. Yet, we cannot deny that even in contexts that are 'seemingly' democratic, it will take form as a hybrid of top-down and bottom-up initiatives. This is justified by the idea that most institutions with a long-standing history have been able to sustain themselves through their structures, as problematic as those may seem. The potential and more realistic change that could occur within is by opening the space for more bottom-up initiative, without completely dismissing the fact that sometimes a decision has to come from the top for things to be started. We need to realize as researchers that by 'poking around' in those agencies, we are somehow triggering research activities that require a decision to come from the leadership. Nonetheless, we have to ensure that subsequent research activities rely on processes and needs driven by the communities of interest, rendering the process more bottom-up.
4. Moving further towards a PD agenda on a larger-scale, development agencies need to build coalitions that rely on relational and horizontal relations rather than transactional ones with other actors of a local context. This paves the way for the

sustainability of any development project as stakeholders come together with a wide array of resources and skills, facilitating the development of a sense of ownership. This being said, within any context power dynamics are difficult to navigate but as researchers, we have to actively create such opportunities for dialogue. Being outsiders could be an advantage as it might motivate people to engage in such coalitions due to the perception that researchers possess solutions.

5. A key element to draw development agencies' attention to is the existing social innovation occurring within communities. The shortcomings that such agencies and organizations might be suffering from could be resolved by learning from the underlying values and processes behind such social innovation. The goal would be to create an infrastructure that could support and propagate it. Hence, the overall design process becomes a mix of design with and for communities (Manzini, 2014).
6. When considering a PD agenda for the development of digital technology that supports organizational processes, service delivery and even social innovation, it is essential to examine what is known as the 'installed base' (Karasti, 2014). This refers to existing socio-technical infrastructures within a context. While advancing digital innovation is currently a big agenda within the development sector, projects and plans are often too optimistic or unrealistic. Various contexts are not ready for massive digital transformation for infrastructural reasons, but also because people would often prefer to use tools they are already familiar with in both their social and professional lives. As such, exploring the digital literacy and expectations of members of organizations are important pre-requisites before pushing for any digital tool or project. Sometimes offline modalities prove to be more effective in achieving desired outcomes than digital ones.

## Conclusion

In conclusion, this research engagement was an introspective exploration into local/national organizations, based in very different contexts, that fall under the governance of an international development and humanitarian agency. Those contexts conveyed tensions and challenges, reflecting an organizational culture. If such development agencies are themselves struggling internally with 'participation' among other issues, it tells us a lot about how service delivery and projects are being implemented within communities targeted by such organizations. Some implications, lessons and reflections are noted around PD and how it could become a means for institutional transformation. This work also highlights how such organizations would need to move forward: by engaging more horizontally with diverse stakeholders and perhaps being influenced by processes underlying social innovation occurring within communities. This was a sense-making endeavor to fulfill pre-assigned research interests. The activities conducted in workshops and group discussions were an attempt to render the process more participatory, yet such flexibility was not possible in interviews. Apart from the reflections and lessons learned in this paper, this research resulted in various recommendations revolving around the topics that the team initially wanted to explore, moving the process towards the problem-solving end of the spectrum. However, the risk lies in how future research would take place and whether PD would be adopted to materialize those recommendations especially when thinking about digital innovation.

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## WHO SETS THE AGENDA? SUPPORTING REFUGEES' PATHWAYS TO HIGHER EDUCATION

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**Abstract:** Worldwide, refugees' access to higher education is severely limited. Over the last decade several online learning initiatives have been developed to ease refugees' pathways to higher education and to increase equity in this matter. Against this backdrop, the paper presents results from a research project that investigated refugee students' usage of a low-threshold online learning offer. The offer bundles Massive Open Online Courses (MOOCs) into full online curricula in different study tracks, with the aim to ease refugees' access to universities in host countries. It is accompanied by various support measures. Research results, based on combining participant data analysis (N=1375), two surveys and semi-structured interviews in a mixed methods approach, reveal some of the intricacies of online learning offers as well as the design of support measures in this context. The usage of the online learning offer in terms of MOOCs started and completed is rather low. The uptake of support services is high; and, at first glance surprisingly, participants use support measures independently of the provided online curricula, rather in correspondence with their overall individual needs and life challenges. They value the existing support but also highlight the need for more one-on-one support and opportunities to improve their language skills. On a more aggregated level, the results raise the question of who sets the agenda when designing (online) learning offers to increase equity in higher education.

**Keywords:** Refugee, Student Support, Online Education, Higher Education, MOOC, E-learning

### Introduction

Access to higher education is very restricted for refugees worldwide (e.g. UNESCO 2016, Lambert et al. 2018). Refugees striving for higher education in their host countries have to overcome a number of hurdles. Often they need to prove a certain level of language command, obtain an adequate legal status, and provide records of their university entrance exam. In addition, refugee itineraries frequently imply changing locations, difficult housing situations as well as limited means of living. Capacities in higher education in host countries, moreover, are often restricted and distributed on a competitive basis (Berg et al. 2018, Grüttner et al. 2018, Lambert et al. 2018, Streitwieser et al. 2017). Of course the challenges refugees face differ individually as educational and cultural backgrounds as well as socio-economic situations are highly diverse amongst refugees. Differences in the educational system and policies regarding higher education in different host countries add to this diversity. Despite the heterogeneity among refugees, the challenge to ease their pathways into higher education exists in every host country, albeit in various different forms.

Against this backdrop, various approaches have been developed to harness technology for innovative solutions (Colucci et al 2017, Crea 2016, Crea and Sparnon 2017, Dahya and Dryden-Peterson 2017, Dryden-Peterson et al. 2017). Our research takes a closer look at one of these initiatives, Kiron Open Higher Education (Kiron). Within the framework of the research project SUCCESS (acronym for "Study success and Study Opportunities for Refugees") in Germany we aim to assess the effects of this digital approach. For this paper, we particularly look at (1) how the support services are used that Kiron provided alongside online curricula, (2) what influences usage patterns, and (3) what value students ascribe to the Kiron offer. Our results show that services are used in an idiosyncratic way, in many dimensions different to the intended usage. In our discussion, we, therefore, ask the question of how to design a (digital)

support offer that best meets the needs of a varied target group or, to put it more succinctly, *who sets the agenda* when designing support offers in higher education for a vulnerable group, such as refugees, in order to increase equity in education.

We organize our paper as follows: First, we summarize previous findings regarding support for refugees' access to higher education. Second, we outline our research design, including a description of the context of our study, the online education offer of Kiron. Next, we share our key results as well as possible limitations. In the following sections we discuss our findings and end with our conclusions as well as pointers to further research.

## **Supporting Refugees' Pathways to Higher Education**

Increasing refugees' access to higher education can be considered not only an educational intervention but also a psychosocial one (Crea 2016), and could possibly foster social integration in a forced migration context (Berg et al. 2018). Generally, there is limited research on the situation of refugees as regards access to and study success within higher education (Berg et al. 2018, Lambert et al. 2018). The situation in Germany has only recently been getting research attention (e.g. Grüttner et al. 2018, Streitwieser et al. 2017, DAAD/DZHW 2017). Up to now, there have been insights to the complex and interacting factors that create barriers in accessing higher education in host countries, among them lack of information, legal status, language competencies, economic resources, housing situation, lack of recognition of prior learning, restricting national policies, etc. (Lambert et al. 2018). Little is known on the role technology can play in easing refugees access to higher education. Even less is known about how to design effective support programs that meet the actual demand of refugees; a demand which in itself is highly diverse. In addition, it needs to walk the tight path "between empowerment and stigmatization" (Berg et al. 2018, 57). In the following section, we summarize the findings on three relevant aspects in this regard.

### **Online Educational Offers**

Given the flexibility in time and place of online education, many recently developed projects use online education for enabling refugees' access to higher education (e.g. Colucci et al. 2017, GIZ 2016, Moonlite 2019, UNESCO 2018). These aim to be accessible in a variety of forced migration contexts, e.g. if living in a rural area in a host country, during migrant itineraries or in refugee camps. In particular, Massive Open Online Courses (MOOCs) with their "open access" policies allow for participation without tuition fees or any formal requirements such as university entrance qualifications or formally documented language competencies seem to provide at least a partial solution for the challenge at hand.

Research results on the impact of these projects show an uneven picture. On one hand, in general, completion rates of MOOCs are rather low (Breslow et al. 2013, Jordan 2015), MOOCs hardly are integrated into full online curricula nor do they lead to a formal academic degree; and even to get MOOC credits recognized in academic institutions often is challenging (Arnold et al 2018). These reasons seem to limit the value of MOOCs and other online courses for refugees (Fincham 2017, Law 2016, UNESCO 2018). Furthermore, the "open access" policy within MOOCs might deter refugees who need to protect their identities (UNESCO 2018). In addition, MOOCs and other online courses also come with shortcomings for refugees. These include language barriers, lack of cultural adaptation of learning material, a mismatch of existing and expected learning cultures as well as instructional methods (Crea & Sparnon 2017, UNESCO 2018).

On the other hand, there are indications of highly valuable effects: MOOCs and online courses provide higher education opportunities in areas where no other offer is feasible (for

examples cf. UNESCO 2018, 64-68 or Moser-Mercer 2014), they may provide a respected status as a student (Dryden-Peterson 2016, Crea 2016), keep educational trajectories mobile (GIZ 2016) or provide possibilities for community building and support networks (Dahya and Dryden-Peterson 2017, Dryden-Peterson et al 2017)

### **Need for Support within Online Educational Offers**

Generally, the need for support measures in online education is widely established. Support should comprise, amongst other things, technical support in accessing online learning platforms, guidance and orientation as regards learning materials, (online) learning techniques, and virtual communication and collaboration (Arnold et al. 2018, Baxter 2012, Bauer & Knauf 2018, Salmon 2011). Studies on online educational offers for refugees also highlight the importance of support which seems to be even higher in camp settings as under-resourced contexts (e.g. DAAD 2017, Moser-Mercer 2014). Several studies point to the significance of also integrating face-to-face elements if possible (Colucci et al 2017, Fincham 2017, GIZ 2016). This seems to be in line with Baker et al. (2017) who differentiated *hot*, *warm* and *cold* types of support (even if their investigation concerned support for refugees in general, not focused on online education). *Hot* in their classification signifies family and community-based support, *cold* referred to formal and institutional support whereas *warm* meant support by a person who might be distant but is still perceived as empathetic.

### **Program Design for Refugees' Access to Higher Education**

Given the limited evidence we have on how to support refugees' pathways to higher education, designing programs with this goal remains an intricate matter. Harnessing technology to tackle this problem, i.e. introducing flexible online education provides by no means a straightforward solution (Halkic & Arnold 2019).

The question arises how much can be designed for centrally and how bottom-up processes, involving refugees as relevant actors, could contribute to the design process (Reinhardt et al. 2018). In a critical appraisal of a pilot project in online education for refugees in camp settings, Crea (2016) develops three implications for designing programs for refugees in higher education: (1) to go beyond service delivery and connect the project vision with clearly circumscribed outcomes for project participants, (2) to embed project activities in the local context and to consider additional offers to the participants by other organizations and possibly connect or partner up with these, (3) continuously adapting the project according to feedback of beneficiaries and stakeholders.

### **Research Design**

Our study is placed in the (1) context of the online educational offer of Kiron, we frame our investigation with (2) an analysis model following the German Center for Higher Education Research and Science Studies (DZHW), and used (3) a mixed methods approach for data collection and interpretation.

### **Kiron Open Higher Education**

Kiron is a social enterprise that aims at supporting refugees' access to higher education with a special online educational offer: It uses MOOCs by various providers at its base, bundles them into full online curricula in five bachelor study tracks. Recognition of credits gained in MOOCs is facilitated by partnerships with regular universities; certification of accomplished

MOOCs is free of costs for Kiron students due to partnership agreements with MOOC providers, such as e.g. Coursera for refugees. Ideally, Kiron students will gain up to 60 ECTS studying MOOCs within a selected modularized study track using the online platform Kiron Campus. Then, students are supposed to enroll at one of Kiron's partner universities, get their credits recognized, and finish their bachelor degrees on campus. The entire phase of studying online at Kiron Campus as well as the transfer period Kiron offers a variety of (online) support measures such as a Buddy and Mentoring Program, Online Tutorials, Counselling, Study Weekends, etc. The support services are geared to successfully studying MOOCs, obtaining recognizable credit points, and as the "ultimate aim" (Suter and Rampelt 2017, 4640), to enrolling in a Bachelor study program at one of Kiron's partner universities. With this approach, Kiron considers the traditional shortcomings of online studying with MOOCs, identified through online learning research (s. above).

### **Analysis Model**

Following the work of DZHW (Mergner et al. 2015, Heublein 2017) we frame study success as a match between students' individual factors and the institutional factors, differentiating between social integration, academic integration and institutional integration. With also looking at institutional integration we go beyond the classic work of Tinto (1975) as we focus especially on the support services in place to increase the match that finally enable participants to reach study success.

### **Mixed-Methods Approach**

For this study we combine quantitative and qualitative data. We use (1) students data from all Kiron students who registered with Kiron between May and September 2017 (N=1375), forming our study sample. In addition, we use an (2) online support survey that focused on Kiron students' perception of the support services, including filter mechanisms due to different regional availability of support services, as well as a dropout survey that addressed students who had not logged in on the Kiron Campus platform for 90 days (n=988)<sup>1</sup>. Ten semi-structured interviews (via Internet, sampling according to maximal variety) with Kiron students presently in Germany are added as qualitative data source. Among the interviewed students are 9 male and one female student. Interviewees could choose between German and English as interview language. Interviews were processed using a Qualitative Content Analysis (Schreier 2012) approach.

### **Results**

In the following sections we will present selected results from both quantitative and qualitative data analysis. The first section summarizes results from these sources: student data (N=1375), support survey (n=203, response rate 14,8%), and a dropout survey (n=224, response rate 23%). It gives a short overview on the characteristics of our sample and shows how students use the Kiron offer, their satisfaction and evaluation.

To better understand students' perspectives, the next section then adds results from analysis of the interviews.

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<sup>1</sup> As of: 18.04.2018

## General Usage of Online Courses and Support Services

Our sample (N=1375) which is part of Kiron's larger student population were found to be highly heterogeneous. At the time of registration (05 – 09/2017), students came from 54 different countries and fled to 60 different host countries. The gender ratio was 4:1 with 80 % men and 20 % women. With an average age of 29 years, it is not surprising that nearly half of the students (n=569; 41%) had already completed a higher education program beyond secondary education. Of these, 56 % had completed a bachelor's program and another 8 % hold a master's or an equivalent degree and 1 % is holding a doctoral degree.<sup>2</sup> It is unclear how many of these degrees are recognised in the respective host countries.

The Kiron offer with its modularized curricula, MOOCs at its basis and study supporting measures alongside implies an ideal use of the program. Our results show that the majority of students do not follow this intended order. Although 1173 students (85%) (as of: 26.03.2019) have started at least one online course, 991 (72%) students remain without any completed courses. Of the other 384 (28%) students 178 have only completed one online course.<sup>3</sup> As parts of the dropout survey (n=181), we found that the majority of students state "personal reasons" (69%) most important for becoming inactive within the program, followed by "technology-related reasons" (23%). Students who stated personal reasons as most important for becoming inactive (n=133) name "no time for online studies" (16%) and "schedule conflicts" (17%) as main reasons.

To analyse whether the use of support services and online studies correlate, a Chi<sup>2</sup> test was applied with 2x2 tables for each service and dichotomous course variables with characteristics "yes/no".<sup>4</sup> Results show no statistically significant correlation between the use of support and both whether students begin or complete courses as well as low effect sizes according to Cohen (1988).

## Student Satisfaction and Evaluation of Support

As part of the student support survey, students were asked about their satisfaction<sup>5</sup> with the single support services offered at Kiron as well as how helpful they found Kiron's overall support regarding different aspects in life and studies. New variables were calculated for each student's average satisfaction along all support services and average evaluation along all aspects of life and studies. Students grade their overall satisfaction in average with AM=3.8 (SD=0.8) on a 5-point Likert scale. 50% of students rank his/ her overall satisfaction with a value of 4 ("quite satisfied") or higher.

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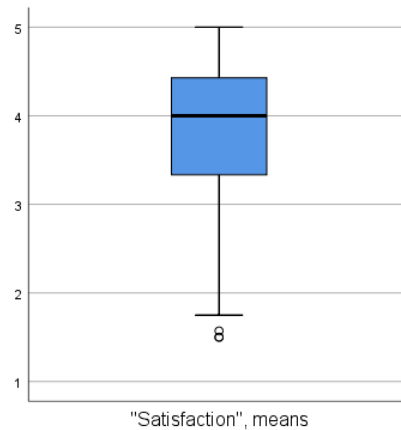
<sup>2</sup> The remaining 35 % have completed tertiary education below bachelor level.

<sup>3</sup> At the time of analysis students have had a study period of approx. 18-21 months.

<sup>4</sup> Fisher's exact test was interpreted in cases where expected cell frequency was  $\leq 5$ .

<sup>5</sup> Survey question: "How satisfied are you with the support services you have used?", Scale: "not satisfied at all" (1)... "very satisfied" (5)





**Figure 1: Average student satisfaction along all support services**

The evaluation of the helpfulness of support regarding different aspects is predominantly positive (Figure 2). On average students rate the helpfulness of support along all items with  $AM=3.7$  ( $SD= 0.9$ ) on a 5 point Likert-scale. However, there is a deviation from the mean regarding the evaluation of support for the four items “helpfulness for making contacts with local people (1), other students (2) and academics from own study area (3). Combining these aspects into a new variable “Making social contacts” we receive:  $AM= 3.3$  ( $SD= 1.2$ ) which is 0.5 points lower than the overall average evaluation.

**Figure 2: Student evaluation of helpfulness of support**

### Explaining Usage Patterns

As mentioned earlier the use of Kiron online courses and support were found to be independent. In the following section we present results on students’ experiences with online

courses and support services, the values they ascribe with these as well as central influences on the usage.

### Online Courses

Although the majority of students do not seem to follow the modularized study tracks designed by Kiron, students completed single courses or at least started studying online. On the one hand, interviews show specific values that students ascribe with studying online. However, on the other hand, students also face various difficulties in this regard which both can result from external factors within students' life realities as well as from the conditions of online studies.

#### *Usage and ascribed values*

Students consider online courses as an opportunity to refresh knowledge gained through interrupted education back home. The pluses they see at Kiron are especially the certificates free of charge for refugees. Furthermore, the courses are a source to gather information around specific topics. For example students who volunteer to help other refugees report to have used online courses to learn more about the legal framework of asylum. In addition to that, courses which convey soft skills can be helpful when applying for a job. Easy access and time-space independency are also mentioned as advantages of studying online.

#### *Influences on the use of online courses*

*External:* For some students the Kiron curriculum is not what they are looking for. Some want courses on a higher level as they have already completed a bachelor and other look for another content that fits their previous academic subject or interest. Students mention that they lack English skills as these either have not been practiced for a while and/or the use of another local language in the host country gets in the way. This makes it difficult for them to follow the content, which can be even worse when often there are no slides to follow the orally presented content.

Furthermore, an insufficient ICT infrastructure makes regular studying almost impossible:

*15: Actually, it was not time, but it was services, everything was really very difficult for me to continue studying platforms because of the accommodation I needed. I had no access to internet so I have to go to cafeteria or anywhere else to be able to get connected into Kiron. I still have no internet in my accommodation where I live.*

Drawing from that, ICT non-availability is due to specific housing situations. Living in a camp or a refugee shelter with shared rooms is problematic as students have no free internet access. As parts of the support survey 58% (of n=179) stated some to great difficulties with their housing situation, and interviewees also reported on their difficult housing situation. Additionally, keeping up the motivation to complete a course is reported to be a challenge. Although offline study weekends organized through Kiron are mentioned as helpful to foster motivation, maintaining it on the needed level to continue started courses remains difficult.

*Inherent:* Critical aspects which students mention with regard to the nature of online studies are multifaceted. There is too little communication in the online environment which does not allow for queries or students do not know whom to ask when something is unclear. In addition, very good time-management and self-organization are needed and online courses are considered too theoretical, to name some of the mentioned challenges. Those students who use online courses to try out a new subject also report difficulties in understanding the new content.

## Support Services

### *Usage & ascribed values*

Support usage patterns of the interviewees show a preference for offline support offers such as Study Weekends, Online Mentoring as well as language courses. Some students even travel to other cities to join Study Weekends which only took place at the two Kiron offices and focused on specific topics like a maths weekend. Generally, there is a tendency towards support offers that allow for a personalized one-on-one support. Thus, Online Mentoring and the Buddy Program are especially popular. Although Online Mentoring comprises of only one initial offline session and then continues with only with online meetings, several students managed to meet their mentor in person even if he or she did not live in the same town. Interviews show that students joined single career events that were organized by Kiron in cooperation with corporates and focused on topics like “how to write a good CV” and job interview training. Two patterns were found to be dominant for students’ arguments as to “why they consider Kiron as helpful”.

First, “*Do something for your future*”: When arriving in a new country and society some refugees come without any documentation, not knowing where to start or continue their life journey. The asylum process can be slow leading to a feeling of passiveness and helplessness. One 35-year old from Syria describes this situation as follows:

*14: My experience was first, that I just sat at home for 14 months, I didn't do anything. Just studied a little German for myself and nothing else. Then I had the interview for refugees and got a residence status. [...] Then I wanted to find an apartment, too many papers to fill out with the authorities and then Kiron came and did something, you know? Did a little 'Come, you can do something here for your future, you can study at a normal university. That's really good. Good idea and good work. (authors' translation)*

Although joining Kiron so far has not helped him access a regular university, this student is convinced of the usefulness of the Kiron offer. During this initial period of time, Kiron seems to offer refugees interested in higher education an opportunity to become active again for their future. Another student who was placed in a very small town after arriving in Germany describes how he suffered from “waiting” and feared to “waste his time” (11) after some months. This caused him to drive two hours forth and back every day to join the nearest German class he found. Another example shows why Kiron is being experienced as helpful by refugees. A student from Nigeria who had no documents with him and needed to start life from scratch points out:

*18: After that I was without any material because of my journey to Germany. [...] I lost my passport and I was without any material. With the help of Kiron I was able to get connected, go into further study and have more knowledge about business and economics. It was of great help to me.*

According to this, getting connected and access to knowledge are highly valued. Interviewee 8 has studied single courses at Kiron, but has not used any support offers at Kiron. Online studies, however, did not help him apply successfully to a university. He also registered for the Online Mentoring but something in the process went wrong and he never got back to it. Although he thinks: “for me Kiron is good.” he stopped using it in order to focus on his applications to universities. He explains:

*18: I did a lot of research on how I can further my education. I think the major problem was my current status because none of the universities wanted to give me admission with my status. With Kiron I was able to have an opportunity. Kiron gave me opportunity, but in the*

*end I still hope maybe tomorrow I will be able to find my dream university and continue my dream career.*

It seems as if the value of the Kiron offer lies in the provision itself as students highly value the offer even if it has not helped them access a university. To most students what matters is the opportunity as such of which they make flexible use. “Actually, it is very useful and efficient for the students that we have this opportunity. There are some people available for us just to help us freely as volunteers. I’m really thankful, grateful for that.” (I3) explains a student from Afghanistan.

Second: *Social contacts and guidance*: Another central value for Kiron students is social contacts made through using support at Kiron. One student responds to the question “what services he had used” with “For example I met people. I think this is really important for me.” (I1, own translation). How important it is for refugees to make social contacts and how this permeates their experiences with the Kiron support is highlighted in the following quote from a 27-year old student from Syria:

*I2: They were always in touch with me and they asked me if I need anything else. One time we went to Thanksgiving dinner and they all were kind and they were nice and they introduced me to other refugees and they introduced me to Kiron team. It was something nice because at first I didn’t know anyone here in Germany, I was alone. I am here without my family. Also, I got to know other refugees and we exchanged our numbers. We talked after that and we shared all our experiences here in Germany.*

Additionally, the role of a mentor seems to be specific for students. This is reflected by one student who signed up for the Online Mentoring. Although he never got a mentor because of technical issues (he could not open a link Kiron sent him) he has clear expectations. For him a mentor is someone who should guide and motivate and provide mental support in his difficult life situation:

*I8: Because I need a guide. That was the reason why I wanted to sign up for mentoring because I need a guide because I was filled with frustration because my initial expectation was to get admitted into university last year in 2018, but it was quite unfortunate. I was frustrated. I really need a mentor, someone who will say never give up, keep trying.*

This example shows that besides making social contacts it is also guidance that people need, especially in the initial period after arrival in a new country. Another student points out the relevance of a personal relationship with his mentor: “when we were finished, we talk about privacy, or problems that I have. And I think, this was most important.” (I1, authors’ translation). In contrast, the Student Forum for example, as one student explains, does not allow for a more personalized support:

*I10: There is this forum for example. There are 1000 people; they live in Libya, in Turkey, in different countries, in Germany. And an organization is missing, there are so many people and we need categories, for example that people who are in one place, Bielefeld for example, who study Computer Science, so that they have one group or a weekly meeting in a [location] from Kiron for example. Because it’s a chaos and so many people, yeah. And I think this is not organized well.*

The aspect of *personalization* also seems to matter in open online support which is not designed as one-on-one measure. Besides Online Mentoring, Kiron’s Transfer Guidance is highly appreciated among the students. Especially students who live in Berlin use the possibility to seek advice at the Kiron office personally:

*I2: I visited them two times at the office. One time I had questions about the Master's program and I went there and I met [...] a human resources employee. They sat with me for two hours and they showed me all the Master's programs online and how I can search for them and what I should look for and how I am going to know if the Master's program needs money or doesn't need money and in which languages they are, they were asking for. [...] Yes, actually, it was very, very positive experience with them. (authors' translation)*

This example of a student who wants to study a Master's program shows that personal guidance is considered highly valuable as it delivers all needed information at once and from one source and allows for a consideration of individualities.

#### *Influences on the use of support*

As quantitative results previously showed, the personal dimension seems to be most important when students stop using the Kiron offer. In what follows, explanations for students' usage patterns regarding support mainly resulting from their life situation will be presented.

*Limited resources & priority setting:* During the initial period, after arrival in Germany, most students face a time of passivity and no access to support. For some of them this, however, changes after some time as they proactively search for support like language courses in the first place followed by counselling services at universities or they apply at university independently. This often leads to stopping or reducing the participation at Kiron. Some students still use the Kiron offer as complimentary service and pick those opportunities not received elsewhere. In the course of their integration process, students report they became very busy with many different obligations: language courses, finding a job to improve the chances of staying in the country and fulltime work. Consequently, not much time is left to regularly use the Kiron offer let alone follow the intended concept consisting of a modularized curriculum and accompanied support services. A female student from Syria who, independent of Kiron, applied successfully to a scholarship program for German language studies but still after years struggles with her legal status explains why she has stopped using Kiron after some months:

*I7: It depends on the situation. For the situation like mine it was not really helpful, but the services yes. When I started Coursera, when I started Kiron I had nothing to do in this time so I really had good time with studying online. If someone has more time it's really perfect. [...] I had a couple of two or three months just doing nothing.*

This example also implies that the usage depends on the current individual life situation and that support can be useful therein while online course do not fit in.

One more factor was found to be relevant. Similar to studying online, insufficient ICT infrastructure also can limit the use of support measures. Often students' only way to communicate with Kiron and others, to get information on support services and use these regularly is at internet cafés. A regular internet access is also a pre-condition for communication with Kiron's online Help Desk, in terms of organization prior to offline events or when communicating with a buddy or mentor. As parts of the interview organization we also experienced that students often needed several days, sometimes a week to respond to an e-mail.<sup>6</sup>

*Social contacts & guidance:* On the date of the interview, students have had a minimum stay of three years in Germany. As part of the support survey we found that 48% (of n=180) have

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<sup>6</sup> Interview participants had already given consent to Kiron prior to the scheduling of interviews organized by us.

some to great difficulty related to “contact with locals”. As mentioned earlier, students appreciate meeting other refugees and Kiron staff during their initial stay. Still, from a long-term perspective they still suffer from few social contacts within the broader host society. Interviews show that students have only sporadic contact with Germans, even if they are already studying at university. Furthermore, gatherings are rare and usually limited to a certain contexts such as support programs. These contacts often do not persist in private life. In the beginning, students often made private contacts with seniors from the neighbourhood who volunteered to help refugees. Accordingly, they especially miss contacts the same age. Interviews reveal that students need friends who have time to meet regularly, someone to talk to and who can help with challenges. One student explains:

*I1: What makes it difficult? You have no one to talk to, I mean to talk personally. Yeah, and I talk to my parents every day. I've been in Germany for three years now and until now I have no friend, no German friend. Among Syrians I have many. (authors' translation)*

This need varies between students who live in Germany alone and those who live with their family. Even if they used Kiron's offline support, Online Mentoring or the Buddy Program, all this has not helped with making contacts within the broader local society, because contacts made at Kiron are limited to (1) the people involved at Kiron such as staff, other Kiron students and mentors/ buddies and tutors and (2) rarely persist after the actual support ends. In single cases students managed to keep in touch among each other through WhatsApp groups or other self-organized communication and mentoring relationships that went beyond the functional dimension seem to have better chances of continuing.

Two major challenges add to the difficulties with making social contacts: language barriers and cultural differences. Language barriers already became visible during the interview itself. In terms of cultural differences, students found Germans to be “distanced” and “not so open” which they experienced as quite challenging regarding social integration and compared to their culture of origin:

*I4: For example it's not like that with us. [...] There are small shops and you can sit with your neighbours and chat and...yes. It's another system, another culture. But here people work the whole day until five, six o'clock, from the morning until the evening and, yes...always stress with the authorities, with neighbours and not easy. (authors' translation)*

In addition to that, stereotypes and prejudice against refugees and Muslims within the host society are being experienced wherefore some students think people may be “scared of them” (I1 and I2).

## **Limitations**

The presented results come with several methodical limitations. Participation in the online survey and interviews is limited to those students who have access to ICT and internet and who have sufficient language competencies in English or German. Furthermore, students who are not satisfied with the Kiron offer may have not participated because of that. In general, survey respondents as well as interviewees might be skewed towards those more invested in the Kiron program. The presented interview results do not fully cover the diversity among Kiron students as these are limited to the German context.

## **Discussion**

While Kiron has designed its offer so that support services should contribute to study success in MOOCs to obtain recognizable credit points, and students can benefit from a

modularized curriculum within recommended study trajectories in the different Kiron study tracks, Kiron students seem to use the offer differently. They use support measures and online studies independently. While course completion rates are low, those students studying courses have specific goals and thus study single courses which they consider interesting and useful with regard to their previous educational experiences and goals instead of studying the modularized curriculum designed by Kiron. Challenges regarding online studies both result from inherent and external factors which show that, besides the existing, general difficulties with studying online, refugee students' life circumstances add further barriers on top.

Framing study success as a match between students' individual factors and the institutional factors, differentiating between social integration, academic integration and institutional integration as we do in our analysis it seems that students life situations as refugees, accessible resources and their individual goals have the strongest impact on the uptake and usage of the Kiron offer. Students are highly satisfied with the support measures and consider them as valuable. The subjectively perceived value associated with the Kiron support mostly serves needs which primarily result from their situation as refugees. Especially in the initial time after arriving in a host country, the Kiron offer is seen as a way to become active for the sake of their future and a first starting point to connect with locals. Having the chance and the power to act can be especially important when refugees suffer from a very long asylum process and no access to alternative support. This is a time when Kiron seems to be most valuable to refugees. Thus, educational content and support that is easily accessible and comes at the right time seem to be satisfying enough. Making social contacts and receiving educational (and other) guidance is what students need in the beginning the most and what they partly find in Kiron's support measures. What does not seem to matter yet are the type of contacts and their intensity. With the priority to get connected, become active and meet people, students pick those services that possibly cover their demands irrespective of what outcomes were intended by Kiron. As a result, students' subjective evaluation of the support services is positive as long as these needs are fulfilled to a certain extent and irrespective of the offer's ultimate goal which is enrolment at a partner university. What most likely also influences the overall positive evaluation is that Kiron's offer is free of charge, students are free to use it or not as it is open to all refugees.

After some time spent in the host country student engage with other obligations and continue to use Kiron support complimentary or stop using the offer completely as their temporal capacities decrease. As part of this, students' priority setting shifts in favour of opportunities found elsewhere. In addition to that, the usability of the Kiron offer is often limited especially in the initial period, through a lack of ICT infrastructure to use online support services regularly and to study online courses. The need for social contacts that go beyond a functional support context increases, but difficulties finding contacts which "last" and friends both remain after years spent in the country. This also leads to a punctual use of the Kiron offer in favour of social interaction. However, the use of support does not improve students' social situation beyond the Kiron 'community. It is necessary that social relations develop into more than a purely functional connection in order to continue after initiated support ends as examples from the Online Mentoring show. Two aspects making social integration difficult are language difficulties and differences compared to the culture of origin. . It seems to be a vicious circle: cultural and language barriers limit social integration, while the latter is needed for cultural exchange and improvement of language skills.

As regards institutional integration Students seem to become familiar quickly with the Kiron system. The question remains to what degree this orientation within the Kiron study program facilitates institutional integration in prospective universities. A social enterprise supporting refugees in a low-threshold approach does not compare easily with a state-run mass university, even if a partnership agreement between Kiron and the university exists.

## Conclusions

The initial time after arrival in a host country needs low-threshold interventions which are easily accessible and free. Although online interventions seem to be promising in this regard, different factors influence the usability of such offers. Influences that can limit expected outcomes result from individual and structural dimensions of refugees' life realities. Moreover, as the presented example shows, the use of low-threshold approaches sheds a new light on refugees who appear as active agents instead of passive receivers of help. Despite the thoughtful design of the Kiron offer, it is the students who set the agenda of how to use it. They are actively seeking and selecting support according to their needs and thus act as agents in favour of their destiny.

At the same time, the issue of program design for a highly heterogeneous target group arises. With low threshold approaches the first two implications for effective program design according to Crea (2016) become problematic. Low threshold approaches risk to overlook important conditions under which the intervention is implemented which in turn may limit to what degree intended goals are reached. In fact, low threshold approaches make it inherently difficult to go beyond the offer itself, but define precise program goals as outcomes for participants. The same applies for considering contextual factors sufficiently. In our example, in order to make (online) support offers usable the availability of necessary resources - like language skills and access to ICT - must be examined. In addition, refugees' specific life circumstances need to be taken into account.

The adaptation of interventions "based on context and feedback" (Crea's 2016, 21), which were once implemented as fast response for refugees in an urgent situation, is necessary. For this, further research to understand what motivates and what restricts usage and thus desired effects is needed. Students' preferences resulting both from their biographies before refuge as well as needs embedded in their lives as refugees such as social integration need to be taken into account. Otherwise, focusing on access and relying on agency can turn into low effectivity and efficiency as well as more social inequality (cf. Halkic & Arnold, 2019).

Given the heterogeneity in our example, one way to move forward might be to add sub-programs with clearly circumscribed goals and certain pre-requisites. Also, the question remains whether all of these aspects can be addressed by one organization or intervention? Another way forward might be an extended network of partnerships that complements different sources and providers.

## Acknowledgements

This work was supported by the Federal Ministry of Education and Research in Germany (BMBF) within the framework of the research project "SUCCESS – Study opportunities and success for refugee students" (duration 2017-2019) at Munich University of Applied Science (funding ID 16DHLQ006). We would like to thank all Kiron students who participated in our research.

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# Who sets the agenda? Supporting refugees' pathways to higher education

Belma Halkic, Patricia Arnold  
Munich University of Applied Sciences, Germany

**CIRN Conference 2019**

Prato, 8 November 2019



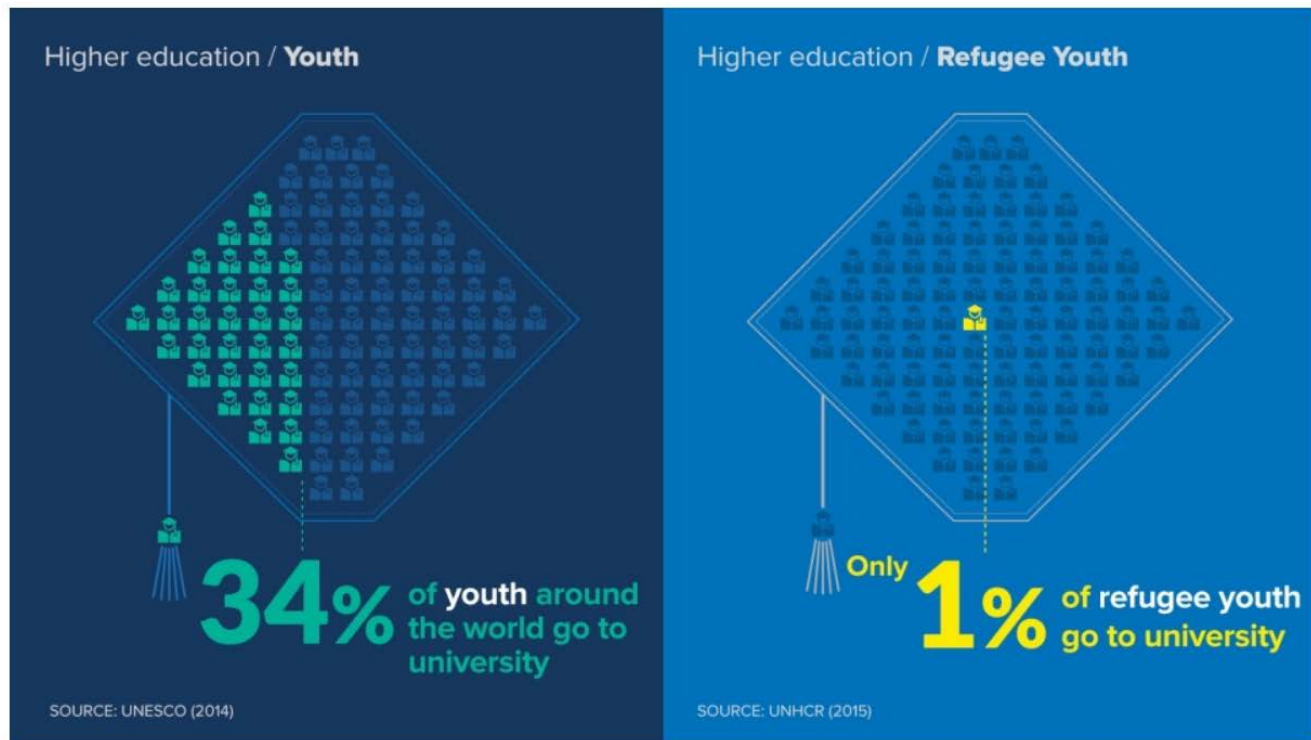
# Agenda

1. Context – Refugees' Access to Higher Education
2. Digital „Solutions“ – What Do We Know So Far?
3. Research Framework – Project SUCCESS
4. Results
5. Conclusions – Who Sets the Agenda?



# Context – Refugees' Access to Higher Education I

- Restricted access / variety of hurdles



<https://www.unhcr.org/aiming-higher.html>



# Context – Refugees' Access to Higher Education II

The infographic displays six Sustainable Development Goals (SDGs) in a grid format. The goals shown are:

- 1 NO POVERTY**: Represented by a red square with a white icon of a family.
- 2 ZERO HUNGER**: Represented by a yellow square with a white icon of a bowl of food.
- 6 CLEAN WATER AND SANITATION**: Represented by a blue square with a white icon of a water tap.
- 7 AFFORDABLE AND CLEAN ENERGY**: Represented by a yellow square with a white icon of a sun.
- 8 DECENT WORK AND ECONOMIC GROWTH**: Represented by a dark red square with a white icon of an upward-pointing arrow.
- 12 RESPONSIBLE CONSUMPTION AND PRODUCTION**: Represented by a brown square with a white icon of a circular arrow.

Below the grid, a blue box contains the following quote:

“A well-established, properly-regulated tertiary education system supported by technology, Open Educational Resources (OERs) and distance education modalities can increase access, equity, quality and relevance, ..UNESCO 2015

To the right of the grid, a large red box contains the text:

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all



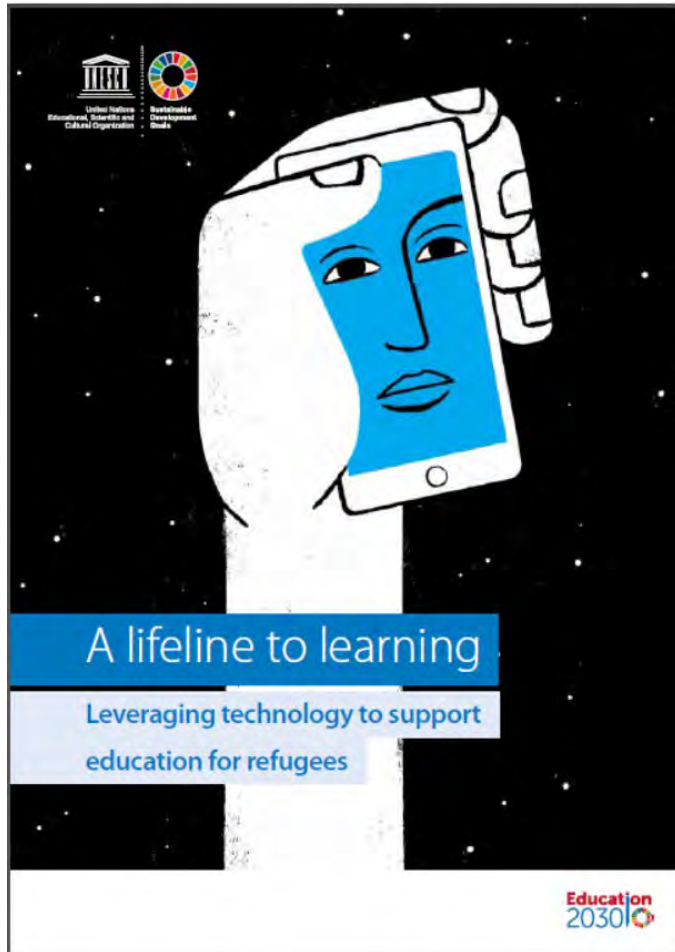
# Agenda

1. Context – Refugees' Access to Higher Education
2. **Digital „Solutions“ – What Do We Know So Far?**
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# Digital „Solutions“ – What Do We Know So Far I

## UNESCO 2018



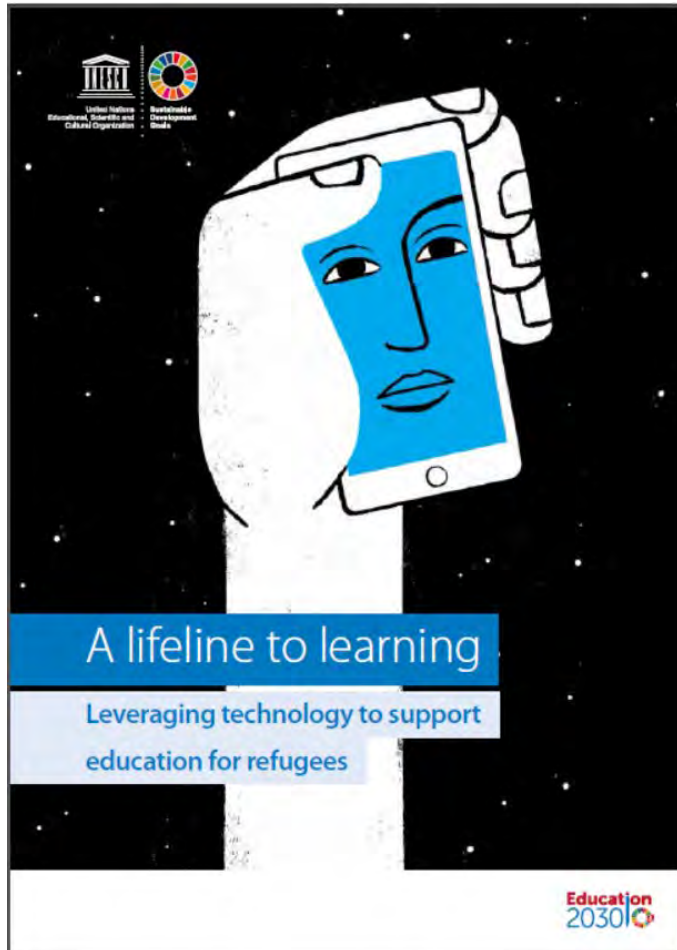
- offer flexibility in time and place often eases access, especially massive open online courses (MOOCs) with no fees / no prerequisites (Colucci et al. 2017, GIZ 2016, Moonlite 2019, UNESCO 2018)
- provide respected status as student (Dryden-Peterson 2016, Crea 2016)
- Keep educational trajectories mobile (GIZ 2016)
- Provide possibilities for community building and support networks (Dahya and Dryden-Peterson 2017, Dryden-Peterson et al. 2017)





# Digital „Solutions“ – What Do We Know So Far II

## UNESCO 2018

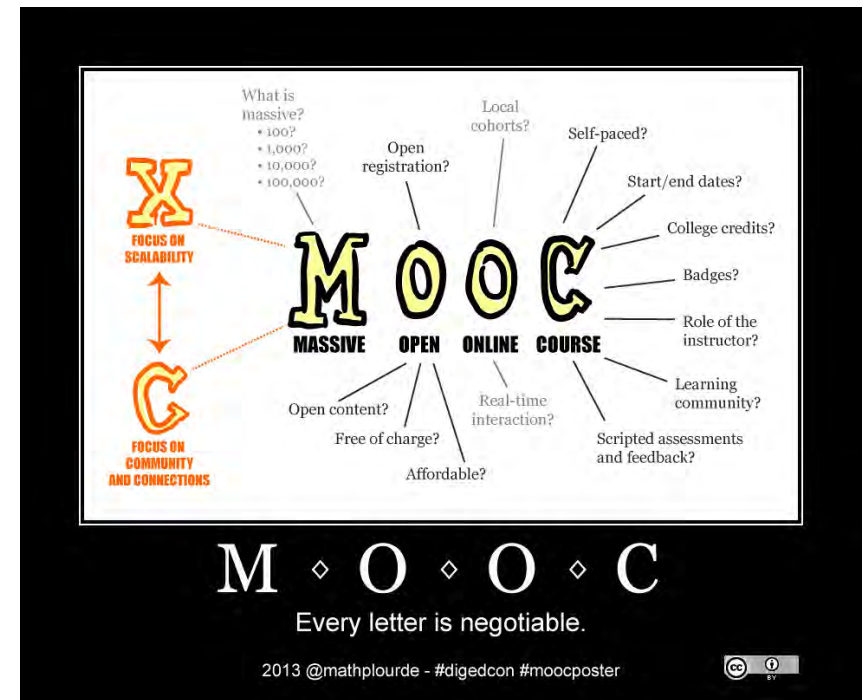


- “open access policy “ of MOOCs in conflict with need to protect one’s identity (UNESCO 2018)
- language barriers, lack of cultural adaptation, mismatch of existing and expected learning cultures & instructional methods (Crea & Sparnon 2017, UNESCO 2018)
- Blended learning formats with face-to-face elements often preferred (Fincham 2017, Law 2016, Colucci et al. 2017, UNESCO 2018)
- Inclusion and gender equity as an issue (Dankover & Giner 2011, Greenaway et al. 2016)

# Digital „Solutions“ – What Do We Know So Far III

## MOOCs

- In general low completion rates (Breslow et al 2013, Jordan 2015)
- Professional development purposes rather than first degrees (Bates 2016)
- Recognition of MOOC credit is problematic
- Rarely bundled in full curricula / degree programs
- Support needed on different levels (Baxter 2012, Salmon 2011, Moser-Mercer 2014)

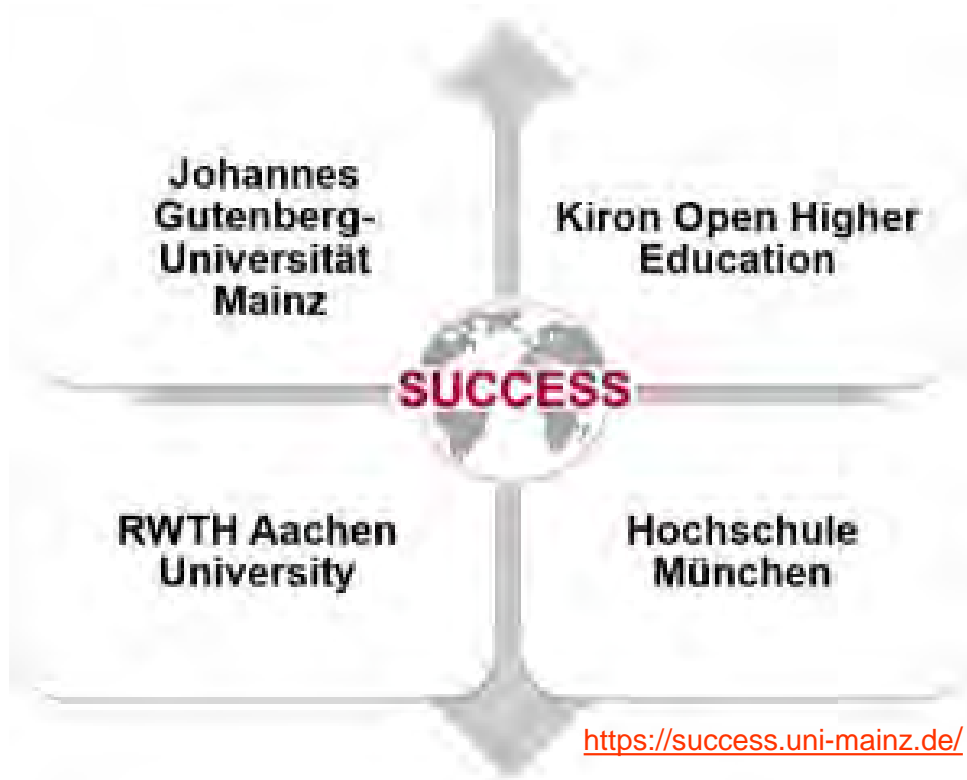


# Agenda

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# Joint Venture Research Project **SUCCESS**



## Study Success and Study Opportunities for Refugees in Higher Education (SUCCESS )

- 2017-2019
- funded by the FMER (BMBF)
- Online Self-Assessment
- Competence diagnostics
- **Support measures**



# Kiron Open Higher Education – low threshold approach

- *“Refugees live for years in uncertainty, their talents on standby”*

**kiron** (Markus Kreßler, co-founder of Kiron Open Higher Education) MENU

<http://www.goethe.de/lhr/prj/daz/mag/spr/en14988913.htm>

**kiron**

Open Higher Education for Refugees

Kiron enables access to higher education and successful learning for refugees through digital solutions.

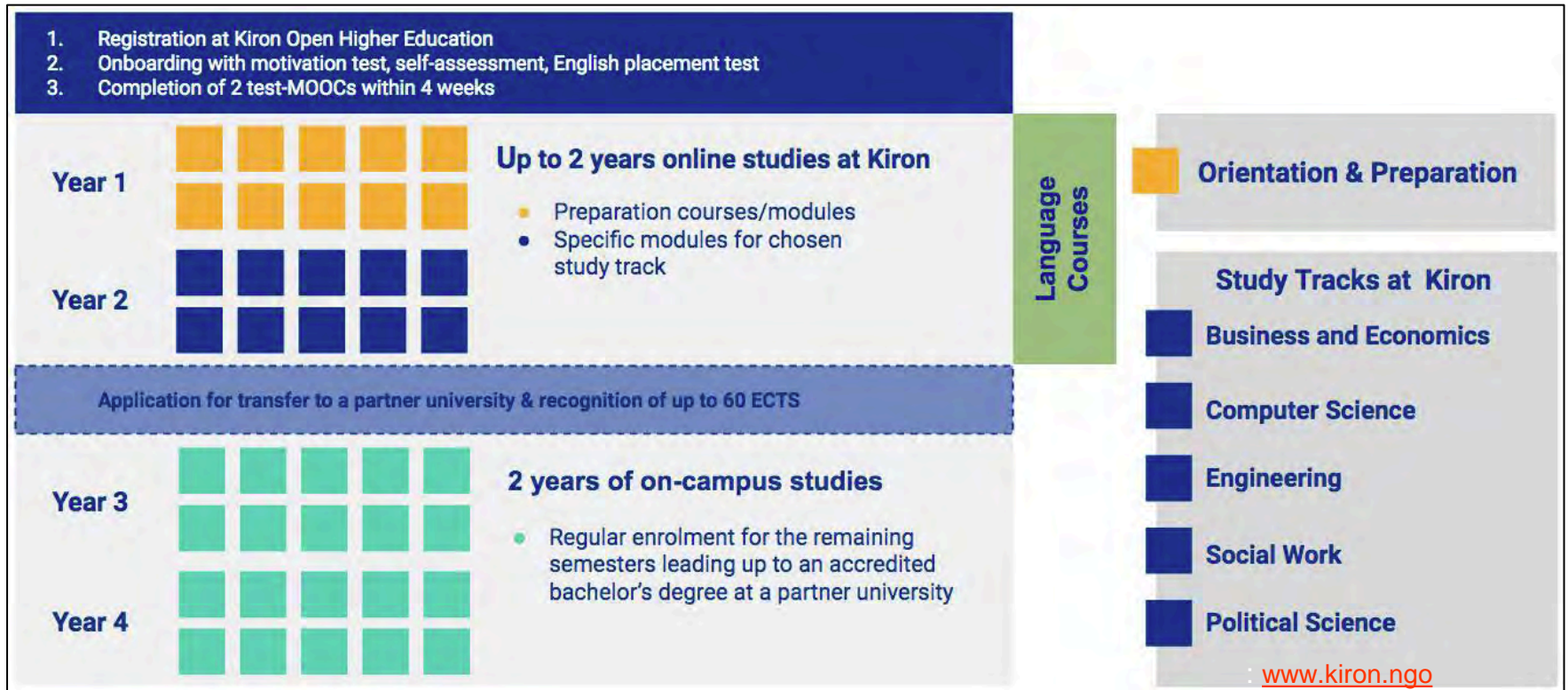
Is Kiron for me? Find out! >

Apply now >

<https://kiron.ngo/>



# Kiron Open Higher Education – “Academic Model”



**PLUS** Support Services - online and F2F: Buddy Programme, Mentoring, Counselling, Career Mentoring, Online-Tutorials ,etc.



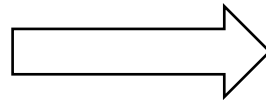
# Support Services offered by Kiron

Name	Description	Scope
<b>Online Tutorials</b>	Online live video tutorials accompanying single online courses, delivered by volunteer tutors	worldwide
<b>Study and Orientation Weekend</b>	Single offline (only in some cities available) meetings with Kiron students and Kiron staff for either welcoming new students or topic specific workshops (e.g. Math-Weekend to refresh knowledge)	Berlin, Munich
<b>Online Mentoring</b>	3-month, one-on-one online mentoring to support online studies; delivered by volunteer mentors who are coached by Kiron's partner "Volunteer Vision"	Germany, France
<b>Career Mentoring</b>	Germany: Offline mentoring with professionals from companies (not in offer anymore); Jordan: Career summer school in 2017 offered by the German Department for International Cooperation (GIZ)	Germany (specific larger cities), Jordan
<b>Buddy Program</b>	One-on-one on-/offline partnership between Kiron students and university students or others who are in the same field of studies/ work	Germany
<b>Counselling</b>	Online psychological counselling via video delivered by professional counsellors from ipso e-care ( <a href="https://www.ipso-ecare.com/">https://www.ipso-ecare.com/</a> )	Worldwide
<b>Help Desk</b>	E-mail support by Kiron	worldwide
<b>Student Forum</b>	Online communication tool for students to communicate with other students and Kiron staff; includes group and individual chat function	worldwide
<b>Study Groups</b>	Extra feature within the Student Forum for students to communicate and study around specific online courses via chat or video chat	worldwide
<b>Study Center</b>	Offline located study spaces equipped with computers and internet	Single cities in Germany
<b>Transfer Guidance Calls</b>	Students who fulfil all or almost all prerequisites for a transfer to a regular university are being contacted by Kiron transfer team to assess transferability and provide consultation on transfer process	Germany
<b>Kiron Navigator</b>	Online orientation tool on Kiron website ( <a href="https://kiron.ngo/navigator/">https://kiron.ngo/navigator/</a> )	worldwide
<b>Newsletter</b>	General weekly student newsletter	worldwide



# Research Questions re Support Services

- (1) how are the support services used ?
- (2) what influences usage patterns?
- (3) what value students ascribe to the Kiron support offer ?



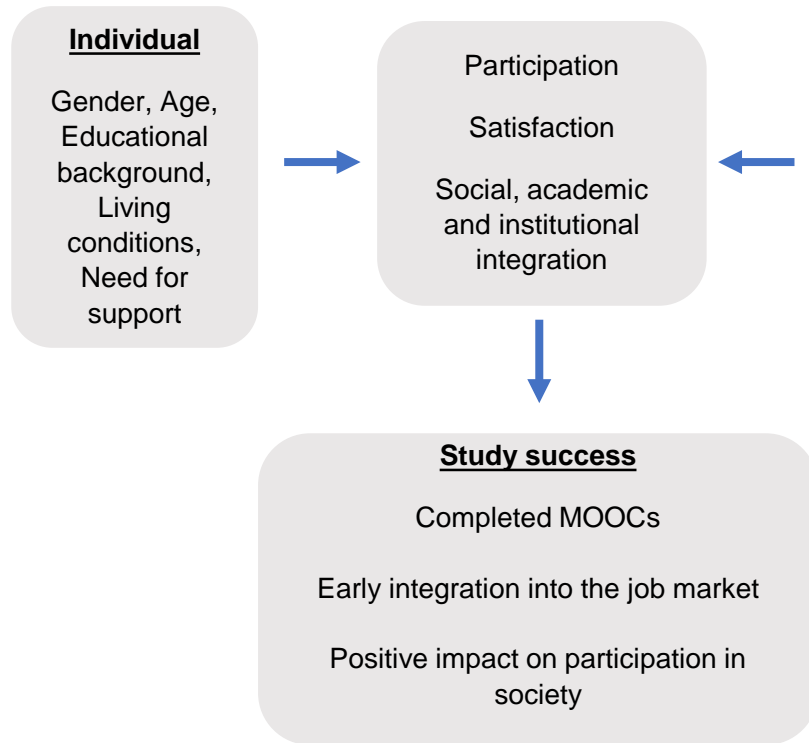
*Who sets the agenda? -*

*How to design programs for refugees' access to HE?*





# Theoretical Framework



- Study success: „successful matching between students and study conditions“ (Mergner et al. 2015, own translation)
- Tinto’s (1975) concepts of ‚academic‘ and social integration‘ complemented with ‚institutional integration‘ (Heublein et al. 2017)
- Definition of „study success“ broader than „transfer to university“ (Kiron)

Source: SUCCESS Project, as of: 01.02.2017



## Research Design – Data Sources

Student Data (start with Kiron between 05 - 09 / 2017) N=1375

- demographic & educational student data as part of student onboarding process

Online Student Support Survey (07-08 / 2018)

- Response rate: n= 203 (14,8%)
  - Focus on four dimensions:
    1. Satisfaction with support
    2. Values ascribed to support
    3. Difficulties in life and studies
    4. Importance of support

Dropout Survey 11-12 / 2018

- Response rate: n= 224 (23%)

Semi-structured Interviews (12/18-06/19) with 18 Kiron students



# Agenda

1. Context – Refugees' Access to Higher Education
2. Digital „Solutions“ – What Do We Know So Far?
3. Research Framework – Project SUCCESS
4. **Results**
5. Conclusions – Who Sets the Agenda?



# Course completion & use of support

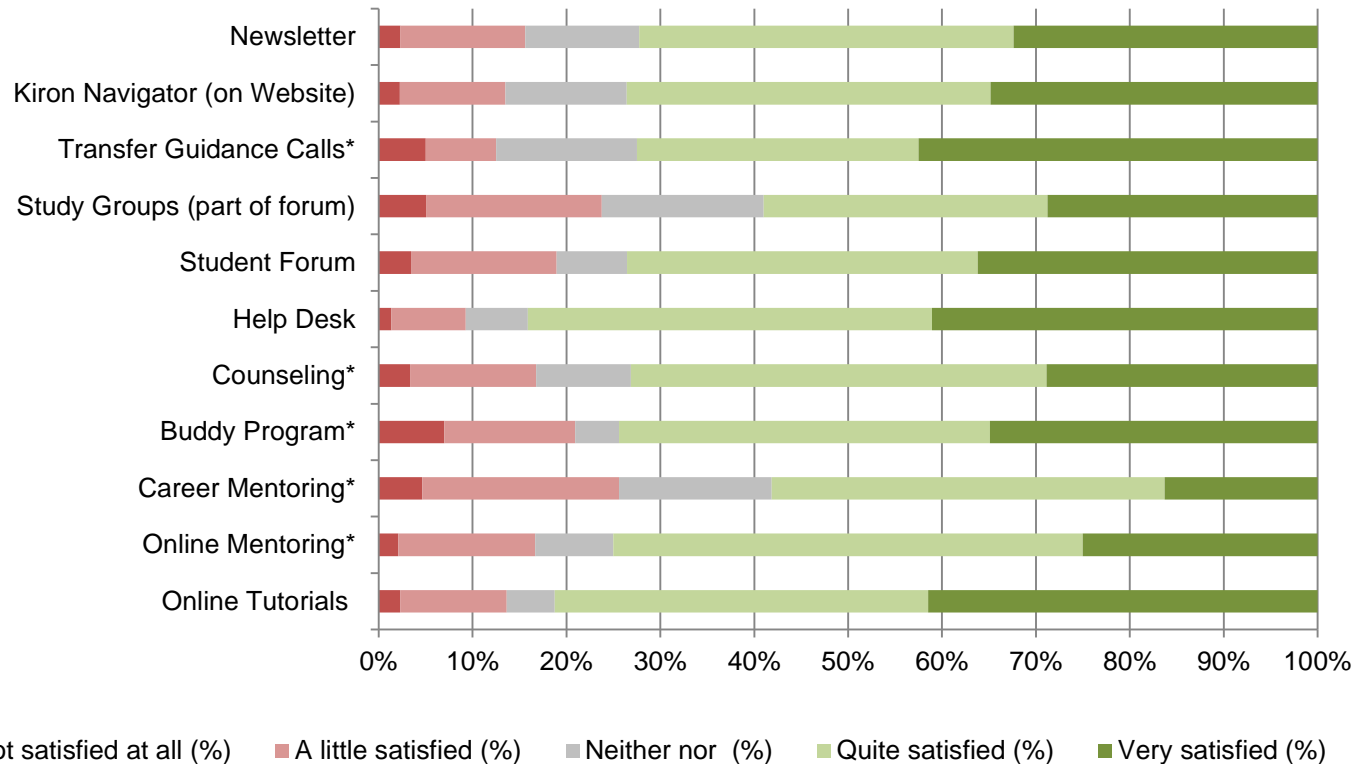
Online course data	N=1375
Started online courses	1173
Completed online courses	384
Study period	05.- 09.2017 until 03.2019

Source: SUCCESS student data, as of: 26.03.2019

- Low course completion rates: every second student completes max. 1 course (178 out of 384)
- No significant correlations for use of support and studying courses & course completion
- Punctual and flexible use of support services depending on students' needs & available resources (individual & structural)



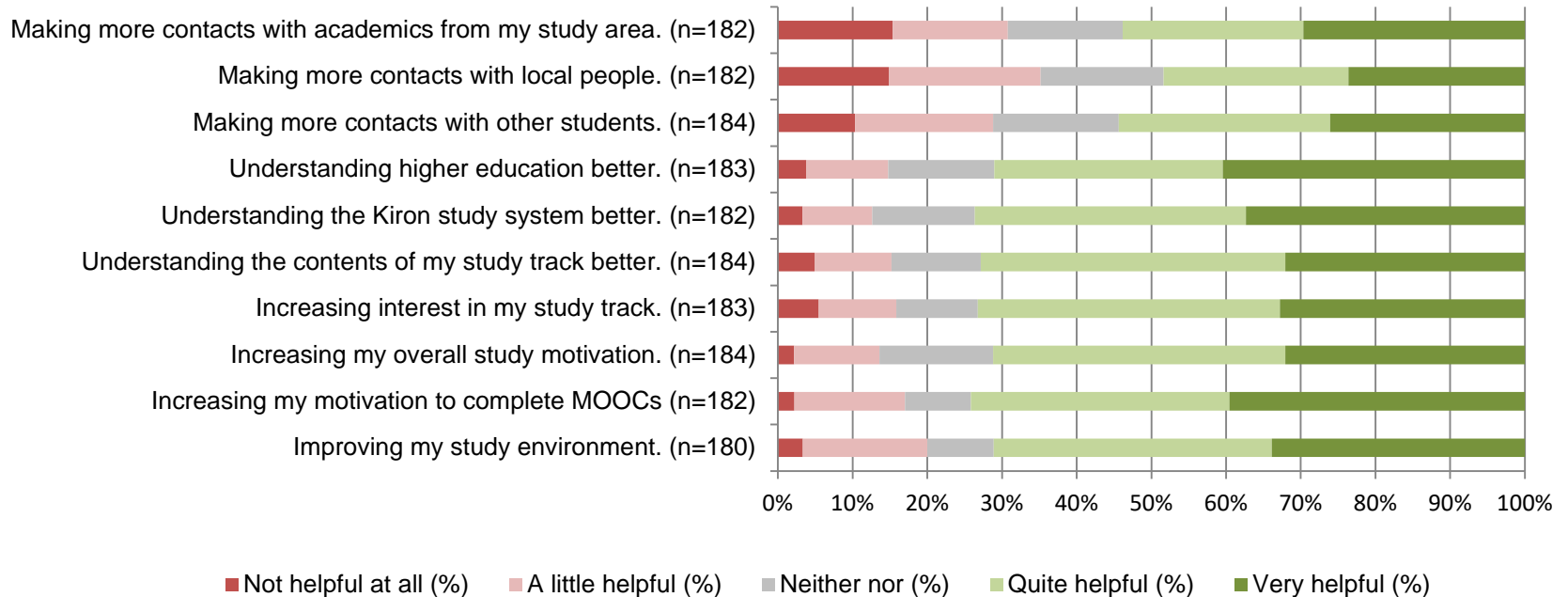
# Satisfaction with support measures



Source: Support Survey, end of assessment: 15.07.2018  
 Question: "How satisfied are you with the Kiron student support services?"  
 n = 203 (only for support services accessible to all students), \* n < 203: service limited in accessibility, \*\*n = 7



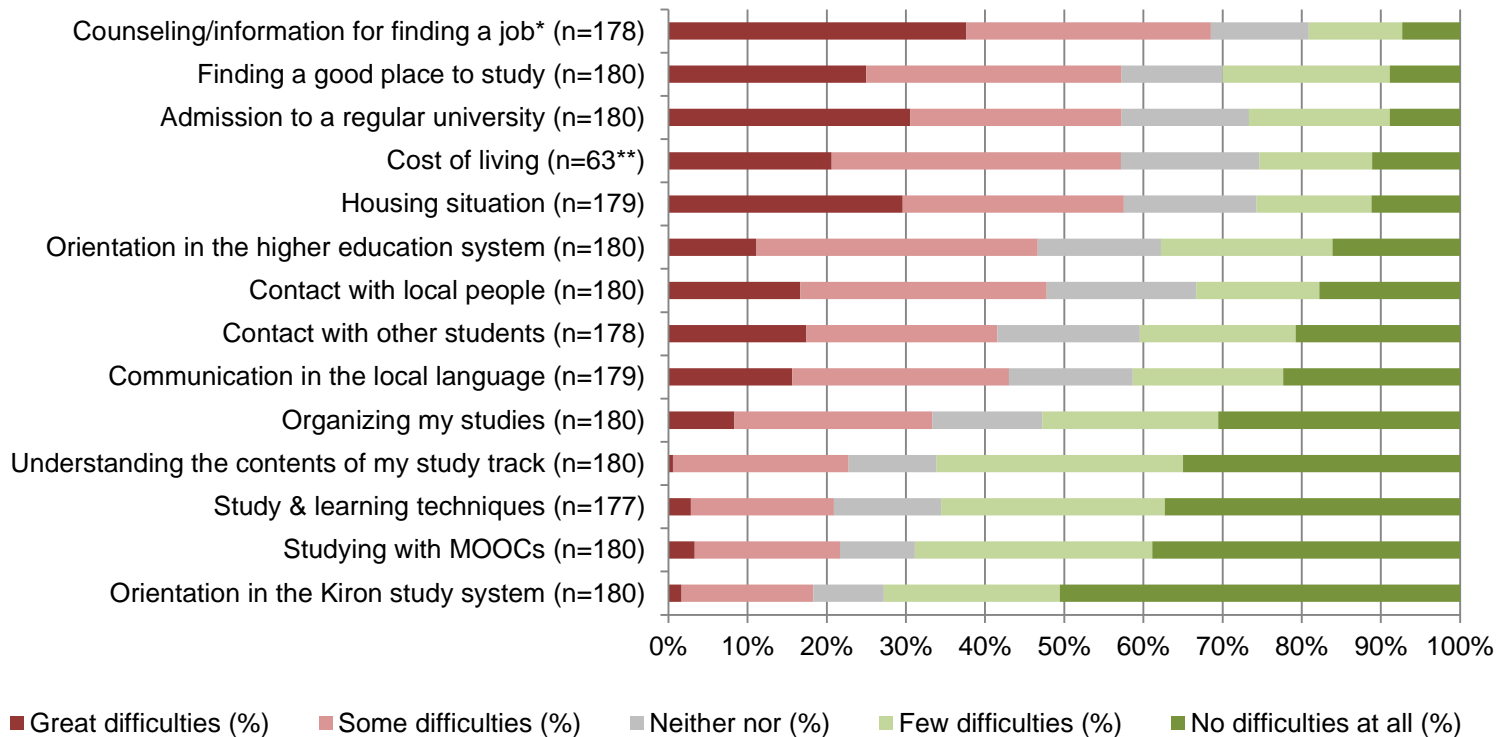
# Value ascribed to support measures



Source: Support Survey, end of assessment: 15.07.2018  
 Question: "To what extent were the support services helpful to you?"  
 n = 203



# Difficulties refugee students face in life & studies



Source: Support Survey, end of assessment: 15.07.2018

Questions: "To what extent have you faced difficulties in the following aspects of life?" and "To what extent have you faced difficulties at Kiron?"

\*deviation from original "finding a job" due to outsourcing of survey implementation

\*\*only students in Germany were asked.

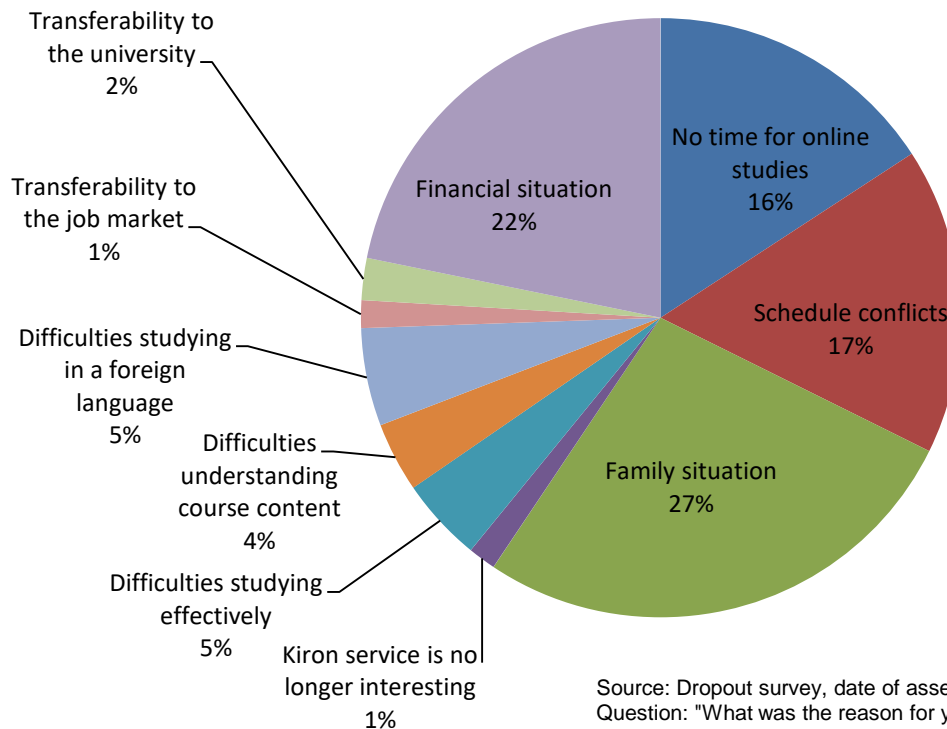


# Reasons to Pause

## Reasons n=181

- 69% personal reasons
- 23% technology related
- 08% program related

### Personal reasons to pause using Kiron n=133



Source: Dropout survey, date of assessment: July 12 2018 - March 25, 2019  
Question: "What was the reason for you to pause or to stop using the Kiron platform? Please put the following reasons in order from most important (1) to least important (3)."  
n=133 (students who ranked „personal reasons“ as most important (1))





## **Kiron as low-threshold, instant help**

### **- “Do something for your future”**

*14: “My experience was first, that I just sat at home for 14 months, I didn’t do anything. Just studied a little German for myself and nothing else. Then I had the interview for refugees and got a residence status. [...] Then I wanted to find an apartment, too many papers to fill out with the authorities and then Kiron came and did something, you know? Did a little ‘Come, you can do something here for your future, you can study at a normal university. That’s really good. Good idea and good work.’” (transl. HB)*

- Right after arrival refugees look for opportunities to get connected to host society, to get needed information & to actively shape their future;
- needs change during integrational process



## **Kiron as low-threshold, instant help**

### **- “Do something for your future”**

*I8: “I did a lot of research on how I can further my education. I think the major problem was my current status because none of the universities wanted to give me admission with my status. With Kiron I was able to have an opportunity. Kiron gave me opportunity, but in the end I still hope maybe tomorrow I will be able to find my dream university and continue my dream career.”*

- Student stopped using the Kiron offer to focus on application to universities
- needs change during integrational process



## **Kiron as low-threshold, instant help**

### **- “Social contacts and guidance” I**

*I4: “One time we went to Thanksgiving dinner and they all were kind and they were nice and they introduced me to other refugees and they introduced me to Kiron team. It was something nice because at first I didn’t know anyone here in Germany, I was alone. I am here without my family. Also, I got to know other refugees and we exchanged our numbers. We talked after that and we shared all our experiences here in Germany.”*

What support services did you use?

*“I1 For example I met people. I think this is really important for me.”*



## **Kiron as low-threshold, instant help**

### **- “Social contacts and guidance” II**

*I4: “Because I need a guide. That was the reason why I wanted to sign up for mentoring because I need a guide because I was filled with frustration because my initial expectation was to get admitted into university last year in 2018, but it was quite unfortunate. I was frustrated. I really need a mentor, someone who will say never give up, keep trying.”*

- Support services are used for making social contacts,
- Need for guidance and motivation support



## Additional insights from the interviews

- Preference for support that enables social interaction, personal guidance & language learning (Online Mentoring, Offline Weekends, Transfer Guidance)
- Social integration as continuing issue: contacts made through support do not persist, contacts with locals are mostly sporadic and functional
- Social integration ↔ Language barriers + cultural differences
- Importance of finding a job results from legal status (better prospect of staying), family status, previous work experience, age
- Ambivalence of English MOOC studies and language of host country → double burden?



# Limitations

- Online surveys problematic
- Course completion relies on self-reported data
- Selection of interviewees: those more invested in Kiron's offer?
- Often high language barriers in English and German



# Summarising

- Idiosyncratic use of support services independent of online courses
- High satisfaction & positive evaluation of the support services
- Use of the Kiron offer influenced by students' life circumstances, need priorities & available resources
- Ambivalence between virtual education & offline needs (e.g. social integration)?
- Students' needs are shifting as their life situation changes: e.g. ICT (mostly in the beginning; depends on housing), language & social integration ongoing issues
- Refugee students at Kiron act as agents in behalf of their own future, but within a restrictive life reality



# SAVE THE DATE

## International Conference & Transfer workshop - SUCCESS

### „Digital Approaches to Increasing Equity in Higher Education – Opening Universities for Refugees”

4. - 6. December 2019

Humboldt Universität Berlin

Early registration:

[success@uni-mainz.de](mailto:success@uni-mainz.de)





# Agenda

1. Context – Refugees‘ Access to Higher Education
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5. **Conclusions – Who Sets the Agenda?**



## Conclusion - Who sets the agenda?

Program design for refugees in HE (Crea 2016)

1. Go beyond service delivery and connect the project vision with clearly circumscribed outcomes for project participants
  - *How to apply to a low-threshold approach?*
2. Embed project activities in the local context and consider additional offers to the participants by other organizations and possibly connect or partner up with these,
  - *How to network as a learning offer provider with political actors?*
3. Continuously adapt the project according to feedback of beneficiaries and stakeholders.
  - How to cater for changing needs over time?

*“How do we introduce technology opportunities without encouraging technological utopianism?” (Wolske & Rhinesmith 2016, 241)*



**Thank you very much...**

...for your attention

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# **Citizen Sensing Communities: From Individual Empowerment To Collective Impact**

Aldo de Moor

CommunitySense, Tilburg, the Netherlands

**Abstract:** Citizen sensing offers much promise in engaging citizens for the common good, such as working on wicked problems like climate change or air pollution. By citizens becoming involved in citizen sensing communities, they can increase their impact. To get truly empowered and reach collective impact, citizen sensing communities need to build effective working relations with institutional scientific and regulatory powers. One way to do so is through citizen science collaborations. However, collecting, vetting, and analyzing data is not enough: in many cases, the insights derived from the data lead to calls for political action. This is the weakest link in the collective impact chain, especially when citizen sensing results suggest collective (political) mitigation of causes instead of just individual adaptation to effects of wicked problems. We illustrate these notions with various cases and end with a tentative reconstruction of citizen sensing empowerment.

**Keywords:** Citizen sensing, citizen science, empowerment, collective impact

## **Introduction**

This paper is an outcome of a presentation I gave at a discussion panel on "Nudging for Climate through Citizen Sensing" organized by the Tilburg Institute for Law, Technology, and Society (TILT) in October 2019<sup>1</sup>. It is not a "finished" research paper, if that were ever possible. Rather, it starts with my personal experience of getting introduced into the world of citizen sensing as a citizen, and then applying my community informatics researcher and practitioner's lens to generate some initial thoughts on how citizen sensing might achieve more collective impact. By weaving together strands of personal observations with theoretical work on communities, technologies, empowerment, and collective impact, it suggests some directions for future research and practice on how a multitude of bottom-up citizen sensing actions might reach more impact at scale. As both the fields of citizen sensing and community informatics are so deeply focused on strengthening the common good, as well as on communities effectively using their technologies - these reflections may help in making them become more aware and supportive of one another.

## **The Tilburg citizen sensing community case**

The Tilburg Public Library recently re-opened as the main tenant in a former Dutch Railways locomotive maintenance hall (hence, its name the "LocHal"<sup>2</sup>). It is not the classical library where the book collection takes center stage. Instead, it acts as a true third place, creating broader community networks and supporting local communities beyond existing users and the library building (Houghton et al., 2013). How successful it is in this mission is shown by the library already having received two prestigious global awards: 2019 World

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<sup>1</sup> <https://www.tilburguniversity.edu/campus/academic-forum/night-university/program/nudging-climate-through-citizen-sensing-14>

<sup>2</sup> <https://www.lochal.nl/>

Building of the Year<sup>3</sup>, after earlier having been named one of the four Best New Libraries of the World in 2019<sup>4</sup>.

As part of its programming formula, the library has created a number of thematic "labs" within the LocHal, in which citizens can learn about and experiment with various cultural, technological and societal developments. The labs include a DigiLab, FoodLab, TimeLab, GameLab, WordLab, and FutureLab. In this last lab, citizens come together to work on social innovations around wicked societal problems, such as climate change.

One field where citizens, technologies, and society meet is citizen sensing: a form of citizen participation in environmental monitoring and action which is bottom-up, participatory and empowering to the community (Woods et al., 2018). A citizen sensing kickoff workshop – the first of an ongoing series - took place in the FutureLab in April 2019. For these workshops, citizens are invited to come and build their own sensor station, based on open source blueprints (Figure 1). Initially, these sensor stations can measure only temperature and relative humidity. However, in future follow-up workshops, they could be outfitted with additional sensors, e.g. to measure fine particulate matter.



**Figure 1: The author and citizen colleagues building their own sensors**

The citizen builders are to place their sensor station in, for instance, their gardens back home. To send measurements to the server, LoRa<sup>5</sup> technology is used. This is a low-power wide-area network, which only intermittently reads results from distant measuring stations, allowing for those stations to be powered by just a small battery. As it needs to be replaced only once in a while, it makes LoRa a very useful networking technology for citizen sensing.

Building and installing the sensors is only a means to an end. Each sensor gives a continuous flow of local measurements, about once every 15 minutes. As the network of sensors grows, an increasingly fine-grained measurement network covers the city (Figure 2). Although the sensors are far less precise and reliable than those of, say, the National Institute for Public Health and the Environment, they can provide valuable data at the very local level. This is useful, since the official government measurement grid is much coarser and depends on theoretical model-calculations to estimate what measurements may apply locally.

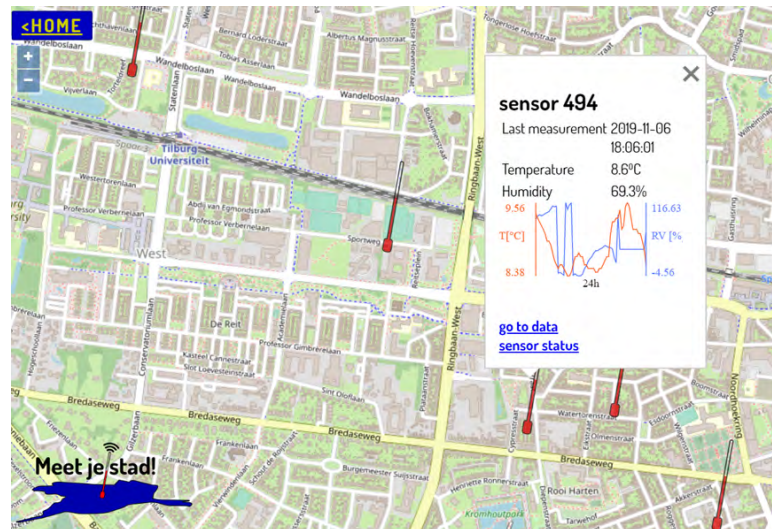
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<sup>3</sup> <https://edition.cnn.com/style/article/waf-building-of-the-year-2019/index.html>

<sup>4</sup> <https://www.iamexpat.nl/lifestyle/lifestyle-news/library-tilburg-named-one-best-world>

<sup>5</sup> <https://www.semtech.com/lora/what-is-lora>

Measuring results are collected and made available city-by-city on a national, open source server<sup>6</sup>. As more sensors are becoming operational in Tilburg, their results will also be shown on the “Monitor of the City” screen wall in the FutureLab, for public analysis and discussion.



**Figure 2: The author’s sensor up and running in the Tilburg citizen sensing grid**

This impressive technical infrastructure tells only part of the story. Just as important is the social dimension. Citizen sensing may sound like an isolated endeavor by app-supported individuals, but consists in fact of an intricate community network: a network of multiple communities, each with its individual socio-technical context, as well as the common socio-technical context in which those communities are embedded and linked (De Moor, 2018). In our case, the sensor building workshops were a joint initiative of the Tilburg LoRa/IoT community, a local group of enthusiasts who aim to explore the potential of the LoRa networking technology in conjunction with the Internet of Things; the Meet Je Stad (Measure Your City) collective, a Dutch network of volunteer-citizen sensing experts, which started in the city of Amersfoort to measure local climate change-related data and hosts the national server; and the Tilburg public library as a facilitator and connector of many local Tilburg citizen communities via, for instance the thematic LocHal labs. The Tilburg municipality is also involved, as a co-sponsor of the sensor stations. The city is interested in this experiment to explore how the data may be used to inform policy making on, for example, local climate action. And, of course, there is the global community (network) of advocates of citizen sensing for citizen engagement and empowerment.

### Citizen sensing communities

Such complex socio-technical networks come with a host of operational, social, and political issues, which is the domain of community informatics and related literature. For example, Sheth sees an explicit sensing role for both the machine and the human, resulting in complex socio-technical citizen-sensor networks enabled by the Internet and mobile data. Whereas technical sensors are good at continuously measuring and reporting encoded observations, humans are very good at turning those data into meaning by adding available background knowledge and using their experience, common sense, and complex reasoning abilities, even with fuzzy or inconsistent data or inconsistent information (Sheth, 2009).

<sup>6</sup> <https://meetjestad.net/>

However, there are also larger socio-political dimensions of these emerging socio-technical community networks. Think, for instance, issues like the self-organization, distributed governance and fractal scaling of such community networks (Graham, 2016) and what are effective mechanisms for commons-oriented peer production initiatives creating common pools of knowledge for even the whole of humanity (Bauwens and Kostakis, 2014).

Like the national platform and educational services provided by the Meet Je Stad collective, many efforts are underway all over the world to increase the effectiveness and impact of citizen sensing community building. For example, Smart Citizen Kits enable local communities "to create local maps of noise and air quality; use it to raise awareness and find solutions for issues that matter to your community."<sup>7</sup> Related initiatives focus more on the methodological side of effectively using such kits. The Making Sense Framework, for instance, provides detailed methodological support to run citizen sensing projects through the following steps: *Scoping, Community Building, Planning, Sensing, Awareness, Action, Reflection, and Legacy*. In doing so, the methodology abides by four cross-cutting principles: *Empowerment, Co-Creation, Changemaking and Openness* (Woods et al., 2018).

Citizen sensing communities need to ask themselves some important questions, beyond the infrastructuring socio-technological ones: What data should be measured and how? What do the data mean? How can these insights lead to action with impact? Citizen sensing is often heralded as an approach that will empower users by providing more informed and data-driven feedback for decision making (Ottaviano et al., 2019), and that is bottom-up, participatory and empowering to the community (Woods et al., 2018). How this empowerment is to come about is far from trivial, however, as these communities do not operate in a power vacuum (Figure 3). There are at least two powerful institutional worlds that citizen sensing communities need to build fruitful and lasting relationships with to find an empowered and impactful role: science and government. Traditionally, science has been the authority defining the validity and meaning of data, whereas government is the origin of the laws and policies that define and regulate legitimate/legal actions, at least in theory grounded in the data, information, and knowledge produced by science.

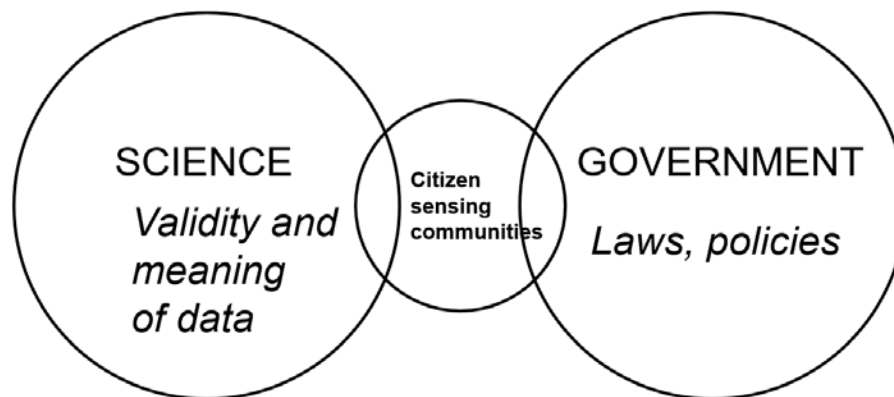


Figure 3: The institutional power context of citizen sensing communities

### Citizen science: beyond sensing?

The link between citizen sensing and science is quite well developed, in the form of citizen science. In this form of science, citizens gather, share, and try to understand the information about themselves and the environment that surrounds them, supported by scientific models, methods, and tools that support the data generation and processing, including the systematic

<sup>7</sup> <https://smarcitizen.me/>

acquisition and vetting of the collected data (Ottaviano et al., 2019). Much of the current literature on the link between citizen sensing and science focuses on this data collection, validation, and analysis stage of the scientific process. Examples are approaches to use citizen sensor data to complement professional sensing platforms in sparse sensor networks (O'Grady et al., 2016), and combining citizen-generated data with official sensing data into specialized predictive analytic solutions to provide decision makers with planning information, and citizens with personalized urban, environmental, and health recommendations (Ottaviano et al., 2019). Still, there are many additional (inter)active peer roles that citizens and other societal, non-scientific stakeholders could play. In De Moor (2014), we gave an overview of such roles for all stages of the academic research process: research question framing; data collection and analysis; authoring; review; dissemination; and impact assessment. We also proposed possible socio-technical designs - grounded in community informatics insights - to support these "bridges between academia and society. For example, by having academic researchers actively participate in citizen sensing communities, citizens could be more instrumental in research question framing and impact assessment. Citizens could also author, review, and disseminate their own findings in the local press and on social media, as well as help "translate" peer-reviewed scientific articles into language and local examples that the general public can understand.

The very essence of community informatics is that research continuously meets practice. "Citizen sensors" as researcher-practitioners can act as important counterparts to professional scientists in at least the following ways:

- Citizen sensors can be *additional eyes and ears*: there is simply too much to be done, scientists cannot be everywhere at the same time, all the time. Citizen sensors can help scale up the number of observations, like producing densely distributed micro-climate measurements. They can also alert their professional peers to potentially interesting phenomena happening in their local area.
- Citizen sensors can *ask interesting questions*: they have often unique knowledge of what is (out of the) ordinary in their own local environment and what may be possible causes of the data patterns observed. Furthermore, professional scientists are often biased in the kind of research questions they ask, because they are working from within existing research paradigms, frameworks, networks, and projects. Citizens can help frame new questions, as they look at reality from a different perspective, and are not hindered by existing research constraints. In the Netherlands, this role has even been formally acknowledged by using citizens' questions as an important input in the construction of the Dutch National Research Agenda<sup>8</sup>
- Citizen sensors can be influential *science ambassadors*: in the era of fake news, anti-vaxxers and Flat Earthers, there is an increasing public distrust and misunderstanding of what science is and its fundamental role in society. This is a dangerous development and hard to counter. Citizen sensors can form a first line of defense here. Through engaging in science, based on their own observations, they themselves get a first-hand, deep understanding of the complex and subtle nature of the scientific process. This background may help prepare and motivate them to educate and to try and convince their circles of peers that science does not provide "just another opinion", but forms the bedrock of modern, diverse society and is worth protecting. This is not to say that scientists are infallible and what they say should be taken at face value. However, a scientifically engaged citizenry can provide constructive criticism to strengthen science rather than destroy it.

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<sup>8</sup> <https://wetenschapsagenda.nl/national-science-agenda/?lang=en>



## **Citizen sensing - from individual adaptation to collective mitigation**

Community informatics as a field of research and practice focuses on how to build, empower, and link communities through the effective use of information and communication technologies. Citizen sensing is an excellent example of technology-supported local, national, and global communities of engaged citizens working together on a common interest. However, such communities are about much more than just measuring: they really mean to foster engagement towards collective impact: the commitment of important actors from many different sectors to a common agenda for solving a specific social problem (Kania and Kramer, 2011).

No community can address huge, “wicked” problems like climate change on their own. As we have seen, citizen sensing communities need to be embedded in rich stakeholder networks to become effectively empowered. In the previous section, we explored the ties that citizen sensing communities can and need to form with the scientific community through citizen science. However, collaborating with professional scientists to generate, validate and analyze data is only a necessary condition for achieving collective impact. Citizen sensing communities also need to grow strong connections – without losing their independence and critical voice – with government regulators, as ultimately it is creating and enforcing effective and just laws and policies that make the difference in addressing systemic wicked problems that no actor can solve on their own.

Still, this relationship between citizen sensing communities and government regulators is complicated. Regulators often dismiss citizen sensing observations as being inaccurate, hence feeling not required to take action (Gabrys and Pritchard, 2018). We illustrate this tension with two cases. The first one, on individual citizens taking personal adaptive action is often promoted by government regulators, one reason possibly being that this is not very contentious politically. The second case shows how sound data collection and analysis may not always be sufficient, especially if the political will to act on the data gathered is lacking. This is a common occurrence when painful collective mitigative actions are required in terms of creating and enforcing adequate laws and policies.

### **Citizen sensing empowerment case 1: involving citizens to take personal adaptive action**

Citizen sensing initiatives abound in which citizen sensing communities collaborate with - often local - governments. One example of many is the PulsAir mobile citizen sensing application and data ecosystem model being rolled out in cities across the world (Ottaviano et al., 2019). The goal of the approach is to help overcome information gaps on environmental and health data, especially in local areas, serving both the information and planning needs of local authorities and the health information needs of citizens. To this purpose, it fuses both official and vetted citizen data sources in an “urban data lake”, and uses this to generate customized information, including recommended health actions for citizens to reduce their pollution exposure. One community aspect, besides many stakeholders being involved in the system development, is that gamification is used to motivate citizens to use the PulsAir app.

From a citizen sensing/science perspective this mobile app is key. It consists of two modules:

- A “*Me*” module containing information about the citizen. It gathers information from wearables and through surveying the user, and provides personal activity reports and customized health risk, educational and action recommendations.
- A “*My city*” module containing all the data relevant to the city and neighborhood of the users. It includes summaries about, among other things, the pollution status of the city; but also allows the user to enter questionnaires on the status of the neighborhood,

Empowerment is an important overall goal: the approach helps "empower the citizen through perceptual sensing of urban environmental and health data (p.3)", provides an "appealing interactive data layer that aims at providing data value and empowerment to citizens (p.6)", and is about "empowering the citizens with personal tools that estimate and manage their pollution exposure, and thus take healthier actions (p.10)" (Ottaviano et al., 2019).

### **Citizen sensing empowerment case 2: citizens campaigning for collective mitigative action**

There is increasing scientific consensus on how dangerous woodsmoke is as an - especially at the residential/hyperlocal level extreme - source of fine particulate matter and numerous other, often carcinogenic, pollutants (e.g. Trojanowski and Fthenakis, 2019). Although the science is clear, regulators are not. The Dutch government, aware of the studies, does not want to take mitigative action. The national government says complaints have to be resolved at the local level, whereas municipalities say that there is no legal framework on the basis of which they can enforce woodsmoke air quality measures. The Dutch Minister for the Environment, against the advice of her own experts, continues to state that there would be no support for stringent measures and that it would lead to unacceptable financial costs for citizens, companies, and municipalities (Bolink et al., 2020).

There is an increasingly vocal Dutch national community of concerned citizens who demand tougher government action. One of the main ways they self-organize is through a number of twitter hashtags, #houtstook (woodburning) and #houtrook (woodsmoke). Another attractor is the @houtrookvrij twitter account of the Stichting Houtrookvrij (Association Woodsmoke Free), which as of February 2020 had close to 2,000 followers and which retweets many incoming reports, and suggestions for action.

This vibrant, growing online community is a good example of a citizen sensing community, as some of its core members are committed citizen sensors who are measuring local fine particulate matter and other emissions, and sharing and discussing the results in online publications and via social media with other community members and beyond. Several of the key members have professional backgrounds in building sensor platforms and doing chemical air quality analysis. They work together with reputable scientific institutes like the National Institute for Public Health and the Environment to validate citizen sensing measurements and integrate them in national pollution measurement models.

Like the development team in the previous case, the anti-woodsmoke community also works to increase awareness among individual citizens about the air pollution health hazards surrounding them. This includes discussing what individual adaptive steps citizens may take to address the worst hazards, such as closing windows in time or buying the right kind of air purifier. However, they want to go beyond this individual adaptive empowerment: to engage citizens in campaigning for collective political action to *mitigate* the source of the pollution, ideally resulting in a national wood burning ban. Given the lack of response and accountability of both national and local government officials, the question is: how? How to go beyond promoting individual awareness towards taking collective action resulting in collective impact?

### **Reconstructing citizen sensing empowerment**

So, what exactly is empowerment? A classical definition is that is a process, a mechanism by which people, organizations, and communities gain mastery over their affairs (Rappaport, 1987). Mastery suggests being in control at a deep level. In order to do so, empowerment should help individuals, organizations and communities develop power and therefore empowerment should be explicitly linked to the development of power (Speer, 2008). Thus, empowerment is about being effectively able to get things done, not just at the individual, but also at the collective level. Further unpacking this, one could say that empowerment helps

people to take control of their lives, develop critical awareness and knowledge about their situation, as well as develop long lasting skills and capacities to participate and shape their own environment beyond the confines of a particular project (Zamenopoulos and Alexiou, 2018). Zamenopoulos et al. (2019) distinguish three interrelated notions of empowerment: loci of empowerment (individual / socio-political community empowerment); a number of conditions for empowerment, and finally four manifestations/types of empowerment resulting in a number of capacities needed to let stakeholders co-design the required interventions: *power over* (realigning power from the powerful to the powerless), *power to* (fundamentally change social, political and community contexts), *power with* (collaboration, mutual support and solidarity), and *power within* (self-knowledge and ability to recognise and mobilize our own assets).

Much of the current state of the citizen sensing art focuses on developing the technological infrastructure; citizen data collection, vetting, and analysis processes; (power with) community building; and (power within) individual awareness and empowerment of citizen to adapt their behaviors (as in the personal adaptive action case). Although these are necessary, they are not sufficient conditions to empower citizen sensing initiatives to address the thorny issues of how to achieve collective impact. Equally needed are the (power over/to) relations, skills and capacities to effectively build and exercise individual and community powers. This is related to the fundamental and long-running discussion in the community informatics field on the difference between digital access and effective use: whereas for a long time it was thought that just providing access would be sufficient to empower communities, there are many often hidden and systemic socio-political barriers that prevent the development of the capacities and opportunities needed for successfully integrating ICTs into the accomplishment of self or collaboratively identified goals (Gurstein, 2003).

Some citizen sensing initiatives are indeed working on expanding this community impact dimension. For example, the *Action*-stage of the Making Sense Framework aims to bring about policy change and to address problems affecting the community. Suggested forms of action include protests, artistic interventions and displays, and public forums and presentations (Woods et al., 2018). Important as they are, such individual community actions and projects may not always be sufficient for building collective critical mass to address systemic problems at the deep level.

How to go about this more systemic, impactful citizen sensing way of working together is still very much an open question. In the Making Sense project, transformation design and participatory sensing were combined in order to create awareness and actions for change to address environmental issues (Coulson et al., 2018). A related approach is the Bristol Approach to Citizen Sensing<sup>9</sup>, which puts communities at the heart of socially innovating the city. Key to going beyond the individual community/project is their development of a 'city commons', where resources, tools, expertise and technologies are shared and used for the common good. To build that commons, city stakeholders are mapped and then actively co-design solutions. A complementary approach to both may be the CommunitySensor methodology to engage community networks in common agenda setting through a knowledge base-driven approach to participatory collaboration mapping (De Moor, 2018). Still, these are only some examples of many more methodologies. What they have in common is that they explore with stakeholders the larger societal context in which (citizen sensing) communities live and work. Further conceptualizing this collective empowerment dimension, as well as coming up with effective situated methodologies, tools, and practices - sensitive to the many subtle ethical, normative, social and political constraints of communities of many different types, shapes, and forms - is the essence of community informatics.

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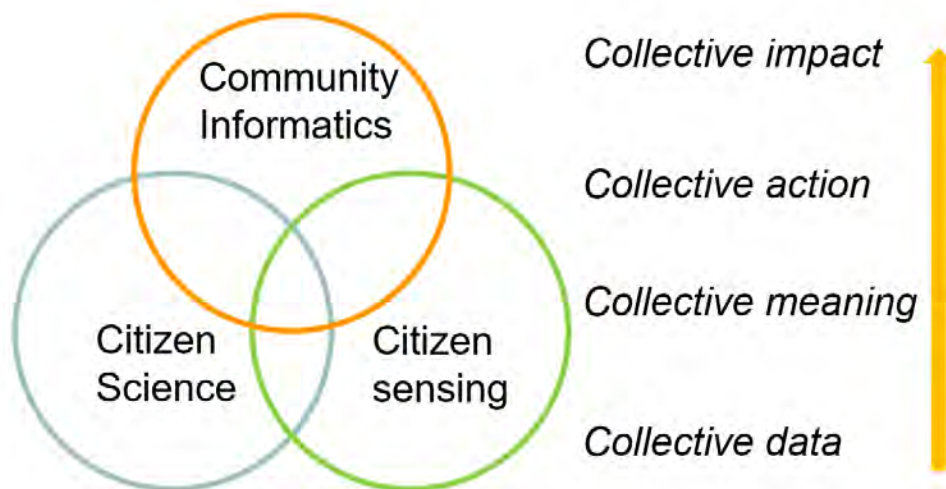
<sup>9</sup> <https://urbact.eu/citizen-sensing-where-people-act-sensors>

## Towards citizen sensing collective impact

In this paper, we focused on citizen sensing communities, starting with the Tilburg citizen sensing community case as an example of the intricate, nested socio-technical community networks at play beyond the basic infrastructure of sensing tools and data. We examined how such communities are a stepping stone on the way from individual citizen empowerment to collective impact. We used a community informatics lens to get a better view on what are the issues at stake.

Citizen sensing is often said to be empowering, promoting bottom-up participation of individual citizens and the communities they self-organize in. To realize that potential, though, these communities need to come to terms with the institutional power contexts they are working in, with, and sometimes against, in particular those of science and government. As to citizen sensing and science, we argued that much of the current participatory efforts focus on the tools, data collection, validation and analysis. Still, there are many ways that citizen sensors could engage in other stages in the scientific research process as well.

The real conundrums are with how to *act* on the citizen sensing data, especially by the responsible government regulators. These regularly label those data as being inaccurate, whereas a more open regulatory view that sees them as "just good enough" data could open up multiple creative uses for political action (Gabrys and Pritchard, 2018). As our contrasting cases on individual adaptation and collective mitigation showed, other issues may need to be addressed that have nothing to do with the data per se, like lack of political will. Still, the data, if put to effective use, sometimes may help create that will.



**Figure 4: A collective impact framework for citizen sensing**

The connection between citizen sensing and empowerment is problematic in the sense of how to bring about collective impact: how to develop meaningful and scalable solutions to wicked societal problems? We ended our paper with some initial thoughts on how to reconstruct this relationship (Figure 4). Much citizen sensing work is on collective data collection and on co-creating (scientific) meaning. (Far too) little is on collective political meaning making, let alone generating effective joint action with significant and lasting collective impact. It is clear that important pieces for solving this puzzle can be found in the overlapping domains of citizen sensing, citizen science, and community informatics. We do not claim to have provided the answers, far from it. Still, we hope that we have raised some interesting questions and thoughts that will inspire others to strengthen these links and turn more of that tantalizing citizen sensing potential into reality.

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# **POWER, ROLES AND ADDING VALUE: REFLECTING ON THE CHALLENGES OF BRIDGING ACROSS RESEARCH AND ACTION ON AN INTERNATIONAL COMMUNITY NETWORKING PROJECT**

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**Abstract:** The three year EU-funded MAZI research project ([www.mazizone.eu](http://www.mazizone.eu)) brought together universities, civil society organizations, and neighbourhood groups to design, develop and trial a digital toolkit for supporting local sustainability in four European countries. Funder constraints, partner ambitions and community needs had to be balanced to both adhere to academic research protocols while making a difference in the neighbourhoods where research and action took place. These sometimes conflicting ambitions caused partners to continuously question whose agendas were best being served by the project activities. They had to confront asymmetries of power, capacity, and credibility both within the consortium and within the community settings. Local circumstances changed; partners had to negotiate new, unfamiliar, and changing roles; and guises had to be adopted to progress sometimes conflicting ambitions.

In this paper, we report on the challenges encountered in two of the pilot locations, Berlin and London. These two pilots were similar as they consisted at the outset of a university partner previously unconnected to the locality, working with a civil society partner that was deeply embedded in the setting though long-term engagement. In both cases, the pairings sought to work closely together both on the ground and in research tasks. Finding acceptable compromises stimulated considerable self-reflection and required ongoing negotiation. We offer insights on the potentials and pitfalls of civil society activists and academic researchers collaborating within a research framework from the perspectives of both, with the goal of building a bridge of understanding between these two viewpoints.

**Keywords:** Agency, guises, transdisciplinarity, collective learning, politics-in-practice

## **Introduction**

The three-year EU-funded MAZI research project<sup>1</sup> brought together universities, civil society initiatives, and neighbourhood groups to design, develop and trial a digital toolkit for supporting local/community sustainability in four European countries from 2016 to 2018. The toolkit was intended as a combination of low-cost portable networking hardware (Raspberry Pi computers), a software platform with easy to use tools, and surrounding guidelines for practice. The goal was to design the system to work at a grassroots level, independent of the internet, to encourage autonomous action by local communities when engaging with digital tools, facilitating the resolution of neighbourhood challenges and catalysing discussions around digital sovereignty. To achieve this goal, all project members had to grapple in reflective debate around partners' own agency within the consortium. The European Commission, the MAZI project funder, had explicitly sought to diversify partnerships in societal challenge research projects. The CAPSSI ('Collective Awareness Platforms for

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<sup>1</sup> [www.mazizone.eu](http://www.mazizone.eu)

Sustainability and Social Innovation’) call that awarded the MAZI consortium funding, aimed for “leverage on fresh grassroots ideas and civil society participation” and had sought to engage “NGOs, local communities, social enterprises, non-profit organisations, students and hackers”<sup>2</sup>. Funder constraints, partner ambitions and community needs had to be balanced to enable adherence to academic and funders’ research protocols while making a difference in the neighbourhoods where the action took place. These sometimes conflicting ambitions caused partners to continuously question whose agendas were best being served by the project objectives and activities.

The MAZI consortium had recognised that a shared understanding of purpose would need to be achieved. The project was structured to encourage partners to exchange experiences, explicitly reflecting on processes that could facilitate interactions beyond members’ accustomed approaches (e.g. Apostol et al. 2017). Tasks included an ongoing work action to develop an interdisciplinary framework, derived through capture and analysis of partners’ self-reflections, concepts, vocabulary and methods used in the experimental research. The consortium worked together from these observations and interactions to identify and utilise a set of ‘strategies’ and ‘tactics’ to better enable fulfillment of the research objectives while remaining true to the interests and ambitions of the communities in which the digital toolkit was co-developed and trialled.

MAZI action on the ground was enacted through four pilots, each driven by two partners, with these supported by a further partner fulfilling technical development and project coordination. The pilot pairings were characterised as an ‘academic partner’ bringing research methods and EU project experience, with a ‘community partner’ bringing practitioner wisdom from engaging in community settings along with familiarity of a specific context, local experiences and a social network, to affect change. Over the course of three years, these pairings had to confront asymmetries of power, capacity, and credibility both across the consortium and within the community settings during the project. Partners had to negotiate new, unfamiliar, and changing roles, and adopt guises (tactical implementations of roles to suit local situations) to progress sometimes conflicting ambitions, expectations and requirements as they sought to work closely together both on the ground and in research tasks.

In this paper, we report on the challenges encountered by two of the pilots, ‘Berlin’ and ‘London’, and their responses. These were selected as in each case they consisted of a university (the ‘academic partner’) previously unconnected to the site of action, working with a small-scale civil society organisation (the ‘community partner’) long-term and deeply embedded in the neighbourhood setting that was the focus for the pilot. Specifically, the community partner in both cases had long-standing engagements with precarious communities, where trust, built up over a long time, was vital for the project but also affected how the research agendas were negotiated. The community partner had a priority not to rupture carefully nurtured relationships and networks. In both these cases, the context was an urban neighbourhood experiencing rapid gentrification with the population consequently experiencing immediate existential challenges.

## Background

MAZI was conceived as an interdisciplinary as well as a collaborative project from its beginning (Antoniadis 2016). Written into the project contract were a set of actions to enable cross-fertilisation of ideas and enable partners to move from their own disciplines and domains to integrating knowledge and methods from each others’ approaches (interdisciplinarity). The project aimed towards ‘transdisciplinarity’ (Unteidig et al. 2018a):

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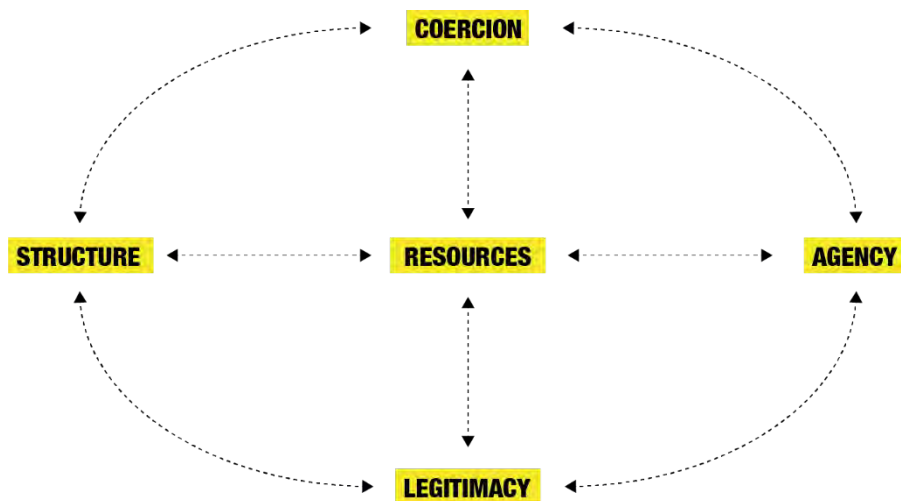
<sup>2</sup> <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-11-2017.html>



seeking a new unity of intellectual frameworks (Jensensus 2012), going beyond the structures of academic disciplines and synthesising different perspectives (Constanza et al. 1991).

Transdisciplinarity responds to the concern that research projects structured through traditional academic disciplines are limited in their capacity to build knowledge that can address complex societal challenges (e.g. Funtowicz and Ravetz 1993). Working across and beyond academic disciplines and including societal actors with their own expertise in exploring research challenges is increasingly seen as not only ensuring adequate knowledge and experience, but also addressing a democratic concern of reflecting on who has the right to participate, and legitimacy concerns. The credibility of developed ‘solutions’ are strengthened by including civic actors in partnerships (Felt et al. 2016). Transdisciplinarity discourses align closely with community informatics approaches, where importance is placed on ensuring that the voices of a wider range of stakeholders are heard during participatory or community-based research processes (e.g. Stillman 2005). However, such “heterogeneous assemblages” of ideologies, institutional beliefs, practices and people, are often in contention (Felt et al. 2016, p.737), and create challenges as well as dissolving barriers.

The MAZI consortium identified that “[t]he very framing of a process or an interdisciplinary project is an exercise of power” (Apostol et al. 2017, p.27). Power has been defined as being present “where an actor effects [*sic*] the way of being of another” (Arnold and Stillman 2013, referring to Latour 1992). Collaborative social innovation projects (such as MAZI) require partners to work collaboratively and be willing to negotiate so that tense and conflicting power dynamics can be managed, and the barriers to collaborative action can be avoided (Brown, 2008, Churi and Araujo 2018). Arnold and Stillman (2013) draw together propositions of power in the social domain and suggest that the key characteristics are resources, coercion, structure, legitimacy, and agency (see Figure 1).



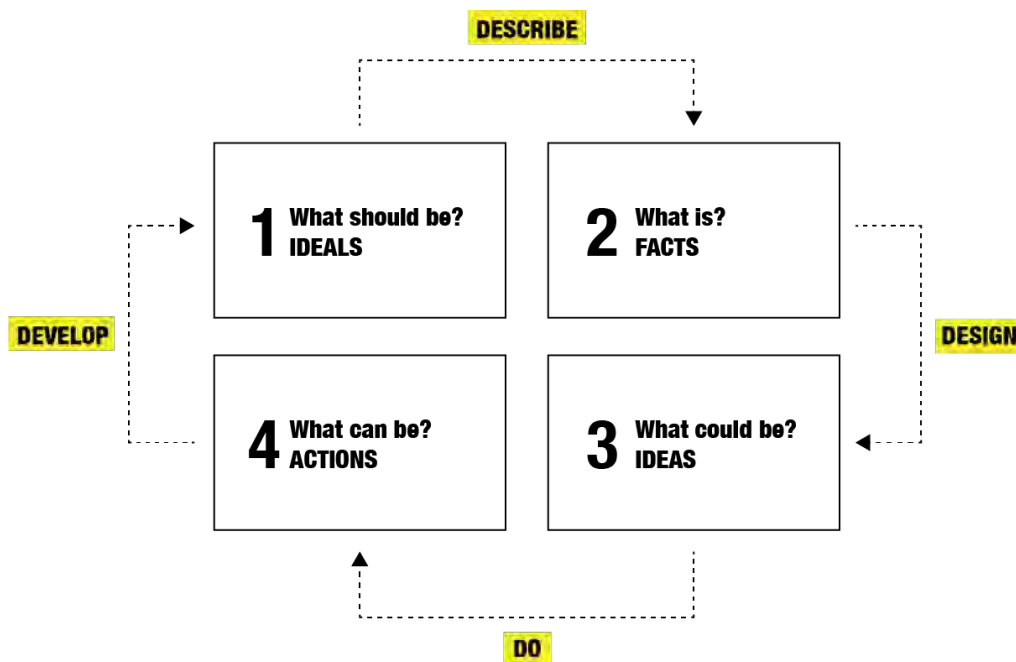
**Figure 1: Propositions of power in social research (adapted from Arnold and Stillman, 2013)**

In a collaborative consortium, partners must negotiate goals with others, and these are achieved through a range of methods drawing on these aspects of power. Project contracts declare how resources are to be allocated, and structures and reporting that must be adhered to in order to satisfy funders (Felt et al. 2016). A schedule of agreed activities must be interpreted and negotiated, and partners encouraged or coerced to fulfil perceived requirements.

De Certau (1984) identifies that dominant actors engaging with power may employ ‘strategies’: using structuring frameworks or “semi-institutionalized constraints or boundaries” (Unteidig et al. 2018a, p.16), to achieve their objectives, mechanisms that are abstracted from specific context or place. These are practically managed, responded to, or subverted in everyday practices by recipients using ‘tactics’: “short-cuts, work-arounds,

unforeseen solutions, compromises” (ibid.) to take advantage of opportunities as they present themselves and progress goals, dependent on the specific time and context (de Certau 1984). de Certau identifies that power has a temporality, that it is shifting and dynamic. Within research work, power is asymmetric, “resid[ing] differentially in the various practices (e.g. different data elicitation techniques) and phases of research (e.g. consent to participation, topic introduction, data analysis)” (Kadianaki 2014, p.360). Power relations are inherent to research practice (Plesner 2011, p.472), and recognising this means that project consortia can treat research as a “site of negotiation”; allowing different participants to debate and reflect in order to understand and overcome asymmetries.

This exploration for the resolution of barriers can be supported through a suitable research design. Brown (2010) argues that a transdisciplinary, collaborative (or collective) research inquiry can benefit from a research design that brings together different knowledges (individual, community, specialised, organisational and holistic) at periodic stages of a collective learning cycle; similar to Kolb’s (1984) model of learning cycles or Reason and Brandbury’s practitioner inquiry cycle (2001). Brown’s 2008 model (see Figure 2) outlines a process for conducting collective social learning to solve ‘wicked problems’ (Rittel and Webber, 1973) in society settings, beginning by asking ‘what should be?’ emphasising bringing together multiple worldviews in equal consideration for negotiation without seeking “one right answer, consensus or the highest priority” (Brown 2010, p.77). Processes for learning together and learning about ‘the other’ are required to ensure an open exchange and negotiating shared understandings (Sclavi 2008). Institutionalising the collective deliberation of ‘what should be?’ is thus regarded as necessary to complement interdisciplinary collaboration into analysis (‘what is?’), projection (‘what could be?’) and synthesis (‘what can be?’) (Jonas 2007).



**Figure 2: After: Brown (2008) The process of conducting the collective learning cycle**

To explore how the challenges of these negotiations played out between the highly diverse and collaborative partnerships involved in the MAZI project, we explore how two pilots experienced these challenges.

## Methodology

MAZI took what Cresswell and Poth (2018) refer to as a ‘transformative’ approach to research and action, seeking to address “issues of power and social justice” (p.9) throughout the project, understanding that the work would be “intertwined with politics and a political change agenda” (ibid.) with the goal of responding to social inequities and enhancing social justice (Mertens 2010). This was recognised both within the consortium’s internal actions by the scheduling of activities to trigger reflection and analysis, as well as an understanding that political issues would be implicit throughout the pilot studies, where MAZI was anticipated as a tool or catalyst to help address local sustainability challenges. MAZI iterative processes were designed and programmed into the project timeline to enable partners to move towards transdisciplinarity, through periodic collaboration, reporting, analysis and generating a framework supporting knowledge generation (e.g. Helgason 2016, Apostol and Antoniadis 2018). The processes identified tensions and conflicts that had been encountered and perceived, strategies planned and tactics deployed, roles that partners had played and guises assumed to tactically progress actions (Apostol et al. 2017, Unteidig et al. 2018a). For the pilot studies, these characteristics were played out intensely through the paired partnerships of ‘academic partner’ and ‘community partner’ while engaging in their field study context.

### The pilot contexts

The Berlin and London pilots were two of four MAZI pilot studies<sup>3</sup>. ‘Berlin’ was a partnership between the Design Research Lab of Berlin University of the Arts (UdK), a university with a strong design-in-society focus, and Common Grounds (CG), a civil society actor based across the city in the Moritzplatz area of Berlin-Kreuzberg. Prior to the MAZI project, UdK and CG had not worked together, but the key researcher in UdK had come to know one of the CG organisers, and proposed they work together on MAZI in Prinzessinnengarten, a community managed green space and the base for Common Grounds. The community garden worked together with neighbours as well as with local activists in the neighbourhood, acting as a focus of action. Very early in the project, local politics meant the planned focus promised in the MAZI project’s Description of Work (a civic participatory planning process for the future of the space itself, Prinzessinnengarten) was no longer possible. UdK and CG worked together in the first few months to propose an alternative focus for the Berlin pilot, agreeing to work with local civil society activist groups that were mobilised in the same neighbourhood to ensure residency rights in the face of rapid gentrification and were seeking methods for sharing best practices.

‘London’ was a partnership between The Open University, Milton Keynes (OU), a distance learning university with a strong social agenda, and SPC, local community technology activists with a long history of wireless networking in Deptford, south-east London, 50 kms away. The principal investigator of the OU research team had previously worked as a community technology practitioner with the owner of SPC before studying a PhD on community networking (e.g. Mulholland et al. 2006). A second employed researcher in the OU was new to the field and balanced two roles: both facilitating the London pilot fieldwork, but also responsible for coordinating evaluation across the whole project. MAZI research was

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<sup>3</sup> The third pilot was in Zurich (Apostol et al. 2018), supporting democratic processes in a housing cooperative, undertaken by two civil society actors, Nethood (a local NGO encouraging civil engagement) and INURA (a distributed NGO exploring action and research in localities and cities). The fourth pilot explored sustainability in rural Greek villages with aging populations, undertaken by Napier University (based in Edinburgh, Scotland) and the nomadic art group UnMonastery, that based two ‘test labs’ in villages and explored how MAZI might enhance their work in the localities (Helgason et al. 2018).

carried out along Deptford Creek, a watercourse that runs through the inner-city London borough of Deptford. Deptford had historically been an industrial area with commercial and naval waterfronts, which had then become economically depressed leading to opportunities for artists and creative industries to thrive, but more recently was experiencing rapid economic growth and gentrification. Deptford Creek links together a number of different communities, including artists, activists, residential boaters and environmental groups; all of whom were experiencing rapid change, and in many situations residential uncertainty due to urban development.

The factors characterising the challenges faced by the communities in the Berlin and London pilot were similar. Social justice was at the forefront of discussions when engaging with local audiences. In both cases, the MAZI toolkit was introduced into neighbourhood settings as a tool that might help local voices be heard in the face of urban change and disruption, 'making the invisible, visible' and enhancing their capacity to share knowledge to promote activities and resolve their identified neighbourhood challenges (Davies et al. 2016, Unteidig et al. 2016). In both cases there was a clear disparity between the size of the research and community partner (researchers in a university infrastructure collaborating with individuals from small activist organisation). Pairings sought to work together on the ground closely, with frequent visits to the site of activities supported by an ebb and flow of frequent and informal meetings and interim communications, e.g. via email and phone conversations.

## Methods and data

As an overarching evaluation approach, the MAZI project used a case-study approach (Yin, 2009) to examine the pilots; realist evaluation to frame pilot activities (Pawson and Tilley 1997); and cultural historical activity theory (Engeström 1987) to reveal the conflicts and tensions that impacted on the pilots' ability to meet the needs of their communities (Davies et al. 2018). Scheduled reflective activities (identified in Methodology, above) identified that greater insights could be gathered by further researching the interactions between the pilot partnerships to better understand how diverse pairings addressed power inequalities, negotiated contested agendas and benefited from their collaborative working (Apostol 2017).

Towards the end of the second year of the three-year project, the Berlin pilot pairing undertook a semi-structured, self-reflective interview (e.g. Myers and Newman 2007) with lead researcher and community partner interviewed by an external researcher, in order to reflect on progress and inform the last year of activities. The interview questions were structured by key themes identified through the project's self-reflection exercises. This interview was then translated and transcribed (German to English), and taken as a model and replicated to provide a structure for a following semi-structured interview carried out between the lead researchers from the London pilot pairing (The Open University, and SPC). Interviews were thematically analysed (Braun and Clarke 2006), drawing both from themes identified through the prior project transdisciplinary research activities (e.g. Unteidig et al. 2018a), and also inductively explored to identify additional themes specific to these pilots' circumstances. Findings were triangulated (e.g. Twining et al. 2017, Elliott et al. 1999) by researchers from each pilot coding both their own and the comparable interview.

## Findings

Pilot partnerships in Berlin and London debated how best to serve both the EU funded project requirements and community agendas throughout the duration of the project. Here, we describe partners' reflections on how working together as a pilot pairing, seeking to achieve meaningful change and the objectives of the funded project, both brought challenges but also potential benefits.

A key theme arising was the importance of early discussions between partners establishing and reflecting on their agency within the consortium. A critical reflection was around the **negotiation of roles** that had been designated, and how these would be fulfilled. In each pilot, the academic partner was allocated as a formal lead to deliver the pilot, and the paired community partner expected to catalyse action on the ground. There was a recognition that these ‘absolute’ roles could be easily fallen into, and had to be negotiated and managed. “What should be” - Brown’s (2008) first stage of the process of conducting collective learning - was a key point of discussion early in the project. In both pilots there was an appetite to overcome the division of ‘research’ and ‘practice’ in line with the project’s ambition for inter- and transdisciplinarity:

*“...it was important to me to reach a level of real collaboration where Common Grounds becomes the UdK and vice versa and everyone acknowledges each other's competences and meets at eye level.”*  
(academic partner, Berlin)

This was not, however, straightforward. In the Berlin case partners were unknown to each other:

*“We had to understand what our relationship was”* (community partner, Berlin)

In London, the two lead researchers had been known to each other in the role of practitioners, but MAZI represented a first encounter on a formal, funded research project. This novel collaboration required accommodation and reflection, particularly because of the inclusion of a postdoctoral university researcher:

*“...he was having to pick up on what we were doing and because we had this sort of history of being able to have communication. [...] We were having to slow down a bit in order to, to bring [researcher X] up to speed.”* (community partner, London)

Both in London and Berlin, community partners felt that power imbalances had been played out in previous engagements with universities, and were wary of what might happen.

*“There was a mistrust on both sides in the beginning that had to be overcome... dozens of masters theses had been written about the garden [the field location] in the past, but hardly anyone ever asked what the garden needed to get out of it”* (academic partner, Berlin)

The ambition of **achieving ‘transdisciplinarity’**, moving beyond the bounds of one’s own discipline towards a unified approach, required reflection on partners’ self-identification. While the researcher in Berlin described his role in terms of classic academic disciplinary boundaries (“I represent both design and technology”), the community worker emphasised the importance of personal and political identity, a very close self-identification with the association she represented: (“When I, [...], talk about Common Grounds, I’m not just talking about a chapter in my CV, I’m talking about myself. The association is closely connected with me and stands politically for what I stand for.”).

Roles also had to be negotiated between the partners and the neighbourhood initiatives with whom they sought to engage. It was seen as critical to generate a shared understanding of how the partner dyads would **present themselves to engaged participants** within the pilot context:

*“How do [we] present ourselves in front of other communities?”*  
(community partner, Berlin)

*“A discussion before the first joint event in the [garden] revolved around the question: Who invites? [the audience to participate in the project]” (academic partner, Berlin)*

De Certeau (1984) talks of ‘tactics’ as a bottom-up, emerging equivalent to top-down ‘strategies’. Through project-wide reflective activities, MAZI had identified the tactical, responsive equivalent of ‘roles’ as ‘**guises**’: a mechanism for working out how to progress project goals sensitive to the local contexts, groups and situations, and responding to changes over time (Unteidig et al. 2018a). There was a recognition that community engagement might not be easy to activate in already wary and overstretched local conditions:

*“...you have to try and diffuse this preconception that people might have, that you're a posh, white bloke who is just going round and doing what he wants” (community partner, London)*

For the civil society partners already engaged within the neighbourhood settings of the pilots, deeply embedded in the local situations and accustomed to navigating through local politics, taking on guises appropriate to different circumstances was not novel:

*“We try to connect different (urban) discourses with one another. So a lot of networking and mediating or translating between different languages and worlds [...] And we are regularly given this role by others” (community partner, Berlin)*

*“...there are layers of networks that you are involved in, and perhaps the role that any individual plays is traversing layers of network...” (community partner, London)*

In London, for example, the community partner engaged the “Friends of Brookmill Park”, volunteers maintaining a local greenspace that wished to better promote their activities to a wider local audience, through his local identity as an active blogger. Meanwhile, he used his identity as a networking expert to encourage participation from an environmental charity, Creekside Discovery Centre, through encouraging them to consider how low-cost MAZI systems might be used to collect sensor data to better inform school science projects. Figure 3 shows MAZI conversations in these contexts.



**Figure 3: Taking on different guises to encourage community participation: (a) blog writing workshop with Friends of Brookmill Park (b) Environmental data discussion at Creekside Discovery Centre**

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The guise of a collaborative team working on an EU project was sometimes seen to encourage participation, with the respective organisations “giving each other credibility” (academic partner, Berlin). While legitimacy and access were achieved through the community partners’ long standing involvement, an outside partner could bring validity and the guise of working in a formal funded project enabled the community partner more leverage than they might otherwise have had:

*“The Open University part of the relationship [...] was vital because it meant that they [engaged participants] had the reassurance of there being some grander scheme that they were seeking a verification from, in order to take things on” (community partner, London)*

*“Conversely, we also profited greatly from the university’s network of relationships. It was very motivating to see that what we were working on in small scale, found echo on a national level...” (community partner, Berlin)*

However, bridging the worlds of the EU funders and local aspiration could lead to activities that led to community partners querying the value to local participants:

*“I think there were tensions about EU money coming into the community setting” (academic partner, London)*

*“And we got all these outputs and made them dance around all day, fed them, watered them ... and got the deliverable data out of the otherwise unfunded engagement.” (community partner, London)*

MAZI formal strategies had to take into account local sensitivities, and often managed through emergent tactics that enabled the pilot teams to sympathetically support local goals or ways of working while achieving funders’ requirements. For example, the project contract expected ‘community workshops’ as a *strategy* for engagement and were interpreted *tactically* to suit local conditions. In Berlin, these included ‘unboxing’ workshops, where civic action groups, curious about the technologies, were given hands-on sessions to configure their own toolkit deployments. These were then followed up through support in form of regular one-on-one meetings or telephone calls to ensure the communities were not feeling left alone during their appropriation of the technology. In London, the community partner had a long-running regular informal technical meet-up in their space, “Wireless Wednesdays”, and so regular drop-in gatherings in cafes and other community spaces familiar to local residents were initiated, promoted as “MAZI-Mondays”. Figure 4 shows these different contexts.



**Figure 4: Interpreting strategies using local tactics: (a) Berlin Unboxing workshop  
(b) London MAZI-Monday**

Project pilot teams recognised that processes needed to be given time to emerge, and that heavy-handed pressing of project objectives would not be helpful. This was both true when working out processes between the pilot dyads, as well as when engaging with local communities:

*“Especially at the beginning, I was very keen to keep the process open, because there were always efforts to concretize as quickly as possible so that added value could be recognized.[...] If you push for a result too quickly, you artificially stop a lot of ideas that just need a bit more time to surface.” (academic partner, Berlin)*

Engagements with community participants had to be handled sensitively to assure them that their agendas were being respected:

*“You can’t hurry things up by jumping an agenda, pushing the objective forward: it’s either appropriate, the part of the conversation or it’s not. If it’s not, then who were you to jack it in there? it’s not going to help” (community partner, London)*

*“...there are expectations immediately when people find that you’re being funded.... they think that the conversation [around what community needs are]...[is] because of the need of the other agencies...the undisclosed puppet masters... And then the thing that they [community participants] have a conversation about is somehow a loss to them.” (community partner, London)*

Local agendas forced the pilot teams to work out tactics against/towards the top-down strategies of the project, and to be creative in guises and agendas, to align local interests with the roles and goals of the project.

A key challenge was to ensure that MAZI project activities **added value rather than adding work** to already stretched local actors (the community partners, and the engaged neighbourhood groups). Project formalities could be perceived as adding work, rather than adding value by emphasising ‘project-logic’ over progression of local processes. For example, the London academic partners, conscious of project progress reporting requirements, sought to plan agendas for meetings and align write-ups with a formal framework, which was at odds with the community partner’s existing practice of informal community gatherings and event blogging:

*“...we rigourised a lot of what otherwise be a more organic and natural process into a set of reportable processes, which [...] added an untold amount of complication [...] as a consequence I missed vital things and vital clues...” (community partner, London)*

A key issue was promoting the agenda of **onward sustainability** at a local level while working within a funded project that implied closure and termination of funding at a set time:

*“[We] both [community and academic partner], feel a very strong responsibility for what we have put into the world [through the project]. That’s why it goes without saying for us that we continue to accompany the projects of the initiatives after the end of the funding period up to the point that they feel comfortable and good about what we have developed.” (community partner, Berlin)*



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*“It should have been THE discussion. What is it, what is it that we're proposing and how does that sustain itself? should have been one of the primary research questions” (community partner, London)*

With the different roles and resources allocated to the partners, **power imbalances were recognised and had to be managed**. Academic partners were given lead of the pilots, and with it, greater resources, so were identified as having greater structural power or influence over what could be done:

*“...equality would certainly have worked even better if the project had been structured differently in terms of funding. The allocation of the budgets led to an unequal weighting.” (academic partner, Berlin)*

The dyads discussed how to practically accommodate this imbalance:

*“[We] tried to lead on the European administrative and reporting processes and try to free you up as you say, to storytell” (academic partner, London)*

*“We [...] wanted an equal partnership, but since Common Grounds had much less money at its disposal for the pilot, [the academic partner] had to do a larger part of the work when it came to reporting and handling the EU-level” (community partner, Berlin)*

Equally there was recognition that power came in other forms:

*“...we [the academic partner] were seen as the lead for the pilot. We are nominally noted as this university pilot. But [...] you [the community partner] had a lot of power because you were the person who knew the community” (academic partner, London)*

Resources and agency limited how much partners could engage across the consortium:

*“I would have liked to have had more time and influence on the development and design of the hardware and software” (academic partner, Berlin)*

While the EU sought to work with small community organisations, there appeared to be insufficient allowance for the disparity in capacities:

*“What we see is that the EU as donors, want to work with communities and community organizations on the one hand, but have problems allocating the needed funds or understanding the administrative limitations and difficulties of small community organizations on the other. You can't work with smaller organizations in the same way as you work with large universities...” (community partner, Berlin)*

There was, however, recognition that the EU was trying something new and seeking to find a balance for how this should look. Pilot partners identified that MAZI was one of the CAPSSI trailblazers and the pilots were experiencing the challenges of this innovation at first hand:

*“CAPSSI [the funding framework of the project within Horizon2020] has nevertheless managed, in some cases, to develop settings that have allowed egalitarian collaborations and project work. Nevertheless, the classical idea of innovation still prevails: that the universities are the contact persons, secure the financing and fulfil the reporting*

*requirements. The fact that a platform like CAPSSI was possible is nevertheless remarkable.” (academic partner, Berlin)*

## Discussion

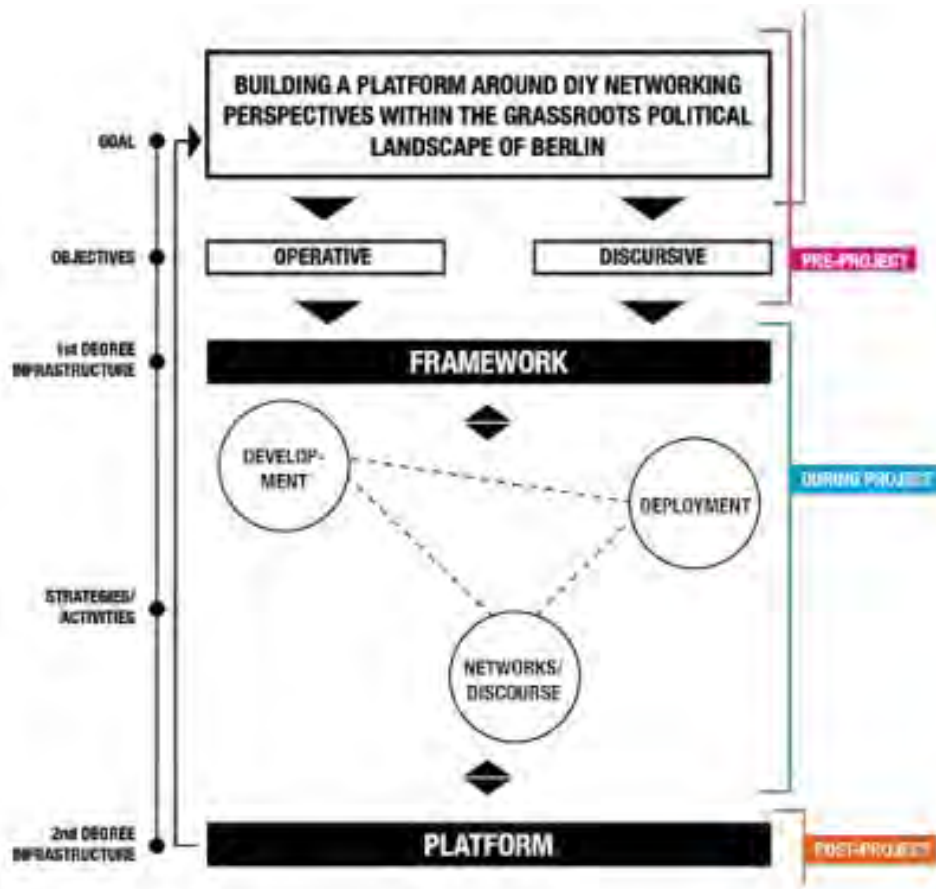
MAZI pilot partners were aware from the beginning of the project that the collaboration process would be fraught with pitfalls as well as potentials: highly diverse partners were working to come to grips with a ‘wicked social problem’ in complex social settings. They experienced challenges that resonated with other social innovation projects such as aligning goals, and reaching common language (e.g. Chueri and Araujo 2018).

Negotiating agendas, ensuring added value to local situations, and managing power imbalances in order to align goals and achieve common understandings were challenges that operated at four levels: between partners in a pilot; between the pilot partners and the participant local communities; between partners in the wider consortium; and between the consortium and the funders. There was a need for both forward planning and maintaining a responsive and agile approach to circumstances to balance “project logic vs. engagement in local processes” (Unteidig et al. 2018a, p.14). Formal project mechanisms aided this process, yet partners in pilots had to be attentive to local, emergent situations: there was the danger that the “...ideal of collective experimentation to find innovative solutions is [...] reduced to more ritualized information and communication events.” (Felt 2016, p.755).

Informal, ongoing debate and negotiation focussed around neighbourhood action was critical for pilot success on the ground. These pilot-specific conversations resulted in localised ‘tactics’ suitable for managing day-to-day realities. MAZI identified that ‘planned roles’ could be complemented by ‘responsive guises’: locally enacted roles that could tactically progress project goals. An ongoing investment and commitment was required between pilot partners as power imbalances changed over time. Academic partners holding a larger share of resources could be seen to have more structural power to direct work; however they were bound by university processes (e.g. the requirements of ethics committees), while the community partners, operating at smaller scale had more independence and might be considered to have more agency over how to act and respond locally as well as the power that came through their longstanding relationships with neighbourhood groups, and their gatekeeping role.

MAZI identified the importance of creating space for discussions between project partners, both scheduled, but also given space to emerge: strong collaborations have to be “crafted over time” (Unteidig et al. 2018a). It was important for pilot teams to find ways to work together to create corridors to maneuver and align agendas and interests. The challenge was to ensure these were narrow enough to provide guidance for the desired direction of travel, and to create sustainability, yet still broad enough to create the possibility for all actors to connect and stay involved within the project.

One response was the generation of a research and action framework (Unteidig et al. 2018b) created by Berlin to help maneuver the pilot through the complexity with which they were faced (undertaking research and action between society and technology), see Figure 5.



**Figure 5: Process framework of the Berlin pilot design**

The Berlin pilot partners recognised that the goal of building a platform (the MAZI toolkit) required the merging of operative and discursive levels of project objectives. Through initial conversations, pilot partners established interdisciplinary grounds for collaboration and negotiation of their highly differing perspectives. These enabled a broad alliance of actors to engage in activities towards building the final platform, embracing both initial community partners and new actors that the pilot team encountered, and creating a momentum on which the development of future activities could be based beyond the timeframe of the project. This formalisation reflected the Berlin partners' particular interest in discursive and design aspects of the work, and having been generated at the end of the second year of the project was used as a framework to guide the pilot through their final year of work.

The London partners, with a particular focus on the operative, technological development of the toolkit chose instead to negotiate cyclic processes through the use and development of a shared open source platform hosted by the community partner. This acted both as a site of negotiation and creation in its own right, and the boundary object through which challenges and responses could be managed.

Nevertheless, the process of negotiation depicted in Figure 3 characterises the dynamics of both MAZI pilot negotiations between the academic researchers and community partners. The commitment to negotiate the best way to meet the challenges of the local communities rendered them circular: the continuous circling back to negotiating "big picture-issues" enabled the pilot partners to identify challenges of interdisciplinarity as well as to co-construct responsive tactics and reflect on the applicability and appropriation of project objectives, roles and strategies. This approach reflects Brown's cyclic process model for conducive collective learning and resonates with the social science perspective that has long considered that reflexivity is an important action within research activities (Atkinson and Hammersley 1994).

A key challenge was to agree and manage what ongoing sustainability represented. Like Day and Cupidi (2004), we saw tensions arise in balancing the ‘project framing’ of fixed time scales, prior defined goals and a set termination date, with the community perception of the work as operating as an ‘initiative’, taking as long as required, accepting of delays, periods of dormancy and changes in purpose; and open ended. The ultimate purpose of activities were strongly debated, with a concern that project metrics could overwhelm the broader societal value of the work leading to the missing of crucial yet more fragile opportunities that might not “comply with the auditing logic” (Felt et al. p 756).

Mutual learning moved not just across academic-civil society boundaries, but beyond into neighbourhood settings, and emphasises the need for collaborations to “exceed or escape ‘professionalization’” (Löwenhaupt Tsing, 2015, p.285) allowing for openness to values beyond research systems and funder requirements. Sustainability could at its core be the negotiation of the fragile relationship between the partners.

## Conclusion

The two MAZI pilots discussed in this paper illustrate challenges that may be encountered more widely by projects involving collaborations between large universities and small civil society organisations. While MAZI benefitted from the forward thinking of the EU’s CAPSSI programme taking a progressive approach by bringing together a wide range of partners to solve a complex societal challenge, partners still struggled with imbalances and ensuring that both project objectives and local goals were achieved.

Building in explicit reflective processes into a project helped establish and keep alive conversations to ensure that different worldviews were respected, and points of contention resolved. Identifying “what should be” both early on in a project as well as ongoing discussions builds common ground, and ensures sustainability of both the project outcomes and partner relationships. The current state of affairs (‘what is’) will likely change, and touch points for returning to the discussion periodically to reflect and plan for what could and can be, are valuable to maintain an open exchange. Continued commitment was required by pilot partners to achieve understanding and reach mutually satisfactory goals.

In many cases, it was the continued commitment to ongoing conversations and unexpected discovery of common ground that broke through deadlocks and built the relationships between the pilot partners: “[s]ometimes common entanglements emerge not from human plans but despite them. It is not even the undoing of plans, but rather the unaccounted for in their doing that offers possibilities for elusive moments of living in common” (Löwenhaupt Tsing, 2015, p267). Creating the space, and a lightweight framework to encourage interactions and reflections was essential to finding a way towards a bridge of understanding and project success.

As a concluding note, we offer a meta-reflection on the conference topic of “whose agenda?”. It is worth pausing to consider whether the ongoing work required after the end of the funded project to complete this academic paper re-ignites the identified possible inequalities. For the university-based researchers, ongoing academic writing is part of their expected funded duties, while we should reflect as to whether for the civil society partners, the continued unfunded contributions to this explicitly academic work offered more ‘added value’ to their practice than ‘added work’.

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# MAZI

μαζί (mazi) [greek] *adv.* together; jointly

**DEVELOPING A DIY NETWORKING  
TOOLKIT FOR LOCATION-BASED  
COLLECTIVE AWARENESS**

## 4 Pilot Studies:

### The MAZI Toolkit:

creates **Do-It-Yourself** wireless networks called MAZI Zones

uses low-cost hardware & open source software

includes sensors, data collection tools, visualisation interfaces and web applications

is easily deployed and customised

includes complete guidelines for setting up MAZI Zones

### MAZI Zones:

support a range of citizen engagement practices

are specific to local context, needs and goals

can be long-term or short-term in duration

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University of Thessaly, Greece  
NetHood, Zurich, Switzerland  
Edinburgh Napier University, UK  
Berlin University of the Arts, Germany  
The Open University, UK  
INURA Zurich Institute, Switzerland  
SPC, London, UK  
Prinzessinnengarten, Berlin, Germany  
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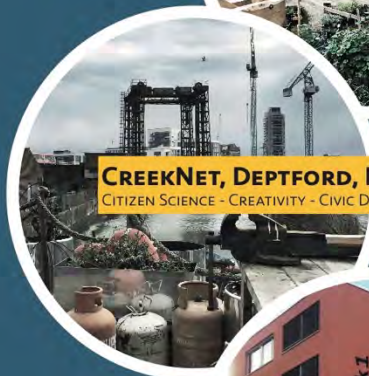
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# CIVIC DESIGN THROUGH THE LENS OF SOCIAL LIVING LABS

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**Abstract:** This paper draws on the learnings from three practice-based design research projects that were carried out between 2013 and 2018. It aims at contributing to a deeper understanding of new agencies, roles and responsibilities of design – especially in the context of civil society and as a political actor that faces new complexities within the digital transformation discourses. As ICT increasingly act as mediator for novel types of communication, interaction and social and political participation, the projects have developed experimental and contextualized tools for civic engagement that provide insights on how a political understanding of design could shape local practices that foster the motivation for and the possibilities of democratic engagement.

In this paper we will start by introducing the concept of civic design, and its impact on debates around political agency and participation in design. We will then move on to focus on the impact of technologies for civic engagement and by drawing on our learning from the use of the social living lab model, we will present some conclusions that might provide new avenues for a critical conceptualization of civic and social design. We argue that it is precisely in conditions of complex structural crises, technology-induced transformation processes and uncertain forecasting conditions, that our disciplinary agency can play a decisive role in understanding the significance of digital infrastructures as socio-political practices.

**Keywords:** design research, living lab, social design, civic tech, design interventions

## Introduction

We understand civic design – first on an operational level – as an approach within design that deals with the civic life in its broader manifestations. Civic design does not simply include the rituals of democratic participation through electoral processes, but instead focuses on forms of civic education and awareness, on new ways of working together with policy makers, public agencies and communities. It looks at the interactions among citizens that happen on a daily basis in all manner of civil society, when neighbours cooperate with neighbours, local civil servants deal with social problems, when they communicate and digitally engage in societal and local relevant issues, when community groups organise, and locally active peers ally themselves and share a common interest, and more. Civic design depicts opportunities and networks and mediates local knowledge through both digital and analogue technics and technologies – in order to foster civic engagement and digital participation. Ultimately, it has been argued, *[...] civic design aims to contribute to new forms of living together* (Di Salvo and Dantec 2017, p 66), where the role of design might shift to stronger considering the local context(s).

Against this backdrop, we look at design within its political and social implications, and how civic design and civic technology might co-influence processes of transformation. This paper draws on the learnings from three publicly funded, transdisciplinary research projects, which were developed within a framework of civic design. All three projects were asking about how to inquire and advance democratic practices at a local level, through small-scale appropriations and through civic technology. On a disciplinary level, they were asking about how to render visible the paradoxes that come along with socially engaged, participatory design, such as issues of power relations, co-determination of who is entitled to participate in the processes, or who designs for whom with which assumptions and ideologies. Within a larger concern, the projects raised the question of how to deal with democracy threatening developments that get amplified by some aspects of the digital transformation – issues such as the increasing vulnerability and manipulation of individuals, the violation of fundamental rights through mass surveillance or the digitally mediated undermining of democratic institutions and practices, that become more and more threatening for an open and tolerant society.

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The first example, the German-Israeli cooperation “Community Now? Conflicts, Interventions, New Publics” (2013-2016)<sup>1</sup>, aimed at developing a deeper understanding of the potential of designerly interventions in diverse and conflictual communities. During the cooperation, in Berlin, at the Social Living Lab Mehringplatz, as well as in Jerusalem in the neighbourhood Pat, home to the bilingual, Arabic-Hebrew school Max Rayne Yad be Yad (“Hand in Hand”), a large set of co-design workshops, interactive installations and experimental digital tools were developed. Our goal was to better understand if and how communities and neighbourhoods can be supported by experimental, civic tech in the process of taking ownership of societal and political decision-making.

The paper will mainly focus on the subsequent project, Participatory City project (“Mit-Mach-Stadt Brandis”, 2016-2017; “mitmachen” in German means *join, be part of, participate*),<sup>2</sup> which questioned how citizens use and adapt new digital means that have the potential to strengthen local social structures. The goal of our research through design approach (Fryling 1993; Findeli 2008) was to implement in the German city of Brandis (10.000 inhabitants) new avenues for civic participation in order to support those who were already engaged in democratic practices, but also to address the yet not-engaged citizens with informal participation opportunities, as well as to improve communication and exchange between the municipality and the citizens.

As a third research through design project, the follow-up cooperation “Citizens Connect Neighbourhoods – Community Development Harnesses Digital Transformation” (2016-2018),<sup>3</sup> aimed at engaging civil society, academia and policy makers into a participatory process in order to find out how to design a citizen-centred digital agenda in the German state of North Rhine-Westphalia, a digital agenda that strengthens the opportunities for social cohesion and inclusive, participatory engagement in the networked society.

What the here presented projects have in common is their collaborative partnerships with non-profit organizations, municipalities, and other civic initiatives, carried out within the methodological approach of socially oriented living labs. Each project critically asked how to advance democratic practices at a local level, especially by “bridging social and technical capacities for action” and thereby enabling “different publics to take action on issues of concern” (Dantec 2017, p 29). Efforts focused on questions of systemic, structural and technological conditions and potentials for civic and digital involvement.

In this paper, we will especially focus, as mentioned, on the project “Participatory City” (2016-2017). We contextualize the project’s processes and outcomes with regards to design’s political agency for strengthening those democratic practices that aim at preserving an open society and a deliberative public space, especially with regards to the ongoing process of polarization within our societies and the progressive radicalization of right-wing political groups (Doerr 2018). Within the project, we were able to theoretically question the design’s potential for shaping local practices through a more inclusive, democratic urban development (Manzini 2014). In fact, all three above mentioned projects address issues of plurality and diversity, access and authorship of technology and digitalization within the urban space and on a local level. As Manzini points out, the groundwork for macro-transformations and for great systemic changes is laid by micro-transformations and by local systemic discontinuities (Manzini 2014).

In the following pages, we will introduce first how we see the role and the landscape of political discourse within design practice to take shape and how we position our projects; we will then introduce the concept of Civic Tech and how we used the model of the social living lab (Franz 2015) to challenge the “top-down” approach to the digital developments within the city. We will conclude with some theoretical considerations around the impact of the digital tools on groups and communities in urban context, that could contribute to the wider literature on civic technologies and inform on a context-dependent concept of civic design.

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<sup>1</sup> “Community Now?” (2013-2016) is a German-Israeli cooperation between Berlin University of the Arts (UdK), the German Society for Design Theory and Research (DGTF) and the Bezalel Academy for Arts and Design Jerusalem, funded by the German-Israeli Future Forum Foundation (DIZF) and the Federal Agency for Civic Education (bpb): [www.community-now.org](http://www.community-now.org).

<sup>2</sup> Participatory City” (Mit-Mach-Stadt Brandis, 2016-2017) is a cooperation with the municipality of Brandis/Germany, funded by the Ministry of Interior in Saxony: [www.mit-mach-stadt.de](http://www.mit-mach-stadt.de).

<sup>3</sup> “Citizens connect neighbourhoods – community development harnesses digital transformation” (2016-2018) is a cooperation with the State of North Rhine-Westphalia (NRW) and 14 civil society initiatives: [www.modellproject-nrw.de](http://www.modellproject-nrw.de).

## Design and political agency

Questions of ideology and political agency have been rarely raised in more mainstream design practices, although we can find in design history numerous positions and schools that discussed and interpreted the interdependencies of design and the wider processes of social transformation, from Bauhaus, to the Ulm School, the Participatory Design Movement in the 1960s, or developments like Critical Design from the 1990s. A large part of the design approaches has been regarded as at least in part politically motivated, driven by the idea of change by design, and being closely linked to critiques of consumerist design, as Nigel Whitely (1993/2003) formulated it in the early 1990s'. Since then much has changed, at least in certain areas of design practice and research, as questions have been asked about the political role of design to be disruptive of political systems and authority.

Working specifically in an urban context, Thomas Markussen (2013), for instance, is a scholar and practitioner who has interrogated how structures can limit and constraint local actions and social change in an urban environment, and has explored what the role of design could be to disrupt these structures and to rediscover the power of agency. In line with his thought, we aim to raise the question of the role for design research in design activism and civic design practice by drawing on Carl DiSalvo's conception of *political* design (Di Salvo 2012). *Political* design predominantly operates outside existing mechanisms of governance, in the sense that Chantal Mouffe positions this term (Mouffe 2013) as an agonistic discourse or conflictual controversy. It aims at rather unveiling these mechanisms in order to raise questions, to challenge existing conditions, to open space for contestations and for building alternatives to the status quo. Through the tactics of *revealing* and *contesting*, DiSalvo suggests, we can begin to consider political design as a "*kind of inquiry into the political condition*" (2012). We applied this definition of political design to the projects we are presenting here, as this allowed us to frame our practices of civic design on the theme of civic technologies according to the tactics of which DiSalvo talks about, and namely: revelation (through the continuous process of interrogating the status quo) of contestation (by generating alternative models through actions of research through design) and dissensus (which in our project took the shape of experimental making). DiSalvo's categorization offers valuable instruments for conceptualizing political design. However, the underlying understanding of our political design practice is deeply rooted in Dewey's political philosophy and his concept of democracy: "Democracy is a way of personal life controlled not merely by faith in human nature in general but by faith in the capacity of human beings for intelligent judgment and action if proper conditions are furnished" (Dewey 1939, pp 2). In order to be understood and lived, according to Dewey, democratic values have to be experienced, by individuals and collectives alike. This understanding of political (design) practice goes in line with the importance of micro-transformations for systemic change as outlined by Manzini (2014).

Taking a pragmatic political stance in our design practice, therefore, meant for the project to reclaim a role for design as an agent for providing an infrastructure for deliberation and the experience of self-efficacy towards democratic urban development. That meant not only providing the tools for collective practices, but also emphasizing on questions about how democracy, ideology and memory are manifested in the city, as we shall discuss below. Within a mesh of roles, tasks and tactics, such as bridging between different "logics" and "cultures" (e.g. governance logics of the municipality, cultures of voluntary commitment, discursive practices), providing low threshold access to digital means and bringing together different and even conflictual interests and stakeholders, design has become a "mode of political action" (Mareis 2014).

But the question to be raised here is to what extent is design able to instigate social and political change that can be related to the design practice in *causa*? The relationship between design and the concepts of social and political is not a straightforward one. While we might say that sociality is always something that will be mediated by design, as people are embedded in socio-material and socio-technological contexts, this does not automatically imply a role for design in social change. Scholars have for instance critiqued this relationship, highlighting the incapability of design practices to challenge the established political order (Kiem 2011). Drawing on critical and political thinkers like Gramsci or Foucault, Kiem builds an argument for his critic due to the absence of power analysis from the majority of interventions and investigations in the field of design for social innovation. This lack is what makes design incapable of addressing, or even making sense, of contemporary issues of public concern. In this respect, our approach, which started with a deep, interdisciplinary analysis of the

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status quo and incorporated an analysis of the power dynamics, could represent an interesting tactic to counter these deficiencies.

### The project

Specifically, within the project “Participatory City” in the city of Brandis, we approached these questions first by analyzing the existing socio-material infrastructures. Based on an intensive phase of qualitative social research, we were able to map the already existing civic initiatives that were active in the city, outline the mesh of interests, political stances, digital literacies, potentials and motivations for involvement and thereby shape our partnership and initial agenda accordingly. In the light of the open borders for refugees in the year of 2015 and the resulting (growing) polarization of the German society, we partnered up not only with the municipality, as our main project partner, but included other civic initiatives, different stakeholders and engaged citizens interested in working actively to promote a more diverse and open attitude among the local population especially towards migrant inhabitants. To bring together these diverse groups and civic initiatives, we chose to set-up a social living lab in the local cultural centre “Musikarche” (*arc of music*). The idea was to both establish a physical space for regular encounters, deliberations and co-development, and a methodological approach that takes into consideration and works with the local contexts. The living lab model allows for the boundaries between scientific work and the inhabitant’s everyday practices to gradually dissolve the limitations between expert, non-expert and domain-specific expertise to be re-negotiated and re-organized.

After this intensive status quo analysis and the local anchoring, we managed to build a “task force” consisting of up to 20 socially and politically engaged citizens to co-research, co-design and accompany the entire process. From the beginning, it was important to think about the “taking over” of our endeavors by the initiative (the new formed up task force) after the end of *project duration* (Ehn 2009), taking into consideration the *design after design* (Binder, De Michelis, Ehn et al. 2011). With this core group of active participants, we conducted a series of intensive participatory workshops and co-design workshops, implemented interactive installations and realized public interventions throughout the whole project, which ended with the moment of handover of the project outcomes, activities and the elaborated formats of knowledge exchange to a group of self-selected responsible individuals. Together with the “Mit-Mach community” we developed a socio-material infrastructure (Star, Ruhleder 1996, Ehn 2008) that built on and extended already existing local structures (fig. 7). In the next section, we first illustrate the model of the social living lab.

### The model of the Social Living Lab

Living Labs are part of a wider call to democratise innovation, both as a way to affirm what has been defined as a ‘collective resource approach’ (Ehn, Nilsson & Topgaard 2014) and to reframe the role of expertise within knowledge production, not by being against expertise in itself, but to challenge the idea of experts as a unique source of knowledge and authority (Schuler & Namioka, 1993 xi-xii).

The concept of the Living Lab first emerged theoretically from the Massachusetts Institute of Technology, and since then has been spreading rapidly and worldwide. The European Network of Living Labs (ENOLL), for instance, counts today more than 150 active Living Labs across Europe.

Although there is no agreement around one definition of what a Living Lab is, and there is a huge diversity across the spectrum of how these Labs are set-up and what values are they based on, we follow from the Scandinavian example and literature and describe these labs as being ‘enabling platforms’ (Emilson, Anders, & Serravalli 2014), that are built around the idea of creative communities, which are made of ‘professionals of the everyday’ (Meroni 2007).

The methodological ideas of the Living Lab, drawn on the Scandinavian model, are the following:

- The set-up of a collaborative space, where a variety stakeholders with diverse agendas work side by side;
- The conception of the Lab as an open space where mutual learning and respect to each other are supported;
- The establishment of a long-term engagement, to allow for the building of trust among diverse actors;

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- The use of participatory design techniques to explore concepts and ideas in real-life and contexts and through hands-on work.

In the Scandinavian example then, the Labs have the feeling of an assembly, a democratic forum, where different people can engage in conversations to question what is taken for granted and explore how things could be done differently. Theoretically the Labs are based on principles of participatory action research, as it values and honours the knowledge and lived experience of lay persons, and it has the double aim of producing both impact and knowledge (Wadsworth, 1998; Reason 1994; Whyte, 1981); it is inspired by the practice of the pedagogy of the oppressed, as regarding the concept of conscientization as inspired by the work Paulo Freire (Freire 1996); it acknowledges the complexities of emancipatory research which can only be judged emancipatory by the results it truly achieve (Oliver 1997).

At the core of our social living lab approach were furthermore two concepts that seemed helpful with regards to the local context, namely design as infrastructuring (Binder et al. 2011; Ehn 2008) and interventions through civic technology (Bray 2007, Dourish 2010, Ratto and Bolter 2014). We made use of these concepts to reflect on specific aspects of design's and the designer's role in collaborative environments and transdisciplinary frameworks that include stakeholders from different fields: designers, community organizers, technologists, policy makers and local actors. The conceptualization as *social living lab* emphasizes the assumption that the increasing symbiosis of local engagement and technological infrastructures gives way to new possibilities for collective and collaborative action to emerge – especially when the specific social context is regarded as central. Social living labs stress the importance of considering the local context by developing a space of encounter and collaboration that is rooted in the actual life-worlds of those partaking in these processes of transdisciplinary inquiry, and by implementing a set of co-design methods and experimental technologies that foster negotiation processes with a special focus on countering phenomena described as the digital divide and digital inequality.

The social living lab is an experimental environment that builds on already existing local structures, such as, in this case, the local cultural center “Musikarche”. Mainly our Social Living Labs performed the following activities:

- Interrogation: through open ended debates in order to explore the status quo and to develop and exercise critical thinking (within regular monthly meetings)
- Research through design: to generate alternative models for research and knowledge production (through implemented prototypes in public space)
- Critical Making: through the use of artefacts and open technologies to remix, recycle and adapt ideas and solutions (through the participatory testing of open source technology)

As scholars have been highlighting the potential for Living Labs to be an ideal space for researching participatory processes in real world contexts (Åstrom et al 2005), we want to move in the next part of this paper to expand on the question of participation.

#### **The question of participation: diversity and inclusion**

The question of participation in design has been at times overlooked or oversimplified. As quests for more sophisticated ways of framing participation in design have been raised, also by the authors of this paper (Pierri 2018), more critical stance on collaborative approaches start emerging that try to avoid the risk of *romanticising* participation (Collins and Cook in Sangiorgi et al 2014), by assuming that participatory forms of design are in, and of themselves an efficient ethical act in the quest for ethical outcomes.

In our work, we refer to the ethos and practice of participatory design (from now on also PD) as defined within the Scandinavian tradition of social movements during the 1970s. This differs from other traditional practice of collaborative design in many ways: it has a clear interest into issues of equality, social justice, participation and a particular sensibility towards problems and complexities, rather than solutions and simplifications; understanding and learning, rather than just intervening. Participatory forms of design aim at reframing the role of expertise within knowledge production, and while not being against expertise in itself, they challenge experts as a source of power and authority (Schuler and Namioka, 1993, xi-xii).

As Iversen et al suggest, the widespread use of PD practice by many, far beyond Scandinavian

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countries, has meant that the core of what makes a PD project and how this is different from any other collaborative design project has probably been lost in translation (Iversen O.S et al, 2012). The confusion is generated by the reification of the methods of PD and the element of participation itself, which brings designers to think they are doing participatory design just because they use some methods from PD tradition or simply because stakeholders are invited to participate in the design process. These two things on their own are not enough to qualify a project as PD.

When we refer to Participatory design we do it according to a values-based approach, as suggested by Greenbaum and Loi, and we identified the following values as underpinning our participatory effort:

- ***“equalising power relations*** – *finding ways to give voice to those who may be invisible or weaker in organisational or community power structures (...);*
- ***situation based actions*** – *working directly with people and their representatives in their workplace or homes or public areas to understand actions and technologies in actual settings, rather than through formal abstractions (...);*
- ***mutual learning*** – *encouraging and enhancing the understanding of different participants, by finding common ground and ways of working (...);*
- ***alternative visions about technology*** – *whether it be in the workplace, at home, in public or elsewhere; ideas that can generate expressions of equality and;*
- ***democratic practices*** – *putting into play the practices and role models for equality among those who represent others (...).”*

(Greenbaum and Loi 2012)

In our project, we were particularly aware of questions of ownership and power and how these operate and are transformed – if at all – during more collaborative design research work. Scholars and practitioners have raised several concerns towards some collaborative elements of design approaches as these present peculiar challenges, and namely the problems with the *locus of control* (Bowen et al 2013, Piper and Iedema 2010) as the dynamics and expectations that bring participants to be involved in a participatory intervention vary widely, with residents being directly concerned and affected, for instance, by any decisions taken, the wider public indirectly affected by our intervention, and the experts that might be taking part but who are not going to be directly affected by the changes that might result in a local context.

We found in this respect that the model of the Social Living Lab proved particularly suitable as issues of motivation, engagement and expectations are usually addressed and assessed beforehand and conflict between diverging positions and interests are taken into account and dealt with collaboratively.

### **Civic Tech: A Space in Between**

Digital technology is increasingly interwoven with everyday life and has a strong impact on the socio-cultural transformation of today’s urbanity. Urban spaces become inherently hybrid since ICT act as mediators for novel types of communication and interaction. In our project, we challenged the “top-down”, smart city paradigm (Ryser 2014) with small-scale spatial appropriations. Our practice in fact, in line with the tradition of tactical media (Raley 2009), was not oriented toward realising big scale moments of disruption or contestation, but rather it aimed at engaging residents and citizens in small scale disruption and forms of *micropolitics* (Raley 2009:1).

We want to start by acknowledging that there is not the one shared definition of civic tech, apart from the wider understanding that this kind of technology has somehow to do with the use of the technology for building and maintaining the civic space, from a citizen’s point of view – in opposite of a technology-centred and application-oriented “hard” perspective.

Different definitions of civic tech can include a variety of examples like the so called GovTech, online advocacy groups, citizens science projects or crowdsourced maps and local information. Arguably, we could understand civic technologies as emerging from the tradition of critical making communities (Wiley et al 2014), which were widespread within art and design practice, and pursue the aim to question and transform how and who could create knowledge, that can be considered credible and actionable.

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Practices of civic technology usually raise important, and sometimes overlooked, problems of access, sovereignty and control of the technology in question. These problems, like the problem of the digital divide, have been considered as an *embodiment* of wider issues of social inclusion (Selwin 2004), therefore they became central issues to address in projects like ours. To go beyond the limitations of the more traditional understanding of the ‘digital divide’, which developed around the 1990s and focused on access to the physical devices and to the connectivity (Jurich 2000), we refer in our work to the question of digital inequalities. With this shift, we aim at addressing not just the question of access, but the question of engagement, skills and outcomes as well, so that we can start considering the issue of the digital divide, not simply as a matter of ‘having’ or ‘not having’ (access to a device, internet connection, and basic digital skills) but through the lens of what has been defined as a ‘rainbow approach’ (Selwin 2004), which makes visible the shades of inequalities that are at play in discourses and uses of civic technologies. More recent debates around the question of the digital divide have in fact highlighted that even among users with autonomous and unlimited access to the ICT infrastructure, there might be differences in their capacity to engage long-term with digital content and platforms, and with the capacity to achieve from our digital actions the same outcomes and benefit. This has been defined by scholars as the ‘third level digital divide’ (van Deursen and Helsper 2015).

Other scholars from the data justice movement, interestingly raise our attention to even more complex questions of inequalities, that become visible when we move from the level of the devices to the issues of the platforms that we use, and the data that we are producing, owning, using, or giving away (Daly, Devitt and Mann 2019). In this context, raising questions of data justice means to put under scrutiny the opaque, unregulated – and apparently un-contestable – digital systems, digital platforms and the technologies they use. In fact, also in line with the tradition of Participatory design practice (Greenbaum and Loi 2012), we considered our social living lab as a way to frame technology as being socially determined, and therefore prone to societal critique and re-appropriation.

In our project, in the attempt to open up a space to develop alternative visions of technologies, we asked ourselves, how could design enhance communities with hybrid (physical and digital) collaborative platforms and tools? Our main approach was to develop socio-material infrastructures (Star, Ruhleder 1996, Ehn 2008) that build on and extend already existing local structures, in order to counter the digital divide. Very early in the above described project, we identified the necessity to interweave digital and analogue avenues of communication and developed experimental forms for civic engagement, such as public interventions with interactive installations (see fig. 2). We widened the face-to-face encounters with new analogue and digital access points for exchange and information, and in doing so, linked together and updated different concerns and forms of expertise: some participants were experienced in founding and running an initiative, some in programming and setting up digital access points/interfaces, others in communication and media design. The central, physical platform – the social living lab embedded in monthly meetings – served as a space for encounter between these different participants and their expertise, and for implementing a set of participatory design methods and interventions. One key outcome was the strong desire for an independent digital platform with low-threshold access and means for self-organization. In a co-design process, we developed a citizens’ platform (see fig. 3), among other tools. At the core of the digital platform are means for self-organization in different areas of urban social life, with basic functionalities: no registration is necessary, but the user gets topic notifications. It has a local administrator in order to control misuse and adapt it with more functionalities, if necessary. The platform aims to make the getting-to-know-each-other and meeting-up process as easy and open as possible, and lead to interpersonal meetings and face-to-face actions. It provides a continuous space for participation and discussion at local scale. The resulting ideas get bundled and communicated to the municipality.

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Figure 1-3: The interactive installation, integration of public column, the citizen's platform

Another take on how to activate the multimodal socio-material infrastructure was the endeavor to establish a physical as well as digital local history platform. The first access point was established through a physical and public local history archive within the town hall, in which the physical material was collected, from postcards to handwritten letters, also to offer an interpersonal and intergenerational gathering point. To protect the heritage of oral history – still remained in the told stories by the older generations – a digital history platform was developed, on which not only the scanned materials could be sorted on a intuitively accessible timeline, but also narrations in form of recorded sound or video. To offer an even broader access to the digital infrastructure,<sup>4</sup> a physical story corner was installed in the town hall, where all citizens could record their stories in a protected space (see fig. 6). The overall idea was to embed the established structure in other activating formats, as a history school class, in which students interviewed family members and acquaintances, to save their situated knowledge and to inform historical events happening to this region centuries ago, as the German reunion in 1989.

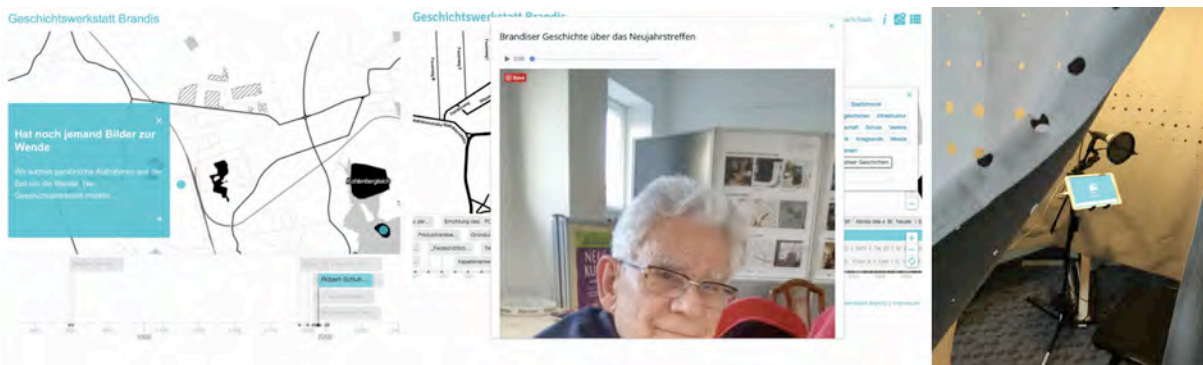


Figure 4-6: The Story platform, the recorded stories on the platform and the story corner installed in the town hall

In the final phase of the project, the established multimodal socio-material infrastructure was not only explained in face-to-face meetings but was also offered in a handy and accessible citizen guide (see fig. 8) with all needed links and background knowledge which was gathered during the one-year process.

While digital technologies were used to support the individual citizens in organizing joint activities and events, and also to support varied requirements of networking and commonality, and thus promote citizens' participation, it became certain that both local government and civil society actors must face the challenges of the digital divide and digital literacy to adequately address important questions of participation. Therefore the implemented socio-material infrastructure (see fig. 7) showed how digital, as well as interpersonal access points, complemented each other. The built and embedded structure offered multi-modal access depending on the diverse communication behaviours through which a new take to counter the social and digital divide was established.

<sup>4</sup> Next to the digital platform, also an open source app »Brandis Stories« was developed. To find on GitHub: [github.com/DRLabCivic/GeschichtswerkstattApp](https://github.com/DRLabCivic/GeschichtswerkstattApp) [last retrieved Oct 13<sup>th</sup> 2019]



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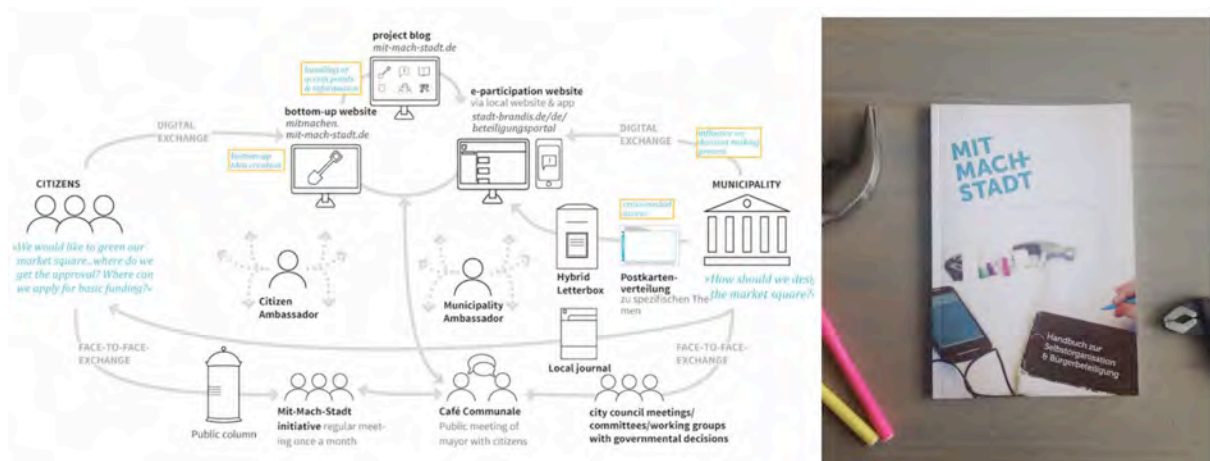


Figure 7-8: The established socio-material infrastructure, the Citizen guide (Herlo, Schubert, Sameting, 2017)

## Conclusion

Within this project, design played a major role in grasping local specific knowledge, establishing peer-to-peer networks and created a system that supported social and political involvement, conversation and the building of alliances, where the designers involved also acted as participants, observers, facilitators and catalysts – while integrating traditional design competencies at all levels of the project, from information visualization to translating knowledge, identifying issues and helping steer the process in the jointly desired direction. A core aspect within these processes was the personal value systems of the design research team, and how they were inscribed in designing situations, processes and systems as Judith Simon in “Values in Design” (2016) problematizes it. The importance of the identity of the designer has been also highlighted by Ezio Manzini (2015) who particularly focused on the shifts that are occurring as designers get increasingly more involved to activate, sustain, and orient processes of social change and social innovation. Through the concept of ‘diffused design capabilities’, which is the intrinsic capacity to design and to collaborate that everybody has, Manzini describes the process of how designers are moving away from the demiurgic vision of last century ‘big-ego design’ and in the process of framing a new role for themselves. Especially in the field of social design or design activism, designers need to find ways to engage in their work their personal values, ideology and stories (Irwin et al 2015) and think about themselves as professional but in a more holistic way. The ways we construct and represent stories, how we design our histories, as Clive Dilnot (2015) puts it, shape and determine our thinking and therefore our actions. What and how we tell has a huge impact on assuming an active role in designing present and future spaces of action, how we create trajectories for the future.

Being included from the very beginning in the design of the project and of the partnership, in fact, allowed us to take an active role that could also inform a contemporary design research agenda, where the role of design was increasingly political and designers were seen by institutional actors, as well as citizens, as playing a ‘political’ role: by creating the conditions and the space for engagement and mutual learning, making issues and conflict visible and tangible so that they can become object of debate, and providing ideas for possible alternatives (*reflection on macro level*). The participatory approach of the Social Living Lab that we took in this project also was successful in allowing us to combine participants’ tacit knowledge with the designer-researchers analytical and technical knowledge. It emphasized the role of the ‘user’ as an active ‘non-design expert’ with local knowledge, skills, organizational and other capabilities (*reflection on micro level*). The design researchers became facilitators of specific design knowledge and transfer processes. We used our agencies (disciplinary agency) to make some paradoxes of the digital transformation visible, by assuming a more critical outlook on the consequences of engaging with ICT/digital platforms and services – such as an augmentation of structural inequality through the digital, exclusion, manipulation by social media and

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exploitation by monopolizing platforms (*reflections on the meso level*). The question of the impact of digital tools and technologies on cities, citizens and more marginalised groups, in fact, emerged as a critical one in our projects, where the role of design can be considered ambivalent, as the discipline of design has a key role to play in making the negative impact of technologies visible, but also has a responsibility in the shape that technologies take or do not take, what is made visible and what is not, what is possible and what is not, who has access and benefit from them and who is left out (*reflections on all levels*).

The questions of how to grasp and also counter these consequences should be addressed by researchers from different fields of knowledge, embracing social responsibility and therefore ethical and humanitarian values, for a sustainable knowledge integration.

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# REDUCING THE CAPABILITY GAP OF SMALL BUSINESS WOMEN WITH A DISABILITY WITH MOBILE DEVICES AND SOCIAL MEDIA

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**Abstract.** This paper investigated the mobile phone and social media habits and behaviours of businesswomen living with disabilities, and identified effective uses of information and communications technologies. It explored the transformation of the work lives and home lives of Australian small businesswomen with a disability, and described how mobile devices reduced limitations imposed by disability. The research employs qualitative research methodologies. A literature review informed the selection of theoretical frameworks with which to identify and explore the social, technical and business-related impacts of mobile technologies. These theories included the Capability Approach and the LIAISE Framework, within a grounded approach. Mobile devices improved work and personal communications to the extent that they diminished disability to a secondary consideration in participants' lives, and they improved business efficiency. The LIAISE Framework was demonstrated to be a relevant tool for operationalising the enabling business features of mobile devices, and the broader digital sector is encouraged to take advantage of both theoretical frameworks in further research and development work. An achievement of this research is that it used the pre-existing paradigms in fresh ways, extending them in the process. It also expands the very meagre amount of existing knowledge of the digital lives of small businesswomen with a disability.

Keywords: mobile phones, capability approach, small business women, disability, social media

## 1. Introduction

### 1.1 Fundamental terms

'Impairment' is an alteration in body structure or function which may impact any individual throughout the lifespan: this 'functional diversity' is part of the human condition. 'Disability' is a more contested term, stemming from historical views of normalcy and deviance (Annison et al, 1996). Limitations in functioning are emphasised when the environment presents barriers to individual capability (Toboso, 2011). This idea, the 'social model of disability', acknowledges that alterations to the environment can ameliorate the experience of disability and enable the potential of people living with impairment. Importantly, even where impairments may be mild rather than severe, if environments present barriers then participation becomes difficult. Environment may include built, social, attitudinal, political, as well as services, systems and policies (WHO, 2001). This context sets the scene for the potential role of technologies to fill the capability gap for women with disability working in a small business.

Recent disability theory recognised intersectionality. It describes disability from the point of view of the person with a disability, and their experience and reality. It acknowledges that people's identities are overlapping, and do not consist of just one feature (e.g., of 'a patient,' 'a client'). Outsiders tend to analyse by using labels. In reality, the 'objects' of analysis have

many more individual perspectives – as women, managers, communicators, chronically ill, and so on:

*The problem of silencing unprivileged groups is defined as a matter of revealing the truth about people's lived experience and real lives (Gressgard 2008).*

Every person has the privilege of being understood for multiple dimensions of identity. This may include being a small businesswoman, and indeed living with a disability, among other features. Avoiding a focus on the disability itself therefore is an important conceptual position, and is enacted in this study through a concentration on the abilities of these women within the rubric of the social approach to assisting them. Enhancing capability is seen as a much more effective objective (Nussbaum, 2011b) than concentration on any inadequacies (Toboso, 2011).

Related to this intersectional view is an international acknowledgment of human rights for all, including broad generic rights, such as the right to movement and the right 'to seek, receive and impart information and ideas through any media' (United Nations, 1948), to more specific rights for people with disabilities (Watchorn & Layton, 2011), such as a universal obligation to 'promote opportunities for self-employment, entrepreneurship, the development of cooperatives and starting one's own business' (United Nations, 2006).

Financing supports which address the 'fit' between a person and environment removes the experience of disablement, whether this is a wheelchair and ramp to access a home independently, or a mobile phone and internet access to enable internet banking and ordering home-crafted goods, enabling economic participation. Human rights legislation recognises provision of assistive technologies and other supports which enable full participation (Van Den Hoven & Oosterlaken, 2012), as rights which governments have an obligation to support (United Nations, 2006). The abundance of ICTs now available with disability-inclusive features has disrupted the traditional perspective of equipment-funding agencies. It is not uncommon for individuals to find that a smart device or mobile phone can replace and surpass assistive products such as environmental control units, or enable a suite of virtual services to be managed from a wheelchair base or bedside. Mainstream technologies (social media and mobile phones) may be used by people with disabilities, specifically women running businesses.

It is difficult to think of any technology which is not 'assistive' in some way, but assistive technology or technologies (AT) are the umbrella terms used for assistive products and related systems and services to maintain and improve function and wellbeing (Standards Australia, 2018). This standard explicitly includes products 'especially produced or generally available, used by or for persons with disability' (EPRS, 2015, p 4), thus including products which may otherwise be considered mainstream, yet which also offer special features to people living with impairment which ameliorate the experience of disablement. The assistive products standards contain over 650 device types across twelve major classes. Class 22, assistive products for communications and information management, captures the products commonly associated with instrumental activities of communications and running a business, and includes mobile phones and accessories, smart devices, and related applications (Standards Australia, 2018). This research focuses on smart devices, specifically smartphones, with the applications and accessories needed for use by individuals with disability (such as a Braille interface) and related social media applications.

Several measures are used in academic literature and government documents to define small business, including the number of employees, financial turnover, and asset levels. Businesses with five or less staff are regarded as very small. The businesses of women in this project are thus called 'micro' on the basis that all but two are run from homes and the manager is the sole operator (Sellitto et al, 2017). Only one had more than one staff member. There are many types of small business. Some are conducted entirely by means of smartphones by unregistered individuals who work part-time, moving from project to project,

receiving cash-in-hand. Their informality lends itself to exploitation. None of our participants worked in this way, although they used informal networks extensively.

It is common (54%) for small businesswomen with a disability to be homeworkers because they have few other options (ABS, 2015). Three of our five interviewees worked from home. Some of the advantages of home-based work are: avoiding the cost of an office, time flexibility, controlling the speed of growth of the business, and personal convenience, whether disability is involved or not. There are clear disadvantages as well. Keeping work separate from family and household proved challenging to women with a disability: they were much less likely to strike a balance -- 51% compared with 64% of those without disability (Baird et al, 2018).

Although there is a profusion of support organisations for people with a disability, very few focus on small business concerns alone, and where they do, they have no resources to assist the functions of women, in spite of the fact that approximately 274,000 Australian women with a disability work in a small business. There is no co-ordination of effort (practical or academic) to find out. The establishment in 2014 of the National Disability Insurance Scheme gives licence for deeper analysis and policy growth (Van Den Hoven & Oosterlaken, 2012), but it is only nascent at this time (Melbourne Disability Institute, 2019).

## 1.2 Aims

Apart from their struggles against prejudice (Shameem et al, 2011, Toboso 2011), very little is known about the cohort of small businesswomen with a disability who incorporate mobile devices and social media into the fabric of their daily activities. Our aim is to evaluate the effectiveness of the use of mobile devices and social media by these businesswomen. This article seeks to answer three related research questions to give insights into the warp and weft of use of mobile devices and social media by small businesswomen with a disability:

- What existing conceptual frameworks provide insights into some dilemmas of small businesswomen with a disability?
- What are the current uses of social media and mobile devices by small businesswomen with a disability in Australia, and how do the conceptual frameworks help to understand the uses, and vice versa?
- Does access to and use of mobile devices or social media substitute in any way for lack of physical mobility or lack of accessibility in the built environment, or for other social limitations associated with a combination of gender and disability?

The paper is structured as follows. First is a brief literature and environmental scan on smartphones and social media use in the context of business and disability, followed by an explanation of the methodological approach. The paper continues with an analysis of the significance of Information and Communications Technologies (ICTs), especially smartphones and social media, within the dual paradigms of the Capability Approach and the LIAISE Framework. It explores how they are interconnected. Results are discussed with the aid of the paradigms, which must be extended. By answering the three main research questions, the article summarises the many ways that smartphones and social media contribute to the business and personal goals of small business owners who are women with disability.

## 2. Literature review and environmental scan

A review of the literature identified that, while social media and mobile technologies have been explored for people with disabilities, and for women in small enterprises, there is no published evidence which considers mobile devices for small businesswomen with disability (Goggin, 2008). The authors undertook an environmental scan of Australian support organisations of people with a disability – numbering about 15 -- to establish what research may have been undertaken already, whether published or not.

The overwhelming response confirmed a lack of evidence, and emphasised the need for a study to fill the gap:

*Your research work sounds really valuable. While we ... don't hold any data on women with disabilities, smartphones and small business ..., what we do know is that isolated women (e.g., rural or housebound) rely on technology to connect to community. That technology is vital for isolated women's health and wellbeing (supporting organisation for women with disabilities, 9 May 2018).*

### 2.1 Social media and mobile phone use in the small business context

Most of Australia's GDP (57%) is generated by small businesses (Busby, 2018).

Approximately 18.6% of Australian women have a disability. Of this group, approximately 273,398 of them, or 12%, are managers of a small business in their own right and most work from home (ABS, 2015). By contrast, only half the number (6%) of Australian women without a disability manage their own small business (ABS, 2015). Two out of three of all small businesses are home-based (Burgess & Paguio, 2016).

As a start it is essential to understand the involvement of people without a disability in small business. In view of the ubiquity of mobile devices and social media in most of Australia, at least in urban centres, it might be assumed that most small businesswomen use them extensively. In 2017 smartphones were owned by 80% of Australian women and by 83% of Australian men (Sensis, 2017). But substantiated small business use is far behind general use. The official figure of 51% of all SMEs in Australia using social media reveals an unusually low level of adoption among able small businesspeople, even though the figure continues to creep up annually (Yellow, 2018). Some suggestive data about gender is available about use of social media. Women are slightly bigger users of social networks: 60% of Australian females used social networking sites daily, and 58% of men (Sensis, 2017). Women business operators are more connected than men. Female business operators are more likely to use online tools (88 per cent) than small businesses overall (84%) (Australian Small Business and Family Enterprise Ombudsman, 2016, p 38).

### 2.2 Social media and mobile phone use in the disability context

There are no figures of the use of social media by women with disabilities, in or out of business. It is well known that many small businesses are finding limitations to the promised elixirs of social media, caused by the effects of lack of a clear marketing strategy; fear of hacking; lack of resourcing management for an online presence; and lack of ongoing social media monitoring (Australian Government. Business, 2018). At the same time, research demonstrates that small businesses benefit in varying degrees from using mobiles and social media for managing the business 'remotely', for off-site monitoring, for improved networking, for sales, for event management, for bookings, for meeting co-ordination, for promotion of products and services, for roster management, for collection of customer data, for data-mining, and for forming loyalty groups (Sellitto et al, 2017). These benefits ring true with the experiences in our study of small businesswomen with a disability also. Little is known about how small businesses measure their return on investments, but it is estimated by the business community that 24% of small- to medium-enterprises use social media (by tracking fresh contacts and sales) as measures of success (Yellow, 2018 p 6).

Another observation is also relevant: the current trends favour use of social media apps on mobile devices for small business rather than relying on websites at all (Yellow, 2018, p 6). None of the existing statistical surveys explore the link between personal benefits and concomitant life-style improvements, and small business functions, which can result from the textured use of mobile devices and social media by small businesswomen with a disability.

## 3. Capability Approach and LIAISE Framework

This section discusses further synthesis of the dual paradigms of the Capability Approach and the LIAISE Framework while the section thereafter presents evidence garnered from the



women by using a grounded approach. Over time the Approach and Framework have modified in response to additional application and further analysis.

#### 4.1 Analysis of ICTs using the Capability Approach

The cumulative assistance of mobile devices is a resource, as Sen reminds us (Sen, 2010 p 3):

*A telephone owned by a person helps others to call the person up, as well as receive calls ..., and so the increased freedom of the phone owner adds to the freedom of others ... The impact of more telephones is to make things more agreeable and more enabling for others ... That is an explanation ... of why massive expansion of telephone networks -- and they have typically tended to be mobile phone networks -- have been, in general, a boon, rather than a curse for societies ... IT has become an interactive culture across the world, and the important question is how we can make people more functionally efficient ...*

Enabling and efficiency are key expectations from the perspective of small businesswomen with a disability, in relation to both their disabilities and their businesses. These ideas clearly require 'agency'. Sen's conception of agency has caused controversy. Sen argues that an agent acts to bring about change (as desired by the individual) in economic, political or social fora (Sen 1999). Bowman (2010) says that Sen's formulation of agent depends too much on self-help, self-reliance, and the neo-liberal belief that all people are free and equal economically (Sen 1985). In fact, individuals are subject to 'structural constraints' of political and social systems (Bowman 2010, p 5), and in our case by disability also. Others use the phrase 'networked individualism' (Stillman & Denison, 2014 p 205) to describe collective aspirations. Oughton and Wheelock (2010) assert that rather than striving heroically as individualistic entrepreneurs, small home-based businesses are 'insecure', have few options, and they struggle to make ends meet in fact. The prevalence of this set of stressful circumstances is unknown. For the insecure, the collaborative groups are more important than the individuals (p 3-7). Wilson and Martin (2015) reinforce the necessity of comingled effort, insisting that by nature entrepreneurship depends on an ability to 'access and recombine resources' (p 163), and human assiduity.

Further central propositions from the enduring Capability Approach require explanation, in this brief outline of their contribution to the whole. First are 'functionings' -- described as the 'beings and doings' of a person -- that relate to identity and actions. 'Capability' is a person's or group's 'freedom to achieve', the sum of all possible functionings. Nussbaum, a colleague of Sen, tried to corral the scope of Sen's philosophies by creating a list of ten core capabilities (2011a). 'Bodily health' is one of the core ten, encompassing being able to move freely from place to place, and participate in sexual relations. Some people with disability are restrained from these capabilities. The fourth core capability is having all human senses, again an area where disability prevents full wellbeing (e.g., with impaired vision). Capability seven deals with 'discrimination', which people with a disability endure on many levels, and women in particular. 'Control over one's environment' is the final capability in the list, which includes seeking employment on an equal basis with others, a further restriction in the situations where people have disabilities. All in all, people with a disability have numerous limited functionings and capabilities, and wellbeing for them can be hard to attain.

For Sen and Nussbaum, capabilities are about real potential, and functionings give freedom to turn potential into actual actions that reinforce identity (Zheng 2007). 'Commodities' are (inter alia) 'goods' and 'services', so long as they are converted into capabilities. Sen indicates in the quotation above that the mobile phone can be an asset and commodity and functioning with potential as a widespread personal and collective capability (Van Den Hoven & Oosterlaken, 2012).

Layered over the above ideas, Sen identifies three types of 'conversion factor' (Robeyns 2005). Each affects the range of available choices and preferences. A conversion factor changes commodities into capabilities (Goeme 2010). The first factor, the 'personal' conversion factor, concerns our topic, in that it encompasses physical and mental health and

gender discrimination. That is, personal characteristics such as these influence functioning and capability. Secondly, 'social' conversion factors include public policies, discriminating practices, and power relations, which relate to disadvantages associated with women in micro-business with disabilities. The third factor also applies directly: Sen's 'environmental' conversion factor includes infrastructure, such as obstacles to physical mobility and access to mobile phone networks (Heeks & Molla, 2009). It will also be argued in this article that small business is a part of social (as well as economic) infrastructure, as in the case of home-based businesses. The lens of the LIAISE Framework also focuses these themes more precisely.

The literature that connects the Capability Approach and digital devices to disability is extensively reviewed by Toboso (2011) in Italy, concentrating on theory, although other perspectives are emerging, as in the case study of Makgopela and Van Belle (2014) in South Africa. Van Den Hoven and Oosterlaken (2012) characterise the Capability Approach literature in relation to mobiles and disability as being in two bundles -- either theoretical or practical. Sen and Nussbaum both acknowledge that a disability impacts on capabilities and wellbeing (Nussbaum & Sen, 1993; Sen, 2009). But unfortunately no effort has been identified in the academic literature to take the connection further to small business (Anwar 2015).

Toboso (2011) adduces the idea of 'functional diversity' into the Capability Approach discussion for people with a disability. It derives from specialists' dissatisfaction with dominant paradigms, such as the medical and social models of human function. Toboso claims that they failed 'to adequately describe the diversity of physiological and psychosocial function amongst people' (Patston, 2007 p 1625). For these analysts, diversity is a means of social enrichment. Some individuals (e.g., with a disability) perform functions in a unique and different way from the average person. Others will have different skills (Chase, 2019).

A variable capability 'set' comprises living conditions that determine wellbeing. Resources and economic value are put to one side to accommodate diversity's influence. Use of the mobile phone in small business by women with a disability can be described as one such set. Toboso (2011) points out that mobile devices 'modify human actions' and in particular make 'new actions' possible for daily living. The effective use of mobiles opens up fresh capabilities for action, for people with a disability to connect with all, to integrate into the information society (p 111-112). Presumably access to business activities is also necessary. Design for all encompasses all possible uses of devices. Long ago disability was acknowledged in the Accessibility Guidelines of the Worldwide Web Consortium (<https://www.wuhg.com/web-content-accessibility-guidelines/>). In this milieu, original skills expressed as part of agency are welcomed (Chase 2019) and are encompassed by the LIAISE Framework.

#### Discussion of the Capability Approach and the LIAISE framework: towards a revised model

The LIAISE Framework aimed to identify obstacles to effective use, such as the necessity to try to assess a surfeit of apps, as well as to promote ICT benefits comprehensively. We adopt a common meaning of the term 'effective use', which itself borrows from the Capability Approach: 'the capacity and opportunity to successfully integrate ICT into the accomplishment of self or collaboratively identified goals' (Gurstein, 2003).

A range of revisions have occurred in the LIAISE Framework since its inception in 2003 when the Australian government encouraged the development of a civil society strategy for social inclusion by means of ICTs. The Framework has been evaluated, modified, and added to (Denison, 2006), and applied to the effective use of ICTs in small businesses in several developed countries (Karanasios et al, 2006; Sellitto et al, 2017). It is fruitful to link key concepts from the Capability Approach and later from the empirical data to propose further change.

As with the Capability Approach, the LIAISE Framework can be used to evaluate individual performance or organisational performance (Grunfeld 2011), and the basic aims of

the LIAISE Framework are to enhance a set of capabilities (Anwar et al, 2018) and expand human agency (Chase 2019), as they are in the Capability Approach also.

In the application of government facilitation, financial assets, and supportive policy, inconspicuous small businesses benefit much less than larger businesses (Sellitto et al, 2017), due to their lack of time for declarative advocacy, their lower profile, their smaller impact, but also to their diminished catchment, by catering to smaller numbers of customers (Australian Small Business and Family Enterprise Ombudsman, 2016). By the nature of being smaller organisations, then, as a group, small businesswomen may have a narrower set of capabilities, even though the contribution of small businesses to the whole Australian economy is 57% of GDP (Kochie's Business Builders, 2017).

Diagrams of the LIAISE Framework summarise its parts, aimed at showing the schema overall in Figure 1.

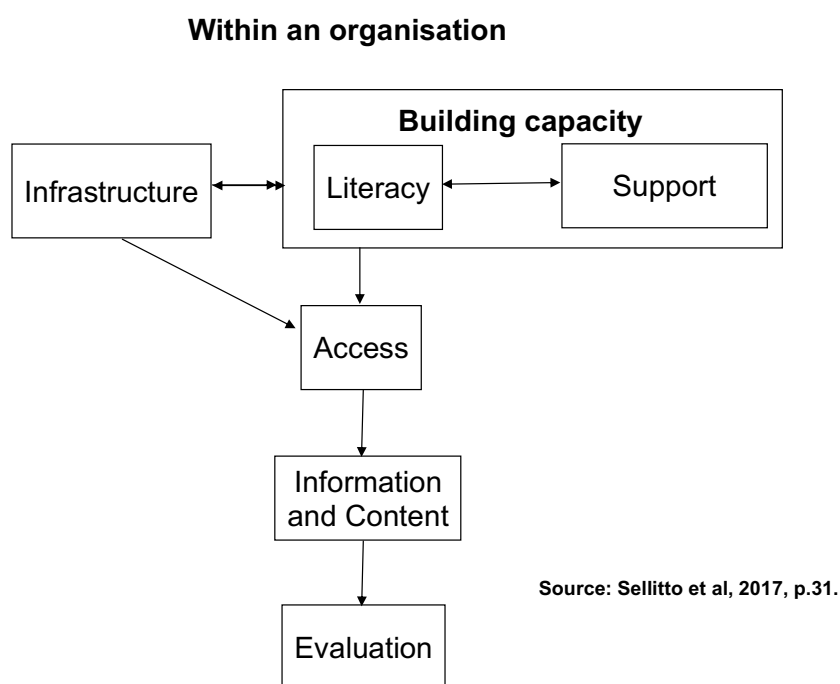


Figure 1. Summary of the features of the LIAISE Framework.

#### 4. Methodology

The scope of the research was driven initially by a practical need to determine how to assist small businesswomen with a disability with the best use of digital devices. In choosing which theories or frameworks might assist us, we were aware that those which survive long-term use need to be dynamic and change over time.

The authors selected the Capability Approach as a congruent framing, particularly as this approach has a 'a built-in gender sensitivity that lacks from many other accounts of justice' (Dumitru, 2018, p 81). In the Capability Approach, its originator, Amartya Sen asks what resources assist people to have the freedom to live the life which they want, and which they find valuable? (Chase, 2019; Oughton & Wheelock, 2010). Wellbeing can be used as a lens to scrutinise outcomes of transitions from functionings and capabilities. It is assumed that a larger capability set will create greater wellbeing (Van Den Hoven & Oosterlaken, 2012).

Conterminously, the LIAISE Framework provides a set of guiding principles for successful social inclusion by means of ICTs: Literacy, Infrastructure, Access, Information and Content, Support, and Evaluation (Sellitto et al, 2017). The Framework was refined from longitudinal

studies of the effective use of ICTs by community-based organisations (Schauder et al, 2005). Importantly one of the target groups of the original formulation of LIAISE was people with disabilities (International Telecommunications Union 2003; Roundtable on Australian Civil Society, 2003), and it relied on extending themes from the Capability Approach.

As many commentators point out, including Capability Approach reviewers (Van Den Hoven & Oosterlaken, 2012 p 7), ICTs have a dark side as well as a positive side, alluding to the well-known social drawbacks of ICTs and media. Danger and damage to personal and/or community security or privacy are often cited. The LIAISE Framework aimed to identify obstacles to effective use like these, as well as to promote ICT benefits.

We undertook interviews in mid-2018 by first identifying willing small businesswomen, recommended by support organisations and professional contacts. Then we found other volunteers by using a snowball technique and a purposeful sample of stakeholders. We tried to interview them in places of their choice. Two co-authors together undertook interviews in workplaces (which sometimes were the home). With permission we audio-recorded interviewees, transcribing their commentaries about their experiences, working lives, and interests and opinions. Two of co-authors coded the core themes, separately and then together, analysing the rich data with grounded theory technique (Charmaz, 2014).

The following summary describes the demographic features of the five interviewees – all active businesswomen with a disability who used social media and mobile devices. We selected two deaf women, two blind women, and one living with post-polio syndrome, and we received some advice about business habits from key informants who work with disability. The business activities were described by the interviewees as: interpreter services for an international market, yoga, online and face-to-face counselling, psychoanalytical psychotherapy, creative writing, tactile art, and freelance social work. In terms of ‘industrial sector’, all were services – an important part of the 70% of national income generated by Australian services (Ruthven, 2016).

The ages of the interviewees ranged from 23 to 71. The youngest was most ambitious to expand her business so that it developed full-time, and to study further (Diploma of Interpreting). The oldest was phasing out her interaction with long-standing clients as they completed the counselling cycle, due in part to the physical strains caused by post-polio symptoms. All of the women had a post-school education at least, three had postgraduate qualifications, and long-term involvement with professional bodies and disability networks, perhaps contributing to their willingness to understand and engage with a research project such as this. They were well provisioned with functionings and assets, and high levels of Literacy, Infrastructure, and Support. All of them had helpful partners, and four had children who contributed to their welfare.

Table 1: Demographic features of participants

No	Impairment type	Business	Age	Education	Work location	Web-site	Remote customers	Partner, + children	Staff	Location
1	Deaf	AUSLAN learning products.	23	year 11	home	yes	yes; in New Zealand	yes, + 3.	1	Perth
2	Deaf	Counselling, Yoga.	40s	M.A.	office	yes	yes; online	yes, + 3.	5	Melbourne
3	Blind	Writer, craft, social work.	40s	B. Social Work	home	no	No	Partner. No children	0	Horsham
4	Blind	Sale of women’s sex aids.	65	B.A. Hons. Dip. Ed.	home	yes	yes; globally	yes, + 3.	0	Melbourne
5	Polio	Journalist. Psycho-therapist	71	Ph.D.	office	no	yes; globally	yes	1	Melbourne

## Results

### Application of the LIAISE Framework

In this section examples are given from the experiences of interviewees to illustrate features of the Framework. The feature of ‘Literacy’, the first in the LIAISE Framework, included knowing how to make use of ICTs, the adoption and personalisation of useful technologies, and using ICTs to sustain businesses.

It was said that small businesses lacked a strategic vision. On the contrary, our collated data demonstrated significant forward thinking by women focused on future consequences of their increasing disability (e.g., increasing blindness); such preparation was ‘strategic’ in an existential sense. This is in contrast to some reports suggesting that small businesspeople lacked a strategic vision, planning only for short-term ends (Capelo, 2014) and attribution of attitudinal negative ‘impediments’ to use of ICTs for profitable business (Sellitto et al, 2017, p 26).

The commitment of a 71-year-old psychotherapist to use of ICTs was unsurpassed. She contracted polio in 1956 and had not been fit since then; her health was deteriorating at a fast rate. She used FaceTime Audio (speech recognition software) for online consultations with half of her patients. She accessed the content of international conferences in real-time via the internet, because she cannot travel to them. All of her colleagues used mobiles, and she noted that

*without a mobile phone, I would not be able to work at all (8 August 2018).*

She owned several mobile phones (for work and personal use), she relied on a student and knowledgeable physiotherapist to help her to keep up-to-date with technologies. She remained in touch with her overseas children via WhatsApp. This interviewee embedded technologies into her long-term business and domestic objectives.

In fact all of our interviewees had goals for their businesses and for the business benefits of ICTs. Thus a deaf woman who ran a counselling business aimed to expand it a lot. For her ‘my husband and my family’ (15 May 2018) were top priorities. Her husband helped as a qualified computer programmer. Her business goals were to expand from two staff members to five staff in one year. She anticipated an increasing demand for deaf mental health counsellors who used smartphones and AUSLAN together to counsel clients online; it worked well (Van Der Vaart et al, 2014). Thinking of the Capability Approach agency of this interviewee, rather than of her Literacy level as a small businesswoman, the process of online counselling can be described as a conversion factor for her, and for the wellbeing of others, in every Capability Approach sense – personally, socially and structurally.

The second feature of the LIAISE Framework focuses on Infrastructure. One businesswoman from a country town travelled extensively for work and leisure. She felt the effects of both external and internal Infrastructure failures. Her mobile networks dropped out on occasion – a serious shortcoming for a person with a serious vision impairment on public transport (5 June 2018). She also craved more training in the use of new apps, and advice on how to take advantage of all of the features of her recently-acquired smartphone. Capabilities came into play in that understanding the potential of new technologies, and monitoring potential beneficial changes, were important and necessary skills for her.

The third LIAISE feature -- of Access -- encompassed use of family and business associates who formed one and the same network for our women. Human networks of mobile users were extremely significant; one of our interviewees had 1,355 contacts on her mobile list. Their interdependence illustrates Toboso’s idea of functional diversity (2011). Makgopela and Van Belle (2014) found that more than 80% of their respondents ranked ‘keeping in touch with family and friends’ as the primary capability offered by mobiles (p 51). Financial capabilities were ranked lowest in that study. None of our small businesswomen with a disability saw themselves as individual achievers, as unaided entrepreneurs; all acknowledged

assistance from supporters. Support from the clan was pivotal. Advice on new equipment was invariably filtered through an intermediary, never by relying on a vendor entirely.

The fourth feature from the LIAISE Framework, Information and Content, combined with mobile phones, covers what the Capability Approach characterised as a functioning that permits creation of new knowledge by small businesswomen with a disability. An interviewee with very limited, failing vision, lived in a regional town in Victoria, Australia. She ordered textile materials from distant suppliers for her 'tactile artwork' by mobile, then enjoyed selling to a Facebook market across the country (5 June 2018). She invented a method for adding a Braille greetings message to her images. Enthusiastically she also set up an online literary journal of fiction and poetry (also on social media) for writers with a disability.

Inherent characteristics of the Information and Content of ICTs (Schauder et al, 2005) and cliquish business practices applied to our small businesswomen, evidencing also Capability Approach agency and expressions of cultural diversity. An obvious case of the inadequacy of ICTs emerged in interview discussions about the usefulness of social media. As commodities, smart apps were integral to identity and networks. Apps which permit multiple communication functions on one platform, such as sound, image, and text, were most useful to people with disabilities. But they were not 'universal' in their design. Social media and apps required tailoring to individual disability and business expectations.

Our interviewees identified three important steps in choosing and using apps: first, find out what is available; learn how to use the app; and customise it for individual use (5 June 2018). This chain of decision-making can be described as a capability in transition.

The most used apps were Facebook, Twitter, Instagram and WhatsApp. One interviewee pronounced that

*Twitter is best. Short, text only, and blind people prefer it ... Facebook keeps changing its interface, making it hard to understand. There is so much nonsense on the silly thing (6 June 2018).*

In contrast, a deaf person found Facebook was a 'very useful tool' (15 May 2018), as did another deaf interviewee who preferred vision over text, because 'it is very important' (9 June 2018) to her to see people when she communicated with them. The nature of a disability led to different preferences, but access to the multiplicity of apps accommodated them.

Adaptations in use of ICTs to cultural expectations were required. Small businesswomen with a disability required flexibility in design that can be personalised, and that allowed for local innovation and acknowledgement of special conventions. In one interview, the blind online saleswoman of sex aids and author of the syndicated sex advice column in newspapers, confessed that when she was busy, her sighted husband would answer her emails or text messages for her, without acknowledging his gender. She was amused to report that he wrote messages 'like a very good woman'! Reportedly the buyers and readers were none the wiser. ICTs were an effective screen for gender swaps.

Moving on to Support in the LIAISE Framework, as a fifth feature, digital and face-to-face networks have been mentioned already. Suffice it is to say that every small businesswoman with a disability relied sedulously on networks for all daily activities, for business functions, for advice on ICTs, for personal needs, for family input, and for human companionship. The mobile and Support were thoroughly integrated. The deaf interviewee from Perth, in the west of Australia, spoke (via an interpreter and VoIP) of her home-based business that developed and sold AUSLAN aids online for young children, with the assistance of her deaf husband and three deaf boys. She saw AUSLAN as a distinct language in its own right, with unique learning requirements. She relied on a desktop computer, iPad, smartphone, and fixed-line phone:

*Smartphones are really, really crucial ... for deaf people, because they have video capabilities ... I would never have been able to achieve what I have achieved without mobiles (4 June 2018).*

She was deeply enamoured of her circle of deaf friends and acquaintances, her ‘eco-system’. She chose to rely on ‘deaf businesses’ first and foremost when she hired help.

*We give to each other, and we can invite each other ... I am a passionate supporter of deaf causes (4 June 2018).*

The eco-system supported in another way. Three of our five interviewees relied on sales of their products and services to their own, and the same markets were serviced by the other two, although not exclusively.

The experience of the Perth interviewee invites further reference to policy and Access; government could extend help to the AUSLAN training packages sold by the Perth mother, stepping in to assist her with creation of the products and to identify sales opportunities. Support by government for AUSLAN services has been raised before in public discussion, but never resolved (Hodge et al, 2015).

The final LIAISE feature of Evaluation can be applied at a local level or macro level. The complementary Capability Approach question is whether wellbeing is achieved? Compatibility with the main ideas of the Capability Approach and the features of the LIAISE Framework is itself some measure of success. We have documented the successful outcomes of the self-management of businesses, and the devotion of our interviewees to their work; they left an impression that efficiency and effectiveness were sized up responsively as a need arose. All our interviewees had managed their businesses continuously. The shortest time in business among our women who were using mobiles was three years, by a 23-year-old mother of three, and the longest was 22 years, by a 65-year-old mother of three boys also. The diagram in figure 2 adds to the base LIAISE framework, identifying roadblocks on the way to well-being, and showing examples of effective use of ICTs by small businesspeople with a disability. The content of both figures is described prosaically in the text also, citing more examples.

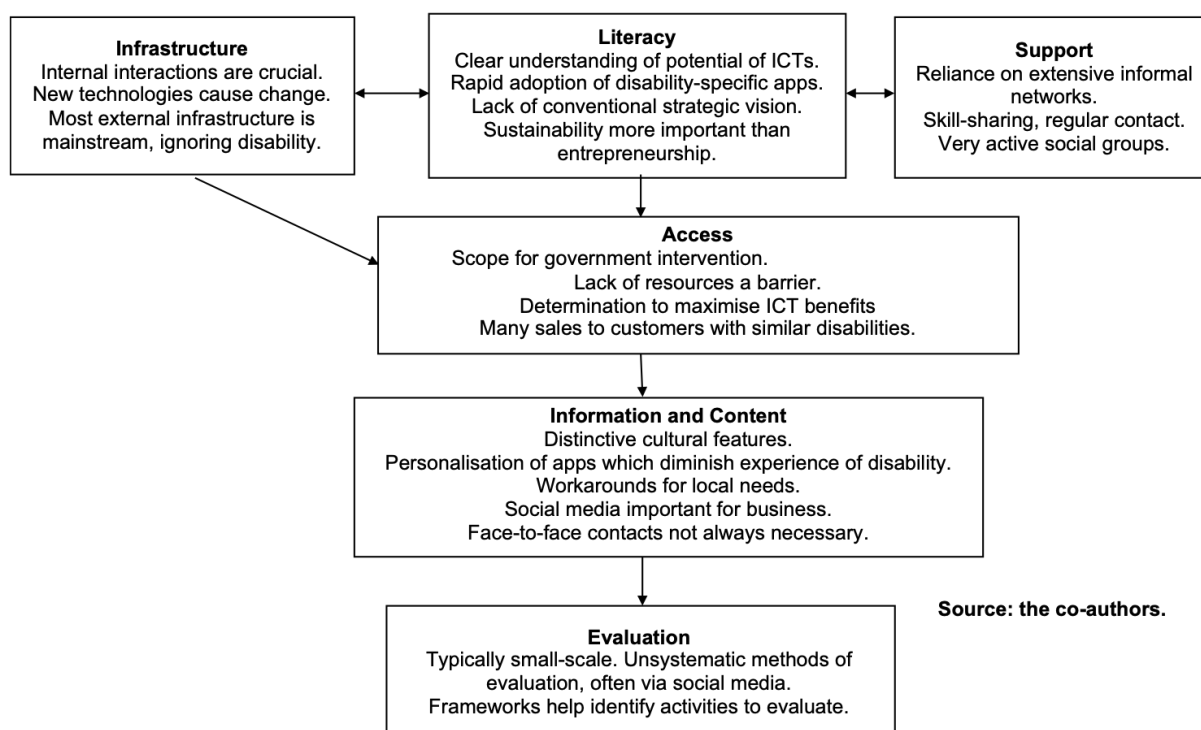


Figure 2. Annotated LIAISE Framework for evaluation of ICTs in a small business where managers have a disability.

### Extending the Approach and the Framework using interview evidence

The pervasive intensity of our women's devotion to their businesses seemed exceptional and beyond the scope of the primary features of the Approach and the Framework. Not only was a passion for work a form of self-expression (fitting with Capability Approach identity), but also a basic *raison d'être* for operating a small business, reaching beyond the scope of any specific feature of the Approach or the Framework.

Our interviewed women had high expectations of work, and deep attachment to their chosen roles; they made a strong impression that economic value was less important to them than a respected identity and the pursuit of a passion. One interviewee had hatched her passion whilst working as a 'stay-at-home mum' (24 July 2018). Then she ran a shop selling sex aids for women for 12 years in the city of Melbourne, working for 8 hours per day for 6 days a week, until her increasing blindness prevented it. She then moved her business to online form only, where it continued (with assistance) 22 years later. Online she 'answers questions about sex and relationships ... She is thrilled to support any venture that fosters successful relationships' (Greagan, 2010). Her business was unique in Australia in that it provided genuine health information about sex, and that it was managed by an empathetic woman. (Most businesses 'in the industry' were owned by men and sold pornography). Women with a disability were attracted by her approach, which related to the Nussbaum capability ('bodily health'), already mentioned.

We asked interviewees if they thought that business with a disability was harder for women than for men, and the answers were mixed. Consensus and dissonance were both anticipated in our interviews. Most interviewees denied that gender made any difference. Two detected a difference, because society was more accepting and tolerant of businessmen: 'your work [as a woman] has to be much better than the rest' (5 June 2018).

A second theme was not sufficiently acknowledged in the Approach or the Framework. Emerging from the empirical data, it related to the advantages of mobiles for support networks. Networks have figured prominently in this analysis. Granovetter described the difference between family 'bonding' networks and irregularly-accessed 'bridging' networks of outsiders (1983), to introduce yet another theory to our mix. The Capability Approach concepts of assets or commodities or endowments or conversion factors relate to networks, as does the Support feature of the LIAISE Framework, but neither elicit the degree of detail that emerged from interviews. For example, a counsellor (9 June 2018) and a psychotherapist (8 August 2018) both identified the importance of networks. Lives were saved and 'a lot of listening' was facilitated by online communications (8 August 2018).

The women's support networks comprised firstly, family and close friends, and secondly, other women with the same disability. It has long been known from studies in Community Informatics that networks are very important for improving social inclusion (Stoecker, 2013). Social networks are core to building community, whatever the community happens to be (Williamson & Johanson, 2018). Our interviewed women all believed that the mobile device was basic to maintain their networks. One interviewee who had about 100 contacts on her phone directory said:

*I have not met a business owner who does not have a smartphone ... We need to help each other (9 June 2018).*

Likewise, a blind interviewee fought back loneliness:

*It helps me not to feel like I am stuck away in a cave (24 July 2018).*

There were no limits to the elasticity of the bridging network:

*In terms of networking, Blind Citizens Australia has a text messaging service for members to sign up to. It sends out messages re campaigns and calls to action. This is really useful when email is down (5 June 2018).*



In summary, in relation to counselling and psychotherapy, qualitative improvements were attributable to mobile devices. The mobile device was depicted as essential to running all of the businesses, and it allowed women to express their identities (in business) almost without interference from their disability (in the manner of functional diversity). The mobile enhanced their support from networks, whether domestically or professionally, and from their peer networks. A wide range of apps were adapted to personal needs, and specific social media and apps (more than others) served needs attributable to the disability. The traditional features of the Capability Approach and the LIAISE Framework do not amplify the passion for business nor the heavy reliance on mobile networks sufficiently.

### Discussion

When the first feature of the LIAISE Framework, Literacy, is considered, personal conversion factors come into play. The assistance of family and friends in helping to make the most of ICTs, are an example of collective agency. Individual agency is illustrated by experimentation with and rapid adoption of befitting apps.

The second feature of the LIAISE Framework, Infrastructure, deals initially with the external provision of ICTs, and the quality of it. Infrastructure internal to a small business includes choice of devices, such as use of social media on a smartphone, or an Internet connection. These are functionings in a Capability Approach sense. Seeking background knowledge on the uses of technologies by small businesswomen, that is, their use of assets, we spoke to David Woodbridge, a manager and a long-term technical adviser employed by an organisation supporting people with vision impairment in Sydney. He was enthusiastic in a planned interview to emphasise convergence of Infrastructure when he spoke to us of capabilities at length:

*This is a good age to ... be effective with your disability ... because the disability becomes secondary. You are just a person that needs different assistance, and the assistance has become more mainstream, not so much Assistive Technology-based now. I think that we are in age with augmented reality, virtual reality, AI, remote assistance, all these are coming online, and it's blurring the boundaries around what you can't do these days ... Everybody is using the same technology (e.g., smart washing machine, microwave, air conditioner, alarms, smart TV, travel kiosk, computer printer, photocopier, telephone system, house fire alarm) whether they have a disability or not ... We have to stop looking at disability technology and we have to start looking at mainstream technology and making it useful for everybody (6 June 2018).*

His perspective as an adviser to people with disabilities was technologically sophisticated. As well as advising users of technologies online, and attending international conferences, he ran a weekly radio show where he answered 'how-to' questions from members of the public who had disabilities.

Without exercising caution, Access, the essential third element, could easily grow into something of a catch-all. It depends on Infrastructure, Literacy, and Support combined, as well as the personal circumstances of a given small business. It is necessary to mention functionings and capabilities and conversion factors that may seem peripheral to the everyday activities of the majority of mainstream small businesses.

Equity of access to ICTs is a serious concern that social and political policies need to address. For example, in Australia the Universal Service Obligation has been an important agenda for governments and network companies for decades. The difficult question is: how can low-priced and quality access be assured for any remote users of telecommunications across the geographical expanse of the country?

*For people located in remote areas or with disability, Internet access enables a level of engagement with friends, education, information and government that is otherwise not possible (Productivity Commission, 2017 p 27).*

The website of Australian government services has 10 million registrations, and 160,000 people use the platform daily. Where businesses might avoid providing some services as unprofitable, governments have stepped in (Schauder et al, 2005). Standardisation is a perennial economic and governance issue that plagues the prevailing heterogeneous access methods for ICTs. People with a disability do not appreciate proprietary limitations to the inter-operability of their basic communications equipment provided by private enterprise. Well before the widespread use of smartphones, community groups advocated for neutral or agnostic platforms as fundamental to facilitate access (Roundtable on Australian Civil Society, 2003).

The advent of near-universal use of social media has affected – and continues to affect -- small business operations enormously (Sellitto et al, 2017). In distant days of fixed Internet points and limited interactivity, Information and Content, the fourth arm of the LIAISE Framework, was much restricted. Now these features are transformed. Purchased software (such as MYOB) mainly served administrative purposes within a small business (Sellitto et al, 2017). Lower prices, accessibility, and mobility have transformed small business by uses of apps and social media on smartphones. They serve special needs of small businesswomen with a disability admirably, as they do the needs of all small businesses. Such levelling of functionality would satisfy the expectations of Sen and Toboso admirably.

‘Building relationships with customers’ and suppliers are now regarded as a major advantage of social media. Contacts not only buy products and services, but provide helpful advice too. ‘Followers’ on social media convert to marketing opportunities, and client feedback can amount to useful advice. The mobile has become a conversion factor for interacting productively (Sellitto et al, 2017 p 152-154). Support is a very important fifth element of the LIAISE Framework, meaning (for this study) informal digital and face-to-face networks which assist the small business. What small businesswomen with a disability may miss out on in formal training in the use of ICTs, they compensate for by consulting expert advisers in the family, and by camaraderie and collaborative loyalty. Small businesses in general rely on home-grown assistants (Sellitto et al, 2017) – yet another indication of inclusivity created by ICTs.

A deduction about dual advantage must be made. In the case of women with a disability, the business not only depends on a loyal network of likeminded business-folk with a disability, which Nussbaum identified as a core feature of Capability Approach -- labelled ‘Affiliation’ (Nussbaum, 2003 p 41-42) -- but it also serves to sustain sufficient profitability from markets of acquaintances. By Affiliation Nussbaum refers to non-discrimination in the freedom to associate for (inter alia) social satisfaction. Here there is a distinctive overlap between a Capability Approach conversion (from individual capability to belonging to a viable personal and online network) and a LIAISE feature (Support from companions as a ready-made market for online business).

Evaluation is the final feature of the LIAISE framework, and refers to the importance of evaluating all the systems of ICTs serving small businesses over an extended period of time (Sellitto et al, 2017). Evaluation can be refined to one question: Is the ICT use in the business managed responsively to attune to the needs of all stakeholders?

Together the Capability Approach and the LIAISE Framework achieve much for evaluative purposes. They complement each other in at least two ways: by sharing underlying aims and values, and related outcomes, and also by providing supportive theory and by identifying implementation guidelines for practice. It is worth remembering that the Capability Approach and the LIAISE Framework have been applied and tested in many contexts over a period of from 15 to 30 years -- testifying to their enduring value as instruments of evaluation. They stimulate longitudinal evaluations of wellbeing and effective use from multiple perspectives. Sen desired that qualitative outcomes be assessed alongside quantitative outcomes. Out of deference to the many disciplines with a stake in the Capability Approach, he tried hard to avoid over-emphasis on *homo economicus*, as Alkire (2005)

stressed. In reflecting on Evaluation, it is important to recall that measures of value and worth are likely to differ for each stakeholder (Stillman & Denison, 2014).

The following Figure 3 shows the overlap in key concepts from the Capability Approach and the LIAISE Framework. It is stylised and simplified, but demonstrates the compatibility of the two approaches.

	Capability	Functioning	Agency	Assets, Resources, Commodities	Conversion factors	Functional diversity	Free choices
Literacy							
Infrastructure							
Access							
Info and content							
Support							
Evaluation							

Source: the co-authors.

Figure 3: overlaps between Capability Approach and LIAISE.

### Conclusions

The three initial research aims set out at the beginning of this article can now be reviewed. First, two conceptual frameworks were used to understand better the dilemmas of small businesswomen with a disability. The Capability Approach was a powerful tool for uncovering capacious development issues. By connecting it to the LIAISE Framework, a proven but narrower set of ideas about what drives successful small businesses, was possible, and further detailed themes about effective use of ICTs emerged.

The two ultimate themes about business passion and networks were a reward that resulted from the pursuit of thorough analysis of empirical data. Detailed interview data extended the Approach and the Framework. The great extent of the emotional meanings of work to our women, and the ubiquitous roles of mobiles, apps and social networks, adequately answered our second research question: what were the current uses? We were able to enumerate comprehensively the textures of the current uses of social media and mobile devices by small businesswomen with a disability, many of which vary from mainstream uses. The interaction between theories and/or frameworks was multilateral, meshing with the ample empirical data.

As to the third consideration, whether social media substituted for lack of physical mobility, or for other social limitations associated with a combination of gender and disability, we recite the words and experiences of the women involved. They spoke dramatically of the values of mobiles, expressing gratitude for living in a ‘lucky’ age of ICTs, describing the mobile as a ‘lifesaver’ (8 August 2018), ‘liberating’ (5 June 2018), and ‘really, really crucial’ (9 June 2018). They ‘could not have done [what they did] 10 years ago’ (24 July 2018).

Devices such as the smartphone were found to be ‘absolutely invaluable’ (24 July 2018). They allowed full engagement in work, and eliminated the morbid loneliness that can dog the lives of people with disabilities. Rather than feeling ‘stuck in a cave’, the ‘disability becomes secondary’ (6 June 2018). The demotion of a disability from primary obstacle to a secondary position is strongly indicative of functional diversity, as outlined in the Capability Approach, and a great achievement for the power of the idea of a conversion factor. Despite this, enormous barriers still stand in the way of small businesswomen worldwide. They are kept invisible by immobility, gender bias, prejudice, structural discrimination, unfunded advocacy, and lack of policy implementation.

No other research before has teased out the strands of the use of mobiles in lives of small businesswomen with a disability. The Framework assisted. This study showed that an

assortment of factors improved professional and personal communications with the use of mobile devices, and that virtual networks of people with disability were woven in ways that would not happen face-to-face. In the face of omnipresent networks, the efficient co-management of small business and family expectations by mobile and social media is not surprising.

The Capability Approach was a positive and valuable framing for mainstream technologies which have applicability in disability contexts. The LIAISE Framework was demonstrated to be a relevant tool for operationalising the enabling business features of ICTs, and the broader digital sector is encouraged to take advantage of both in further research and development work.

Future investigation could include ensuring that features of smart technologies and social media are useable in all contexts of functional diversity. It would be productive to explore the scale and significance of the networks of the small businesswomen with disabilities in more depth. There is no doubting their capacity, or enthusiasm, or the reach of their support systems. A comparison of women with a disability, with women without, would yield more reliable generalisations. Leveraging the innovation and strengths shown by this small sample of small businesswomen with disability might be used to build a better future workforce.

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## ORAL HISTORY AND MEMORY-MAKING IN MALAYSIA

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**Abstract:** This research aims to better understand oral history practices from the perspectives of oral history practitioners and cultural institution professionals in Malaysia. The shortage of written documentation from previous authorities and colonial powers has accelerated the need for oral history as a method to capture valuable untold community stories. Despite this, local content concerning the community in Malaysia is still not being sufficiently captured and preserved. This study also aims to investigate how cultural institutions can reframe and transform themselves to enrich local community oral history collections. Using the Mediated Recordkeeping Culture-as-Evidence Model as a theoretical framework, the study examines current practice and identifies areas for improvement. The focus on the participation of the oral history practitioners and the current initiatives undertaken by cultural institutions contributes to the uniqueness of the study. These connections are significantly under-explored and under-addressed.

**Keywords:** Oral history, Continuum theory, Malaysia, Mediated Recordkeeping: Culture-as-evidence model

### Oral History and Memory-making in Malaysia

A British colony between 1873 until 1930, on independence in 1957, the Federation of Malaya was established as a parliamentary democracy consisting of a federal government and thirteen state governments (Department of Information Malaysia<sup>1</sup>). In 2018, the population was 32.4 million, with Malays and other indigenous groups, including the people of Sabah and Sarawak, accounting for 68.8%, Chinese 23.2%, and Indian 7% (Department of Statistics Malaysia<sup>2</sup>). The state religion is Islam, however other religions can be practised.

Bahasa Malaysia, the official language, is seen as an important means of unifying the nation (Smith and Smith, 2017). Ethnologue lists 134 languages for Malaysia. Chinese languages include Hokkien, Teochew, Cantonese, Hainanese, Hakka and Foochow. The Indian community includes speakers of Tamil, Telugu, Malayalam, Punjabi (Albury, 2017). The Malay language also has regional dialects, for example in Johor, Kedah, Perak, Melaka, Kelantan and Sarawak (Zaharani Ahmad, 2006).

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<sup>1</sup> Department of Information, Ministry of Communications and Multimedia website: <https://www.kkmm.gov.my/index.php/en/>

<sup>2</sup> Department of Statistics, Malaysia website: <https://www.dosm.gov.my/v1/index.php>

Shamsul Arrieya Ariffin et al. (2012) comment that most local historical material available in Malaysia is inadequate for research needs. During Japanese occupation (1941-1945), the official documents relating to the administration of the Malay States and British influence in Malaya were widely destroyed (Samsiah Muhamad, 1996), leaving considerable gaps in the historical record (Zahidi, 2013; Mahani, 2018). There is also a significant lack of material related to Malaysian communities, such as local traditions and histories, ethnic communities, and themes such as the history of colonisation, and traditional medicine. This is in part due to the fact that Malaysian society was largely an oral society, with a strong oral tradition encompassing its epics, poetry, proverbs, legends, romances and myths (Mukti & Hwa, 2004).

In this context, oral history becomes important, because it can supplement or correct existing, largely print-based sources in history, by capturing the voices of marginalised communities (Gorman & Clayton, 2005). In particular, there is a need capture the stories of women, minorities, immigrants and people who have frequently been overlooked and silenced (McDonnell, 2003). It is an appropriate and useful method for engaging communities in documenting, describing, and creating access to community collections that are taken in by cultural institutions (Thurgood, 2002). Bastian and Alexander (2009) argue that it is essential the voice of the community be heard if cultural institutions are to fulfil their role in recording and preserving community identity and history. As highlighted by Madyaningrum and Sonn (2011), engaging communities through oral history projects can also bring people together.

Early initiatives include that of Sarawak Museum, which started to collect oral history in 1957 (Radia Banu Jan Mohamad et. al, 2012), followed by the National Archives in 1965, which sought to document information related to prominent figures (Samsiah Muhamad, 1996). However, the practice of oral history has not advanced as was hoped, nor kept pace with developments in neighbouring countries such as Singapore (Mahani Musa, 2018).

## Methodology

This paper reports on a project which set out to answer the following research questions:

- What are the current practices of oral history in Malaysia?
- How can cultural institutions reframe or transform themselves to facilitate local community oral history collections?
  - What are the related oral history services, programs or activities that oral history practitioners expect from Malaysian cultural institutions?
  - How can cultural institutions contribute to the development of local community oral history collections?
- Can the Mediated Recordkeeping: Culture-as-evidence model be used to assist initiatives undertaken by cultural institutions and the oral history practitioners?

Qualitative research was chosen for this research project as it: allows for rigorous, in-depth investigation and elaboration of the subject discussed, and is appropriate to the study of situated action and eliciting research participants' opinions or beliefs.

Data was collected via interview and document analysis. In person semi-structured interviews were used to obtain information directly from participants, who were drawn from all regions of Malaysia. Interviewees were given the opportunity to clarify questions, and close attention was paid to language and non-verbal expression, so as to avoid confusion, especially when dealing with participants from diverse culture, as suggested by Birks, Chapman & Francis (2007).

Purposive sampling was applied to identify cultural institution professionals, however snowball sampling was used to identify additional participants, with the help of members

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from the Oral History Association of Malaysia. Interviews of between 60 to 80 minutes were conducted between December 2016 and August 2017. In total 38 people were interviewed, including seven expert informants. Eleven cultural institution professionals were interviewed, of whom two were employed by municipal council libraries and museums, two were from the National Archives, six were from state libraries, and one from a special library. 20 independent oral history practitioners were interviewed, of whom four were expert practitioners including academics and freelance consultants with extensive experience in collecting oral history, six village people belonging to different ethnic groups, and ten independent researchers. In the following discussion, the codes used to identify interviewees are: expert practitioners, EP1 to EP5; members of village communities, VP1 to VP6; and independent researchers, IR1 to IR9.

The analysis of interviews was based on the coding paradigm of Strauss and Corbin (1998). Open and axial coding were used to facilitate analysis. Open coding (Neuman, 2003) was used in the preliminary stage, with the data coded based on themes derived from the theoretical framework, the initial research design, concepts from the literature and concepts emerging through immersion in the data. Using Atlas.ti version 8 Software, important keywords, critical terms, and the initial codes were developed. During axial coding, additional codes emerged. The codes were then arranged according to hierarchy and grouped to establish more meaningful codes, with connections among themes and key concepts identified, compared and, where necessary, combined to produce a final set of themes.

### **The Mediated Recordkeeping: Culture-as-Evidence Model**

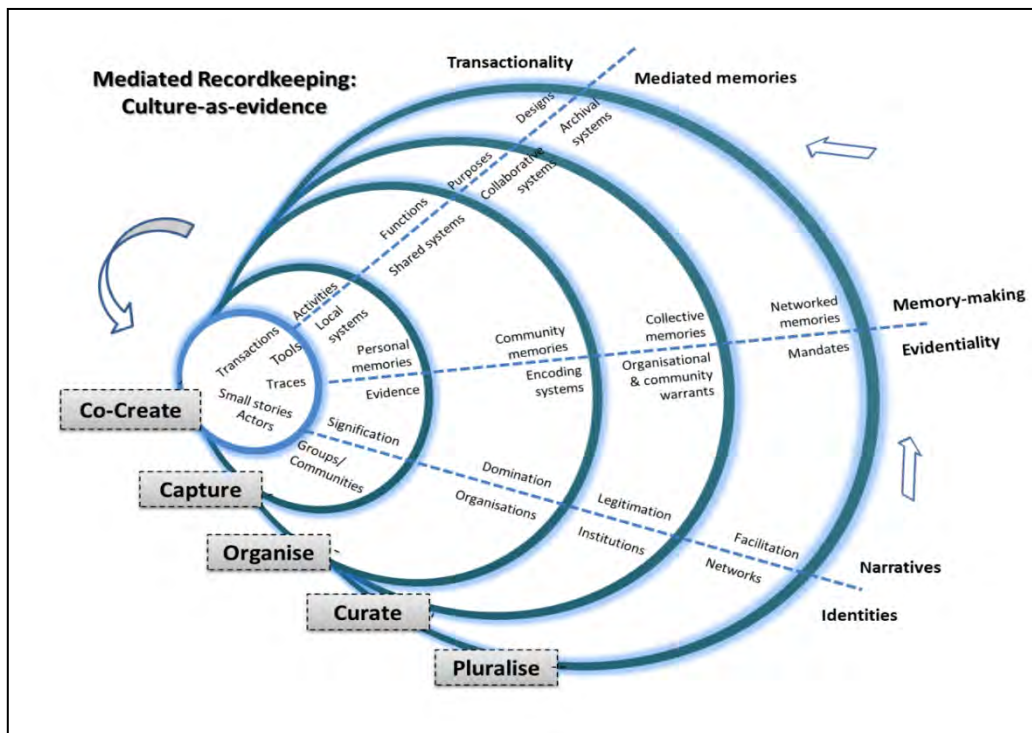
The Mediated Recordkeeping: Culture-as-Evidence Model (Gibbons, 2014) was used as a theoretical framework. It was also used to develop interview schedules and as a checklist to assess the practices in oral history management, in order to develop practical recommendations and strategies for developing more inclusive oral history collections.

The Mediated Recordkeeping: Culture-as-Evidence Model is one of several related models having its origins in records continuum theory. Records continuum theory, developed to explore issues such as the role of recordkeeping in society and business activity, archival description, and the evidential qualities of records (McKemmish, 2001), was itself influenced by Giddens' structuration theory and its recognition that "man actively shapes the world he lives in at the same time as it shapes him" (Giddens, 1982, p.21). Continuum theory emphasizes the concept of spacetime, with the idea that records have multiple lives across space and time, in contrast to the more traditional views based on life cycle models (Upward, 2000). The core of the Records Continuum Model consists of four interconnected processing dimensions; Creation, Capture, Organisation and Pluralisation. (McKemmish, 2001). In creating the Mediated Recordkeeping: Culture-as-Evidence Model, Gibbons added a fifth dimension – Curate.

The value of using such a model in the study of oral history is that it considers the practice of oral history as an integrated whole, from conception through to pluralisation, showing how decisions at every level are interconnected and can impact on outcomes.

The culture-as-evidence concept illustrates how people understand their role in society, how they document themselves and how they interact through systems and technologies (Gibbons, 2014). While recordkeeping is defined as "a form of witnessing and memory-making, a particular way of evidencing and memorializing individual and collective lives" (McKemmish, Upward and Reed, 2010, p 4447), mediated recordkeeping refers to:

*...multiple narratives and memories, including counter narratives and contested memories facilitated by technologies, frameworks, environments, subjective meaning, and the activities of people from diverse and multiple contexts. (Gibbons, 2014, p. 248)*



**Figure 1: Mediated Recordkeeping: Culture-as-evidence model (Gibbons, 2014)**

The Mediated Recordkeeping: Culture-as-Evidence Model (see Figure 1) is expressed in terms of axes, dimensions, and levels. Axes, which include Memory-making, Evidentiality, Identities, Narratives, Mediated Memories and Transactionality, have been used to develop the main themes, while the dimensions and levels have been applied to describe the oral history practices of research participants.

The five dimensions are: Co-create, Capture, Organise, Curate and Pluralise. Key to the Co-create dimension is the idea that “creation is not an isolated event, but is an act of collaboration at multiple levels” (Gibbons, 2014, p. 230), involving roles and processes that interrelate with all other dimensions. In this view, both interviewers and interviewees are co-creators in oral history creation process. The levels involved in the Co-create dimension are transaction, tools, traces, small stories and actors.

The second dimension is Capture, which refers to the capture of “records-as-evidence by linking documents-as-trace to the transactions, acts, decisions or communications they document, related records, participating agents, and their immediate business or social context” (McKemmish, 2005, p.40). The associated levels are activities, local systems, personal memories, evidence, signification and group or communities.

The remaining three dimensions are Organise, Curate and Pluralise. Organise entails the process of keeping records. The levels related to the organise dimension are functions, shared systems, community memories, encoding systems, dominations and organisations. Curate refers to the process of managing content. The levels connected to curate dimension are purposes, collaborative systems, collective memories, organizational and community warrants, legitimation and institutions. The final dimension, Pluralise, refers to the placing of records as corporate (or higher) memory into all-encompassing frameworks which facilitates their use as accessible collective memory (McKemmish, 2005). Archival systems, networked memories, mandates, facilitation, and networks are associated with the Pluralise dimension.

### **Current Practice: Identities**

The identities axis of the Mediated Recordkeeping: Culture-as-Evidence Model relates to the co-creators of oral history collections, and the processes involved in organising, curating and pluralising collections at the community, organisational, institutional and network levels. This axis is thus involved in identifying relevant stakeholders and their roles.

Data was collected from nine cultural institutions actively involved in collecting oral history: the National Archives, Selangor State Library, Perdana Library, Petaling Jaya Museum, Subang Jaya Municipal Council (MPSJ) Hypermedia Library, Kedah State Library, Terengganu State Library, Melaka Public Library and Sarawak State Library.

Most oral history collected by these institutions focuses on government priorities, in keeping with their mandate to collect historical information with high national value. For example, the National Archives has a strong program, with more than 700 recordings available. It focuses on significant personages such as political figures and religious leaders, and historical events such as the Japanese Occupation, the Emergency, and the Malaysia-Indonesia confrontation.

State libraries and museums engage in projects involving ethnic groups. For example, local traditions and culture feature strongly in the collections of the Kedah State Library and the Melaka Public Library, while ancestral traditions, indigenous land use, cultures, and traditional practices associated with the Bidayuh, Iban and Melanau community histories have been recorded by the Council for Customs and Traditions in Sarawak. Despite these examples, community-based projects are limited in number and framed around government interests.

Approximately half of the oral history practitioners interviewed for this study are members of the Malaysian Oral History Association, which aims to cooperate with various agencies in recording oral history, organising training, and promoting an awareness of the significance of oral history to the broader community (Zahidi Zainol Rashid, 2013). Established in 2013, its membership is drawn cultural institutions, communities, teachers, students, and researchers.

Independent oral history practitioners reported a number of community-related projects. For example, VP4 is involved in a project which aims to record and preserve the Kristang language, previously practised by the Portuguese community and classified as severely endangered languages by UNESCO. IR3 reported working on a project to preserve the history of traditional performances such as hadrah, which which originated in the Middle East, and consists of singing in Malay, Urdu or Arabic, accompanied by dancing and drumming. A number of independent practitioners are also involved in short-term oral history projects funded by government ministries.

Most independent practitioners work on small ad hoc projects, motivated by a desire to help connect individuals and local communities with their identity by recording untold stories. Village people typically participate in oral history programs as part of a team, acting as intermediaries to provide background information to the interviewers. They become involved to preserve memories and identity, including culture, language, music and skills. Some of these have received formal training, however others rely on experience gained working on projects. Most village people reported that constraints relating to funding, skills and time create difficulties in producing outcomes from oral history interviews, however one interviewee reported that he managed to overcome such difficulties by working with student volunteers.

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Funding for oral history initiatives is affected by a lack of awareness of its importance. Although State government support is generally seen as crucial for oral history programmes, IP4 commented that some state government officers see no need for their involvement, assuming that everything can be published through social media platforms such as YouTube. When local communities are not sufficiently interested, the government usually diverts funding to other activities.

According to VP4, local museums serve as a platform for the community to discuss their cultural development and related activities but they are dependent on outside funding, which has been a problem as funds provided by government sources have been decreasing. VP4 expressed the view that community programs cannot be sustained without adequate financial support, citing as an example Medan Portugues, which was setup in 1984 but failed to secure ongoing funding. As a consequence, VP4 and other community members took the initiative to seek support from elsewhere, including sponsorship from private companies.

While cultural institution professionals see the value of oral history mostly in terms of verifying the data in written records and providing additional reference sources, practitioners believe that oral history can provide a counterpoint to other historical sources and help to maintain the historical consciousness or collective memories of communities. VP2 thought that, through oral history projects, competing narratives could be produced and so promote understanding. According to IR1:

*I give one example in the Malaysian community itself. We have one opinion that states Chin Peng<sup>3</sup> was a destructive communist. A bad thing. However, research that other historians done about Chin Peng's stated differently. Thus, it is the other side of history. The other side of history is the key contribution of the memory itself. Other than the existing source. If we depend too much on British source in writing Malaysian History, we will become British-centric. Thus, our writing will be pro-British. Therefore, the memory will balance the history writing centrality. Indirectly, it means it will assist the researcher to become more objective.*

A firm believer in the accuracy of properly conducted oral history, EP3 raised questions about the nature of history and the nature of different sources, noting that:

*But we must remember the nature of history is alive. The research that we do, we need to accept that until the research is written, up to now, this is my research and my research is correct or accurate, based on the sources that I use, including the oral sources. However, if tomorrow there is other researcher who obtains another source,*

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<sup>3</sup>Chin Peng was a communist who, having played a key part in local resistance to the Japanese occupation, led the struggle against the post-war restoration of European colonialism. Stockwell, A. J. (2006). Chin Peng and the struggle for Malaya. *Journal of the Royal Asiatic Society*, 16(3), 279-297.

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*write with some other method, it is another discovery. We need to respect every researcher's knowledge field.*

Questions relating to the meaning and accuracy of oral history relate to several interconnected areas of the Mediated Recordkeeping: Culture-as-Evidence Model, notably the Evidentiary, Narratives, Memory-making and Mediated Memories axes.

### **Evidentiality**

The statements above reflect the view of oral history as evidence, which is a critical aspect in assessing the value of records. As noted by McKemmish (1996), "Without reliable evidence set in rich context, memory becomes bogus, false, wishful thinking, or is transformed into imagination, fiction, ideology (p. 105)". In the context of oral history, input from witnesses to events is vital in providing evidence and context, but there remains an overarching concern relating to the validity of oral history and its interpretation. There is a need to capture supporting evidence for recordings and transcriptions.

Evidentiality includes the elements of traces, evidence, encoding systems, organisational and community warrants, and mandates. Encoding systems will be discussed in relation to Mediated Memories. Traces refers not only to audio or video recordings and transcripts, but also to artefacts connected to the subject.

The credibility of interviewees is obviously important to claims of evidentiality. Criteria for selecting interviewees proposed by cultural institution professionals include identifying those with a broad knowledge of the chosen topic, balanced or less biased views, sharp memories, and are respected by community members as having relevant knowledge. Oral history practitioners also reported taking into consideration factors such as good memory and health.

The means used to identify participants varies. VP2 reported using social media, while IR1 locates potential interviewees by making contact with authors of books or other reference sources. VP1 highlighted the elderly or veterans for their knowledge of past events, and the role of the village head in acting as a first point of contact. The process of selecting potential narrators often begins with contacting village people, usually informally. IP4 discussed the importance of using an intermediary, that is, someone familiar with the community, its culture and languages. Although the majority of expert practitioners and independent researchers cautioned that choosing suitable people as intermediaries or brokers is essential, they cautioned that the appointment of an intermediary does not guarantee that opinions from the broader communities are included.

The majority of those interviewed stressed the importance of not relying on a single source, and that cross-checking with additional sources increases credibility, contributing to the integrity of the knowledge captured.

*Old people are interviewed based on their memories and experiences. Some of their memories have faded and the answers they give are based on their personal perspectives. So, we have to clarify what they say from various sources such as old newspapers and documents from archives. Even though some of the interviewees came from the same community, there can be contradictions in the facts they state. Therefore, an in-depth analysis and comparison is needed. (VP1)*

Newspapers and photos are the primary additional materials used. For example, VP2 maintains a collection of pictures and artefacts documenting Chetty community life, including

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marriages and traditional foods. Other materials such as manuscripts and diaries are valued, but often prove too difficult to locate.

It is seen as desirable to collect oral history immediately after an event to record interviewee feelings at the time, however the ability to do this is impacted by budget constraints. This attitude reflects the role of oral history as evidence in describing an event, rather than exploring the meaning of the event, for which opinions might change over time as people have time to reflect.

The ways in which material is collected, including ethics protocols and working with community concerns, is seen as important to validating organizational and community warrants, and so the integrity of the stories collected as evidence. Community representation, ownership and control of oral history are all important in this context, and will be discussed further under Memory-making.

## Narratives

According to Abrams (2010, p.1):

*Conducting an interview is a practical means of obtaining information about the past. But in the process of eliciting and analysing the material, one is confronted by the oral history interview as an event of communication which demands that we find ways of comprehending not just what is said, but also how it is said, why it is said and what it means.*

The role of oral history as evidence is clearly important, however it is also important to understand how particular narratives come to be dominant, with the associated risk of obscuring other voices. The Narratives axis assists in understanding this relationship. In the Mediated Recordkeeping: Culture-as-evidence model, the Narratives axis includes the elements: small stories, signification, domination, legitimation and facilitation.

Small stories are interactions that contribute to the creation of narratives. They represent a mediation between “individuals, technologies, cultural information and memory-making” (Gibbons, 2014, p 212). As noted by EP2, a small story could begin from a conversation within a family, and could be related to family histories, migration, tragedies or individual success stories, expanding to community stories. Most oral history practitioners considered this a useful way of engaging local communities in oral history projects. However, these small stories are seldom captured, even when villagers have the opportunity to do so. In Sarawak for example, members of one ethnic community were trained and provided with tools to conduct oral history, however, were not encouraged as they proved too dependent on the cultural institutions.

The higher levels on the Narratives axis are signification, domination and legitimation. Giddens (1984) describes signification as “the medium and outcome of communicative processes in interaction”. In relation to the Mediated Recordkeeping: Culture-as-Evidence Model, Gibbons (2014) describe signification as “our interpretative schemes and the way we encode and communicate our activities” (p. 22). Domination includes the “facilities by which groups and individuals are organised and thereby harnessed to organisational or societal goals” (Upward, 1997, p. 22). Legitimation deals with the sanctioning of actions drawn from the norms and standards communities and individuals carry forward in their memory. It also relates to the use of appropriate ethical practices aimed at ensuring the integrity of the oral history process.



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As discussed in relation to evidentiality, the authenticity and credibility of oral history must be established to justify its interpretation and use. In terms of Legitimation, facets such as the purposes of documenting oral history, the culture of those involved, and the selection of the appropriate people to speak on behalf of a community are important. As noted by oral history practitioners, there needs to be a sensitivity to community needs and processes, with an emphasis on honesty and openness, so as to avoid an erosion of trust which can impact the process and the outputs.

The practitioners interviewed assigned a range of meanings to oral history. IP8 believes that oral history collections supplement the written record and provide useful sources, preserving local history for future generations. IP2 argued that oral history is a useful technique for preserving identity and working culture, while for IP9 it can correct the historical record relating to minorities. IP4 argued that an understanding of history and an appreciation of racial and cultural differences can be strengthened, adding that oral history sources can contest the colonial dominant account. For example, EP1 conducted a study of Japanese and Thai Military Administrations in Terengganu (1942-1945). Initially he found it difficult to locate sufficient resources for his research, and so sought to capture undocumented stories.

Narratives often become dominant because of widespread dissemination through the media, for example television and radio. VP2 argued that for community history to become dominant, the influence of authority or government communication channels also come into play and, as stories published by the media or the government become widely shared, detract attention from alternate versions. IP5, on the other hand, believes that the relative acceptance of stories depends on audience choice, and that families passing down personal stories or stories relating to national history, will become dominant over generations. Cultural institutions professionals as a whole were more of the view that the official national discourse remains dominant, and reflects the role of federal and state authorities in shaping collective memory.

Gibbons (2014), describes the final level, Facilitation, as the way “technology is used to create, capture, organise, curate and pluralise memories and identity across multiple memory spaces including physical and virtual” (p.244). In terms of curation and facilitation, information professionals produce transcripts, reports, monographs, documentaries, and articles on the nation's history in local magazines and newspapers. They also organise forums and seminars. The ways in which oral history is pluralised will be discussed under Mediated memories.

### **Memory-making**

Memory-making is closely linked to the Narratives axis. Gibbons (2014) discusses this in relation to narrative, and its role in supporting dominant ideologies and power, adding that “once a story has acquired the power of domination, it begins another transformation process leading to long term memorialisation and retention in the values of a community and society” (Gibbons, 2014, p 244). As Bastian (2003) notes, “records, oral or written, become both the creators as well as the products of the societal memory of a community” (p. 5).

Abrams (2010, p.175) defines collective memory as “shared memory of an event or experience”, while to Gibbons (2014) it is entwined with cultural identity and learned social practices. Collective memory can be expressed in a variety of formats: written, oral and physical, and including rituals, commemorations and performances (Ketelaar, 2005). Community museums can contribute to collective memory by curating community resources, but other methods exist, such as annual community festivals, which can provide a means of preserving language and cultural practices, and so enhance connections between generations. Networked memories are defined as “the spaces enabled by technology and enable people to share and communicate a cultural identity” (Gibbons, 2014, p. 240).

Although most participants in this study view oral history as a technique for curating community and collective memory, few had given this aspect much previous thought. Consequently, they discussed what could be done in the future, emphasizing the role of television and radio documentation, books, magazines and journals.

The question of community memory was often raised in connection with the question of ownership and control of oral history collections. Cultural institutions seek to collaborate with communities. They adopt a variety of strategies to connect and collaborate with communities, seeking out people, particularly those who speak and understand diverse dialects and ethnic languages to participate in oral history programs. They also recognise that it is important to identify key speakers capable of representing the community, however this can be difficult when different political ideologies and internal conflicts are present within the community.

Despite such attempts at collaboration, communities often feel frustrated when they lose connection to the research they have been involved in. As VP4 commented:

*We always ask researcher to do research here. Some are coming back giving knowledge that because you see we have a lot of people do a thesis here. Not many come back and give back their research (outcome). That's what we appeal; they do what research they want here, we hope that they come back.*

However, as IP2 and IP7 noted, the ability to create oral history collections with community associations depends on community willingness to share, and that is not always the case. Villagers sometimes refuse to participate or contribute their private collections because they are afraid that others will not take good care of their collections which have been kept across generations. Cultural institution professionals also reported that some interviewees are unwilling to share certain information as they fear that information might be manipulated or misused by interviewer/s, an attitude reflected in the desire of some communities for more control over outputs. Another concern in handing control to institutions, raised by EP3, is that collections potentially became too official and challenging to access. This was echoed by VP4, who argued that such collections belong to the community, and that the community control makes them more accessible to the local community.

Those interviewed were divided on the question of community ownership and control of oral history collections. Village people who participated in this study argued for their own space. A member of the Portuguese community argued that developing a community museum is not only the best way to organise community memories, but that it would encourage further contributions. VP1 argued that oral history collections should be developed and owned by local communities so that they retain control, and has developed a community centre with a collection related to the Chinese in Kajang. This view was supported by IR1 who considered community ownership important, but saw a role for cultural institutions providing support in terms of planning, budgeting and training.

In principle, cultural institution professionals were sympathetic to community ownership and control, but thought that local communities required guidance and support if they were to take on that role. However, research participants were concerned about the capacity of communities in terms of for long-term management and preservation, and argued that government institutions and related agencies should play a prominent role. IR7 added that cultural institution professionals are more qualified to manage community history as they had formal training, and could nurture community interest in oral history programs. Others, such as EP1 and IR7 argued that collections could be jointly managed and owned, which each group contributing according to its capabilities.

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Further concerns were raised in relation to ownership, privacy and copyright. VP1 was keen to deposit oral history he had gathered, but had serious concerns about legal and privacy aspects and feared some sensitive content would not be protected. Most cultural institution professionals agreed that the judgement as to what remains private or public must be decided by the interviewee, with sensitive information being reviewed by interviewees and oral history committees set up by cultural institutions. In practice, cultural institutions have the exclusive right to determine if and how material in the collections can be used. For the most part, users are only allowed to access the content of audio recordings and transcripts within the specific institution, to protect the recordings and transcripts from damage. Copyright, privacy and access rights all need further consideration to instil confidence in the management of oral history collections.

### **Mediated Memories**

The last axis to be considered is that of Mediated Memories, defined as “activities and objects we produce and appropriate by means of media technologies, for creating and re-creating a sense of past, present, and future of ourselves in relation to others” (Dijck, 2007 p.21). They describe how people use and experience technologies in relation to oral history and its management. The levels involve in mediated memories are tools, local systems, shared systems, collaborative systems and archival systems.

The model emphasizes that local systems, shared systems and collaborative systems are connected and that the development of networked systems can be seriously impacted by decisions made at each level. Tools refers to the equipment used when recording oral history. Local systems refers to the storage of audio recordings and related outputs. For example, oral history practitioners use audio recorders and mobile phones to record oral history while cultural institutions professionals use audio and video recorders based on media such as tapes and digital files (MP3).

Storing audio recordings in the original medium such as cassettes, can be a problem as formats become obsolete or the originals damaged. For the most part, the oral history collections in cultural institutions have not been digitised, although they are aware that this compromises long-term preservation, which could be addressed through a shift to digital technology. IP2, IP8 and IP9 commented that the cultural institutions they represented have plans in place to migrate deteriorating cassette and tapes to an integrated digital platform. This was considered a more significant problem for community-based collections than institutions. One solution would be to develop standards or guidelines and to provide oral history practitioners with training.

Metadata underpins systems at all levels as it contains not only descriptive information essential to assist interpretation, but the data required to support proper management and access. Oral history practitioners reported difficulties in accessing their own recordings due to a lack of suitable metadata, and that guidelines on capturing metadata would be also be useful. Such metadata could include finding aids, catalogues, indexes and registers used to facilitate, manage and mediate access to records and archival collections. These are the main forms of metadata captured in most cultural institutions. These concerns flow through to shared and collaborative systems as well. Guidelines for producing transcripts should also be developed to encourage a systematic approach to storing documentation and metadata, especially with regard to resources in languages and dialects other than standard Malaysian.

Cultural institution professionals commented that they were still seeking suitable methods to mediate oral history recordings. Independent researchers who participated in this study considered that cultural institutions need to improve the process of retrieval and dissemination of oral history collections, by providing access via comprehensive and user-friendly databases, with guidance on evidential sources. At present, one cultural institution reported

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having uploaded video and transcripts to their web for public access. The remainder only allow access to oral history collections at their physical building.

Although most cultural institution professionals recognise the need for collaborative systems which integrate audio, video and transcripts, budget constraints mean that little progress has been made. The National Archives has developed a portal for accessing digitised pictures and documents, however it does not provide access to oral history collections, and most cultural institution professionals believe that the future lies in the development of dynamic and distributed archival systems.

Another important issue holding back these developments relate to standardised ways of dealing with languages and transcripts. These relate to encoding systems, and so are important from the point of view of Evidentiality. In cultural institutions, the audio recordings are organised as audiovisual collections, however transcripts are held in local collections departments. The focus here is on language and its role as an encoding system, which refers to the “process of delivering meaning and representation through deliberate construction and conversion, which also require processes, tools and knowledge for decoding” (Gibbons, 2014, p 241). Using oral history as a reference source can be challenging, especially as the transcripts produced by some cultural institutions lack background cultural information. Oral history practitioners, and in particular independent researchers, identified a need for language support and advice. Particular issues arise when interviews and transcripts are in local dialect, and not translated into Bahasa Melayu, however, not all institutions even provide transcripts in the original language.

Producing transcripts, however, is subject to human and financial resources and is often neglected. Although some cultural institutions do not create transcripts as they want to force researchers to listen to the recordings for a more accurate assessment, many cultural institution professionals believe that interview transcripts are needed, at least in part, due to the risk of losing valuable historical information when recordings are no longer accessible, whether due to obsolescence or deterioration.

## Conclusion

Cutting across all of these issues is the concept of Co-creation, which is at the core of the Mediated Recordkeeping: Culture-as-evidence model. and which was raised in the initial discussion of Identities. In applying the model to the field of oral history, it must be recognised that both interviewer and interviewees play an active role in recording oral history and so developing collections. The exact level of co-creation depends on the scope of individual projects and funding levels. The evidence of this study, however is that oral history projects undertaken in Malaysia do not conform to a fully participatory approach, with researchers tending to regard interviewees as information providers who have little involvement in developing interview questions, program aims and outcomes. This can result in a lack of alternative perspectives.

Other issues relate to the development of metadata, systems and standardised ways of dealing with the related issues of language and transcripts. Some cultural institutions have developed shared systems such as such as websites and podcasts to manage and make oral history collections available, most have not yet reached that stage. Standards and guidelines need to be developed to facilitate activities such as indexing and retrieval, and and metadata standards need to be developed to support information on context, rights and provenance. Such actions would facilitate the sharing of content and systems development.

The Mediated Recordkeeping: Culture-as-evidence model was used in this study to explore the current oral history practice in Malaysia. The model has proved useful as a guide

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to interpreting the data and to reflecting on how cultural institutions could better facilitate the development and management of community oral history collections. The Mediated Recordkeeping: Culture-as-evidence model has been particularly useful in drawing out themes related to co-creation, participation, the provision of meaning and alternative perspectives, both the provision of and questioning of evidence and dominant narratives, and how technology mediates access and interpretation.

With regard to the case study itself, it can be seen that cultural institutions in Malaysia could benefit from, and transform, current oral history practice by working with communities and other stakeholders to encourage community involvement in all aspects of co-creating, capturing, curating and pluralising their history to improve the meaning and accessibility of the collections. Having said that, participation on the part of the communities remains limited, even when opportunities arise, due not only to limited funding opportunities, but also due to concerns that community stories, traditions, and viewpoints are not valued, and will potentially be mismanaged.

There is a need to re-evaluate the role of cultural institutions with a focus on engaging with and equipping communities with the necessary skills and guidelines to conduct oral history in a manner that recognises and meets community needs. One outcome of the study has been the development of a Community Oral History Collections Development Protocol, which should assist in that task by providing a mechanism for reviewing policies and standards and so improve practice for the benefit of future generations.

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# COMMUNITY PLACE-MAKING USING UNIQUE MOBILE APPLICATIONS: A MULTIPLE CASE STUDY

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**Abstract:** The concept of 'place' is defined as a meaningful location. This definition encompasses the engagement of people with placemaking and the human need for a 'sense of place'. Technologies such as mobile field survey, augmented reality (AR), location-based games and digital objects embedded in the place, enable strengthening the attachment to the place for both individuals and communities. Such technologies help in making places and their values more accessible while creating new formal and informal learning opportunities. As a result, the processes of giving meaning to places have also changed. These processes not only document and teach about the place in which the community operates, but also act and interact within the place. The variety of interactions might change both the relations with the place and the meaning given to it, in addition to actual changes (physical and digital) in the environment. The presentation outlines these new possibilities through the pedagogical lens of "Discover, Imagine, Change" abbreviated as DICE. The elements of the pedagogical process are based on the results of a prior research which aimed at constructing a 'uniqueness profile' of mobile applications for learning. One implication of the uniqueness profile is the importance of environmental context (physical, human, and virtual) in the design process. Designers, researchers, teachers and students alike should understand not just the affordances of the mobile technology, but also the environmental ones. The DICE novel pedagogy emerged out of such awareness and has been tried out within the context of cultural, geographical, and archaeological heritage in four different communities of learners in Israel, using collaborative mobile learning activities and applications.

**Keywords:** Blended Spaces, Environmental Knowledge, Mobile Learning

## 1 Introduction

The concept of 'place' is known to be simple and complicated at the same time, while "no-one quite knows what they are talking about when they are talking about place" (Cresswell, 2014, p. 1). According to one definition, a place is a meaningful location. This definition encompasses the engagement of people with placemaking and the human need for a 'sense of place' (Massey, 1994). The consolidation of the web, the mobile and locative media (Farman, 2013), and the internet of smart things (IOT) (Borda & Bowen, 2017), opened new possibilities of interaction between the individual, her or his community, and their places of living, working, and visiting. Technologies such as mobile field survey, AR, location-based games and digital objects embedded in the place, enable strengthening the attachment to the place for both individuals and communities. Such technologies help in making places and their values more accessible while creating new formal and informal learning opportunities (Zimmerman & Land, 2014; Dunleavy & Dede, 2014). As a result, the processes of giving meaning to places have also changed. These processes not only document and teach about the place in which the community operates, but also act and interact within the place. The variety of interactions might change both the relations with the place and the meaning given to it, in addition to actual changes (physical and digital) in the environment. The paper discusses these new possibilities through the pedagogical lens of "*Discover, Imagine, Change*" abbreviated as DICE. This is an educational process formulated as an implication of a recent study on the uniqueness profile of educational mobile applications (Shafiriri & Levy, 2018).

The educational use of mobile applications is thought to have significant learning potential. Smartphones are already massively embedded in daily life but integrating mobile technologies within learning environments is a complex and challenging mission which requires innovative pedagogical thinking and strategic changes, beyond merely implementing e-learning methods with the aid of mobile devices. In recent years, much research has been conducted on the integration of mobile apps into educational settings (Hirsh-Pasek, Zosh, Golinkoff, Gray, Robb & Kaufman, 2015; Notari, Hielscher & King, 2016). However, the task of identifying the unique features and affordances of mobile technologies has been a complex one (Woodill, 2014). The research from which DICE has emerged sought to focus solely on learning processes and outcomes that are possible only when using mobile apps, and to identify their unique and exclusive affordances. Within this framework, a unique educational mobile application has been defined as an application that has learning affordances attributed exclusively to mobile devices and apps, with benefits that are unattainable in outdoor learning environments, when no digital technologies are involved. As Figure 1 suggests, the term MUC has been used to label such a unique mobile app.



Figure 1: MUCs - unique mobile apps

While both the "M" (mobility) and the "U" (ubiquity) imply independent learning anytime and anywhere, the "C" (context) suggests some dependency on the decisions and actions of the instructional designer and the learner. The distinctiveness of MUCs thus lies in their ability to be deployed at any time and in any location, while nevertheless being sensitive to the context - the environment, the user, and the learning activity (Traxler & Kukulska-Hulme, 2016). This combination is what makes mobile apps unique for learning purposes.

The next section sketches the analytic process conducted as part of a study of more than two hundred mobile applications for learning, focusing on selected MUCs. The third section outlines the DICE idea - a novel pedagogy based on collaborative mobile and place-based learning using MUCs, developed and tried out in four different communities of learners in Israel. Through participation in such mobile-enhanced activities, learners not only discover the place they live in but might also contribute to its change. The last two sections discuss the lessons learned from implementing the DICE model in these four cases and summarize the significant educational values of the the *Discover* → *Imagine* → *Change* process.

## 2 Constructing the Uniqueness Profile of MUCs

While many studies focus on learning with mobile applications as part of using a broader technology-enhanced learning toolbox, the study briefly presented in this section sought to focus solely on those learning processes and learning outcomes that are made possible only when using mobile apps and to identify those unique and exclusive affordances.



The analytic process was conducted as part of a more extensive study of more than two hundred mobile applications for learning (Shafriiri & Levy, 2018). The research question was what are the unique affordances of mobile technologies that support their informed integration in learning environments? The qualitative analytic process resulted in five emergent themes of uniqueness of mobile apps, organized into three levels, as is shown in Figure 2.

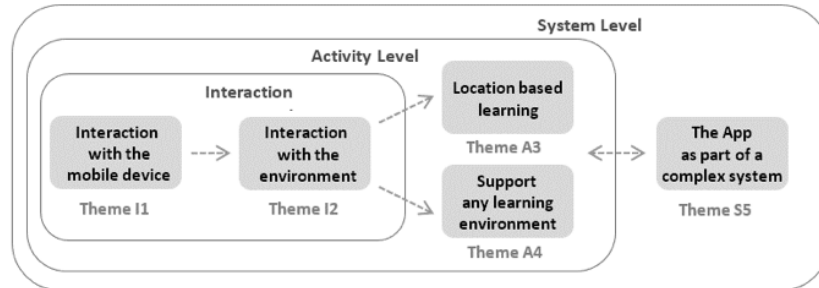


Figure 2: The emergent categorial system

Common to these emergent categories is the experience of learning in blended spaces (Benyon, 2012; O’Neill & Benyon, 2015). This primary pedagogical principle led to additional principles such as embodied cognition, the device as a discovery machine, and open playful design. Taken together, these principles draw a uniqueness profile for MUCs that supports system thinking and deep understanding of the environment in which the unique mobile app is used. The emergent profile of uniqueness encircling these principles is drawn in Figure 3.

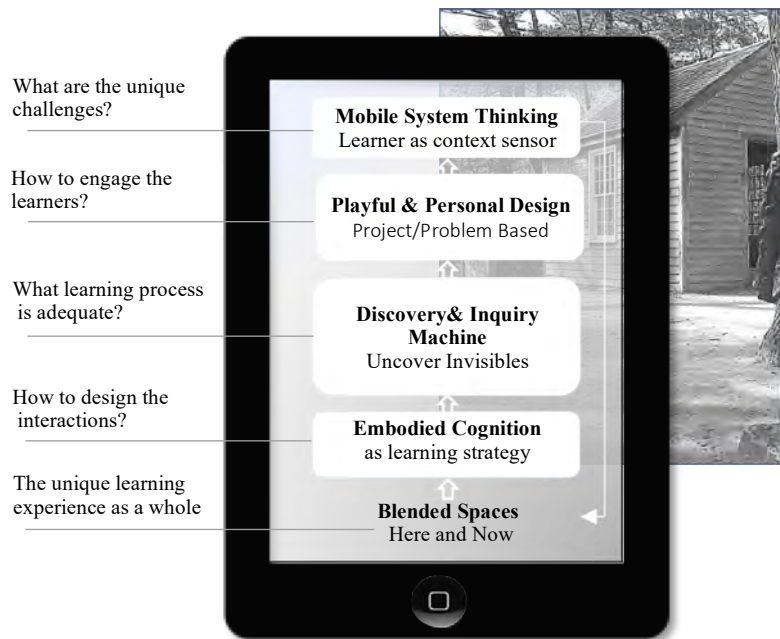


Figure 3: The Uniqueness Profile of mobile apps for learning

According to the results of the study, the overall uniqueness profile stems from the fundamental principle *Blended Space – Here and Now*, while each additional principle has some relationship with this major unique learning principle as well as with the others. Therefore, the fundamental principle is drawn at the bottom of the uniqueness profile. In other words, the study suggests that these principles should be treated not just as a list, but as a structure in which the components are placed layer upon layer so that each layer serves as a base for the next, and all are made possible by applying the founding principle. In learning environments and experiences

involving these principles, the learners operate as ‘context sensors’ with the aid of unique mobile apps.

### 3 DICE: Smart Learning with Local Places

The uniqueness profile facilitates the use of the pedagogical principles for a deep understanding of the environment and promotes new literacy of mobile system thinking. To enable such use, mobile place-based learning activities should integrate innovative technologies and pedagogies that allow the learners to perform as a “context sensor” of their environment (FitzGerald, Ferguson, Adams, Gaved, Mor & Thomas, 2013; Kamarainen, Metcalf, Grotzer & Dede, 2015). This section outlines DICE (*Discover, Imagine, Change*) as a novel pedagogy for dealing with such integration.

The proposed model serves as an implementation of place-based learning with the assistance of mobile and other ‘smart’ technologies (Zimmerman & Land, 2014). It aims to use the uniqueness profile (Shafiri & Levy, 2018) in such a way that the student becomes more aware of the surrounding while the place becomes a powerful or ‘smart’ object to learn with. Based on the results presented in Section 2, the pedagogical process includes elements of mobile inquiry and discovery, mapping and documentation using locative media, location-based games, and knowledge sharing. As will be exemplified in the following four cases, the DICE model can be implemented in diverse communities considering their unique cultural heritage and places, taking into account specific needs and local themes. The model involves three components or learning phases; each answers a different question.

1. **Discover:** *What was here, and what is here now?*

Activities at this phase include *inquiry* into the place ontology - its past, and its present. Such activities enable learners to reveal and express the unique "sense of the place" (Massey, 1994), and to document, map and share knowledge and findings. This component can be implemented as a standalone learning activity and might incorporate a field survey using mobile inquiry apps and archeological, historical or environmental survey.

2. **Imagine:** *What might be done here in the future?*

Learners are asked to think creatively about the future of the place and to make suggestions for future communal projects and interventions, based on the knowledge they created in the first phase.

3. **Change:** *How to intervene in the place?*

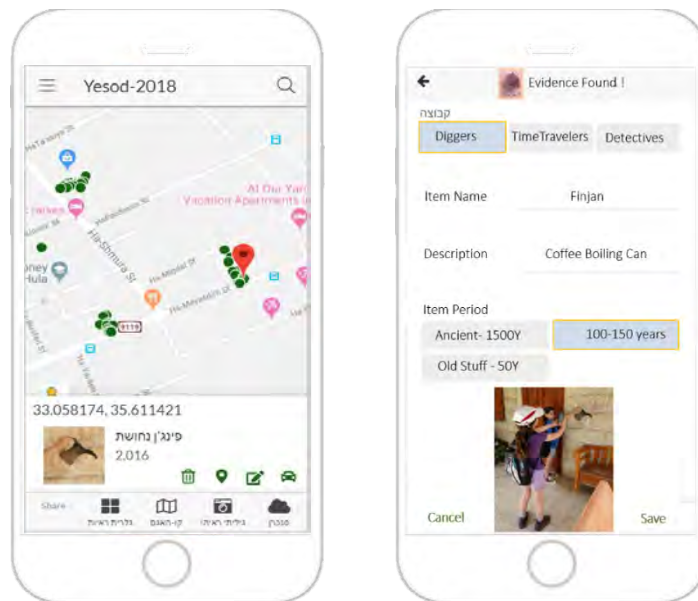
This phase refers to physical "placemaking" projects as well as virtual interventions, as an implementation of the designs from the *Imagine* phase. The *Change* might be in the form of increased public awareness or/and improved accessibility to the place. Such changes are also a result of sharing information and knowledge at the *Discover* phase.

The DICE model has been developed and tried out within geographical and cultural heritage context in four different communities of learners in Israel. In two of them, the activity was connected to an ongoing conservation project. The activities took place in rural and urban settings, with learners’ age ranging from sixth graders to students in academic project-based courses. The rest of this section details these four case studies.

#### 3.1 DICE as part of the excavation of an ancient Galilean synagogue

The first case tells the story of implementing the DICE pedagogical model by an elementary school in the Galilean community of Yesod Hama’ala, in collaboration with the Israel Antiquities Authority. The project was part of the excavation and conservation of the ancient synagogue and Crusaders sugar factory remains found near the village of Yesod Hama'ala. The school children and teachers participated in the excavation during three successive years (2016-2018).

During the first year, in addition to the excavation, the children also explored the historic part of their village that was established in the 19<sup>th</sup> century. The exploration was done as a mobile inquiry activity using a dedicated mobile app (Figure 4-b). In this *Discover* first phase of the DICE model, the learners surveyed historic houses and courtyards in the village, with the help of the house owners. Their task was to search and document the locations and properties of historic artefacts and antiquities that can serve as evidence for different periods at the village. The result was an online map of the artifacts that the children shared with the community (Figure 4-a). Then, they continued to study the artefacts and used them to design a ‘treasure hunt’ game for and with the broader village’s community.



**Figure 4-a:** The shared artifacts map **Figure 4-b:** The mobile app used for the survey

Following the first DICE phase, the elementary school students were also engaged in the second *Imagine* phase when they thought about future archaeologists visiting their village. They decided to prepare a time capsule for these future visitors and explorers. The capsule consists of personal seals the children prepared, as well as a memory stick with the artifact's pictures and description from the survey. The children buried the time-capsule in the archaeological site (see Figure 5-c), thus contributing to a minor but meaningful *Change* of their place.

The second year of the project was centered around the idea of a placemaking design process, in the archaeological site. The first *Discover* phase included mobile inquiry of the immediate surrounding of the ancient site they excavated previously, where they searched for evidence of the lost Hula lake that was drained seven decades ago. The children also documented their impressions from the site's ‘sense of place’ (Cresswell, 2014; Massey, 1994). Then, as part of the *Imagine* phase, they were asked to envision the site in the future and to design their intervention to conserve and develop the site for the benefit of the community. Finally, one proposal from the *Imagine* phase was implemented as part of the last *Change* phase: an original seating area was constructed onsite (Figure 5-d). At that seating area, the children embedded a small digital object that refers to a website detailing the story of the archaeological site.



**Figure 5-a:** Example from the *discovery* phase: documenting artefacts  
**Figure 5-b:** Example from the *Imagine* phase: planning a sculptures garden  
**Figure 5-c:** Example from the *Change* phase: burying the time capsule  
**Figure 5-d:** Example from the *Change* phase: construction of the sitting area

As is illustrated in the details of the Yesod HaMa'ala case, the principle of using mobile apps as an inquiry and discovery machine plays a key role within the DICE model. The principle was implemented through an open and playful learning activity, of reviling and mapping local pieces of evidence of the history of the village (Figure 5-a). The children were enthusiastic about the mobile inquiry, the immediate "here and now" results on the online map, and the ability to share their discoveries with the community. Another implication regards *the power of imagination* in the learning process. The second *Imagine* phase of the DICE model has proved to serve as a powerful trigger for students' engagement with the project (Figure 5-b). They approached it with fun and intrinsic motivation, probably due to both their involvement with the place in the previous *Discover* phase and the opportunity to express their ideas and influence their environment in later phases.

The Yesod HaMa'ala case also raises the issue of the complexity of making physical changes in a place. A physical change has a significant educational value, but at the same time, it also has some practical and administrative limitations. One recommendation to consider is therefore to involve virtual changes such as mobile geocaching, Google 360° documentation, and mapping of a place in creating the change within a blended space (Benyon, 2012). Indeed, throughout the different DICE phases in this case, we noted the relevance of the fundamental principle of blended spaces. For example, a group of children proposed to create an augmented reality gaming activity with IOT objects for visitors in the archaeological site. Such ideas might reflect that young learners nowadays experience blended spaces as part of their culture.

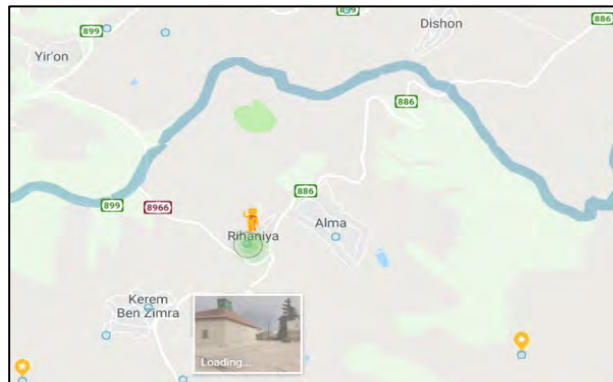
### 3.2 DICE in a community college: Making peripheral places more accessible

The second case is related to a short-term project that took place as part of a social media course in the CIS department (Community Information Systems) at Zefat Academic College. The college is located in the northern periphery of Israel, in the heart of the ancient city of Zefat. The city is one of the most important historic cities in Israel with unique cultural significance. However, it lacks documentation, and many of its sites are neglected and deteriorating. The CIS program seeks to prepare and grow local Information Systems workforce by advancing understanding of computing, design, HCI, digital culture, entrepreneurship and other subjects

regarded as critical to developing the needed workforce for the 21st century. Since mobile system thinking is regarded as one of these essential skills, it seemed valuable to implement the DICE model with CIS students.

The academic project focused on the first and the last components of the DICE model. During the *Discover* phase, students were asked to select a special place in the college area or elsewhere in the Galilee and to document it using the Google 360° mobile app. A collaborative shared map containing all of the students' contributions has been constructed, updated and distributed within the college. A *Change* activity was also implemented using Geocaching - hide and seek. A cache was hidden in the Crusader citadel of Zefat, adjacent to the college, and was followed by a cache seeking gaming activity with the students. The cache became available for the public to discover, imagine, and change as well.

In addition to the principle of using mobile apps as a discovery machine, the Zefat case highlights the unique principle of Embodied Cognition (Abrahamson & Lindgren, 2014). That principle was implemented through the physical actions needed for a successful recording of a panoramic picture of the place using the mobile app. For creating an impressive and accurate 360° panoramic object, the creator must be fully aware of the details of his or her surroundings, while turning around slowly. Such use raises students' awareness of environmental elements as well as to their physical presence within the frame. Furthermore, when a 360° panoramic object is recorded and uploaded successfully, it can make a real contribution to the accessibility of unique and remote places. In some of the remote places documented by the college students, their contribution was the only 360° street view documentation on Google map in the area. As a result of such authentic acts of crowdsourcing, the visibility of those sites has been raised, and the accessibility to peripheral locations has been improved. One example is the Circassian village of Rihaniya shown in the center of the map in Figure 6. The panoramic view of a place at the historic centre of Rihaniya was chosen and recorded by a student living in that village. As it turned out, it has been the first and only documentation of that place in Google Maps since the villages in this remote area were not documented in by Google except for the main roads.



**Figure 6.** Changing the online map of Rihaniya

The Zefat case also demonstrates Geocache as IOT placemaking. The *Change* component of the DICE model, in this case, has been mostly viable through non-physical terms such as increased awareness and accessibility to the place. However, the experience of Geocaching also contributes to a small physical change, that requires mobile system thinking, and environmental awareness. Interestingly, even after the DICE implementation has ended, the Department of Community Information Systems took responsibility for maintaining the cache in its area. This has also an educational value related to the department's goals.

### 3.3 DICE and the ‘uncovering the invisible in the familiar’ effect

Both the third and the fourth cases were carried out at the Department of Geography and Environment at Bar-Ilan University. The university is located in Ramat Gan, a city adjacent to Tel Aviv, within the largest metropolitan area of Israel.

The B.A. course titled "IT applications for studying a place" has been offered by the Department of Geography and Environment for the last couple of years, using project-based learning (PBL) approach. Recently, the DICE model has been integrated within the course, when students have been requested to select a place according to their interests and to conduct an inquiry in and about the place throughout several *Discover* activities. Those included exploring the 'sense of the place' as well as engaging in historical and geographic documentation, collecting field data and mobile mapping. Like in the Zefat case described in section 3.2, each Bar-Ilan student recorded a 360° panorama of his or her selected place and uploaded it into Google Street View. The students were also required to prepare a final documentation report and to share it online through a personal web site. In future courses, the students will also be requested to propose their future vision of the place, as an implementation of the *Imagine* component of the DICE model.

As part of the Bar-Ilan course, a special workshop has been designed and conducted, focusing on mobile learning of places. The workshop has been tailored to the specific characteristics of the sites and the places chosen by the students with the aim of experiencing the place by using unique mobile apps (MUCs). Those included location-based game, partly created by the students; street survey apps; and an AR navigation activity following a historical aerial map on a dedicated mobile app.

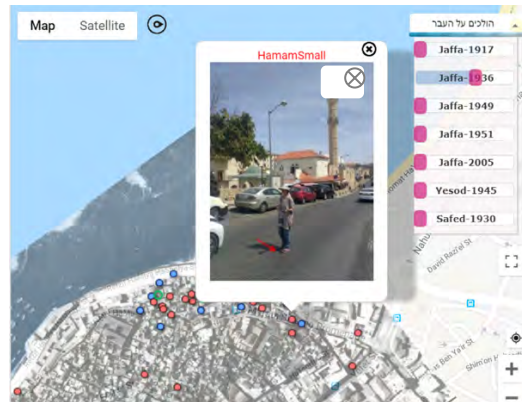
Over the years, the mobile learning workshop keeps receiving the highest ranking among course activities, probably due to the playful and innovative ways of learning it offers to the students. Surprisingly, even after a decade of the everyday and extensive use of smartphones and mobile apps, our typical students have not been familiar with regards to unique mobile features and MUC apps in general, nor were they familiar with mobile apps for studying places and environments in particular.

As in the case of Yesod Hama'ala (section 3.1), the principle of the discovery machine played a key role in the current case. Even when the students were familiar with the place, they often revealed new and unexpected features of it. The discovery phase was assisted by ‘here and now’ blended-space objects such as AR historical maps. This blended-spaces experience brought about curiosity to gain a deeper understanding of the place. The excitement of re-discovering has been noticed in students’ feedback when they described how surprised they were to find out new and meaningful characteristics of familiar places they thought they had known well. Therefore, we suggest naming this effect “uncovering of the invisible in the familiar”. Students also testified that the mobile inquiry helped in strengthening their attachment to their studied place. For some of Bar-Ilan Geography students, it even served as a trigger for further independent exploration (after the course itself has ended). Therefore, the *Discovery* phase of the DICE model might have a lasting effect on lifelong learning of places and environments.

### 3.4 DICE in the context of the Old City of Jaffa conservation survey

The last case is also a project-based learning course offered at the Department of Geography and Environment at Bar-Ilan University. This M.A. course is a part of the program for Preservation and Development of Landscape and Cultural Assets. The students, guided by professionals in the field, conduct an urban conservation survey in an area under planning processes. In the *Discover* phase, students survey the area, collect data and produce a report with the findings. In the *Imagine* phase, the students are asked to propose suggestions for a conservation plan. The report is made available to local authorities, and in some cases, it might inform their conservation plan, and thus might have an actual effect on the *Change* of the place. The focus of the 2018 survey has been on the northern slopes of the Old City of Jaffa. The students recorded and mapped hidden historical elements in the area, through a dedicated *Discover* mobile app. The app enabled the students to locate themselves on historic aerial maps, to record the historic elements they discovered, and to locate them on the map. In Figure 7

below, the app interface is displayed, showing the mapping of remains found by the students together with a picture of one student standing in the present location where according to the 1936 aerial map the small 'Hammam' (a Turkish bath) used to be.



**Figure 7:** Using a mobile app for multilayered mapping of remains in a conservation survey

The “uncovering the invisible in the familiar” effect has been particularly evident in the Jaffa survey, because of the multi-layered complex nature of its heritage. In the survey area, the historic buildings were destroyed, and in later years a garden was planted over the rubbles. The garden today is very popular among locals and is well known to tourists. Although the M.A. students were familiar with it too, they were surprised to discover that the historical remains in the garden which they never noticed before. Until they were required to be engaged in a *Discover* mobile inquiry activity, those remains, and some other parts of the Old City’s past, were transparent to the students. In that sense, the unique mobile app together with the DICE learning activities might contribute to discovering such a *multi-layered place*, incorporating various and conflicting narratives that are not easily accessible to the typical visitor.

The Jaffa case also serves as an example for dissolving boundaries between the classroom and the world, which is one of the main implications of the uniqueness profile described previously (Shafiri & Levy, 2018; Silver, 2014; Brown, 2010). The area is undergoing re-evaluation for planning, and the mobile inquiry app allows to document and share the survey findings. Such digital mapping also serves as a reference point to the *Imagine* phase in the course and the *Change* phase that takes place in the authentic planning process, outside the framework of the student’s project. In this case, the *Change* component has a relatively high potential.

## 4 Discussion

The above four cases followed the DICE process of *Discover* → *Imagine* → *Change*. In all of them, the first learning phase has been central to the model and a necessary one, while the other two have been sometimes implemented mainly virtually. In what follows, we will elaborate on the lessons learned from the four cases with regards to the unique principles apparent in each learning phase.

### 4.1 Discover

Throughout the *Discover* phase learners come to know the place they study, often with the aid of learning principles such as using mobile apps as a discovery machine. As it happened in the abovementioned cases, this creates the powerful effect of “uncovering the invisible in the familiar”, while transparent elements had been invisible in the site until someone acted as a lens to point them out (Silver, 2014). In many cases, when there no human guide is there, such uncovering can only be achieved using mobile or IOT technologies at the right time and in the right place. The immediate effect of such mobile self-discoveries is of primary importance in creating the connection and attachment of learners to the place.

Other learning principles contained in the uniqueness profile of MUCs were also apparent throughout the *Discover* phase. According to the principle of embodied cognition, the understanding of a place is constructed through the experience of being in it and moving around it (Farman, 2013). The ability to place and show local findings from the site on an online map also contributes to creating a blended space experience. Naturally, *open and playful learning design* has also been used in the *Discover* activities.

The *Discover* component serves as a basis for the other two. Its outcomes activate the imagination by connecting the question of "what was/is here" of the first phase to the question of "what can be here in the future" of the second phase. At the same time, the findings from the inquiry constitute the understanding of the characteristics of the place as a basis for the *Change* phase.

## 4.2 Imagine

The rationale for the *Imagine* component of DICE derives both from architectural design practices and from constructionist approaches for learning by design (Resnick, 2008). In the abovementioned case studies, the *Imagine* component played an essential role in motivating the learners while the question "what can be here in the future" led to unlimited directions and ideas. For example, while one team in Yesod HaMa'ala built a model for an ancient playground, another proposed an outdoor art gallery. Other idea suggested a kinetic sculpture operated by actual visitors or from afar, using IOT-enhances placemaking. The outcome of the imagination phase depends mainly on the discovery findings and the instructions for the *Change* component. Knowing that the proposed designs might have a real impact on a place has been both challenging and motivating, allowing for an authentic yet creative process.

In the *Imagine* phase, the use of mobile applications has not been as significant as in the *Discover* phase. However, design applications, or VR applications of an existing place with the addition of VR/AR imaginary 3D elements to it, can indeed be used to spark the imagination further. Furthermore, mobile apps for collaborative idea sharing and the use of the 'wisdom of the crowd' using social media apps might have additional potential for the *Imagine* phase.

## 4.3 Change

The component of *Change* in DICE comes in different modes, from a physical intervention at the end of the design process to a change in public awareness. *Change* can also be in the form of creating virtual access to a remote location, or access to place-based information "here and now" for visitors on site. The different modes of that were identified in the abovementioned case studies were:

1. Physical intervention using a placemaking approach at the end of DICE's overall process. Making a physical change can be complicated as it naturally depends on various constraints, but it is recommended to include even a small portion of physical change due to its high educational value.
2. A proposal for a physical change in a place. Even without an actual intervention, the proposal in itself might be significant both in its contribution to the community and in deepening the learners' understanding of the place. For example, in the case of Bar-Ilan conservation survey, the actual *Change* was not a part of the course framework, but it did inform the local authorities in their actual planning for the Jaffa garden on the slope.
3. Creating blended space objects that connect a virtual domain to a physical one. For example, *Change* can be achieved by adding a physical geocache onsite or by burying a time capsule that relates to the findings from the *Discover* phase. Hiding a geocache requires real-world considerations, such as the knowledge about the local population, social norms and the values of the place. Being aware of such considerations has by itself a significant educational value.
4. Virtual change of the place's accessibility and meaning. For example, by documenting and mapping interesting elements on an online map during the mobile inquiry, and by sharing the online map with the broader community through social media channels, the place is made more accessible, visible, and familiar. Although virtual, such change impacts the meaning of the place for the learners as well as for the wider community.



## 5 Conclusions

The Uniqueness Profile (Figure 3) suggests that mobile devices and apps might serve as the context sensors of a discovery machine in different environments and places, enabling embodied cognition interactions through sensory affordances like AR, GPS or 360° panoramas. MUC apps and learning activities also enable constructing smart blended space artifacts in context, documenting sensations, and sharing it between near and distant actors in an open and playful approach. As part of the overall DICE pedagogical model described in this paper, learners can develop a deeper understanding of their environment, through learning activities based on the Uniqueness Profile principles. Blended space objects, e.g., mapping invisible items, geocaches, location-based games or time capsules, can be created by learners themselves as an outcome of the *Discover* → *Imagine* → *Change* process. This, in turn, leads to an enhanced mobile system thinking, which includes improved environmental and contextual awareness.

Two additional educational values are noteworthy. First, the unique principle of discovery machine on which the DICE's first phase is based supports the effect of "uncovering the invisible in the familiar". This effect might be one of the reasons for the growing sense of attachment reported by users involved in a mobile inquiry of familiar places. Interesting potential for further research grows out of this, especially in light of the common perception of mobile technology as an agent of disconnection from ourselves and our environment. Second, mapping and sharing mobile inquiry findings might also contribute to learning processes outside of the classroom. This is how the boundaries between the educational realm and other social institutions like municipalities might be dissolved. Furthermore, with MUC apps we can now annotate our environment (Brown, 2010), so that the places become like books and the world turn into a library.

Although the *Discover* phase can stand alone, the *Imagine* and *Change* components are very important, even in a small portion or in virtual mode. These phases of the DICE model serve as an intrinsic trigger to an authentic and more engaged process. When adding the *Imagine* and *Change* components to the *Discover* phase, the world might become more than 'just' a library as it turns into a laboratory or a "Construction Kit", when "it is re-seeing the world as something that can be re-made that is the goal" (Silver, 2014).

In this article, we described the implementation of four DICE cases that were different in their goals, places, and learners' characteristics. Some were done in cooperation with the authorities in the context of planning and conservation projects. All cases have been conducted in educational institutions. However, further implementation can be made by place-based organizations that can adopt the DICE model in the context of community projects and cultural initiatives. Additionally, a global open online course for "learning a place" can be developed based on the DICE model, where students undertake a learning project in their area and share their findings and ideas in the online system. Such a global initiative will enable discussion and dialogue with students and mentors around the globe. An academic course of this type may be relevant to the study of various environmental disciplines and activities in urban and rural environments.

To summarize, when participating in mobile-enhanced DICE activities, learners not only discover the place they live in but might also contribute to its actual change. The learners in such activities are a small step ahead of being just mobile consumers and even producers of digital information. The DICE model suggests using unique mobile affordances in conjunction with non-mobile and analogue activities. In this way, learners become more aware of their surroundings, while the place becomes a powerful object to learn with.

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# **DOUBLE DABBLE: SPECULATIONS ABOUT RE-DESIGNING CONFERENCES TO EMBRACE DIVERSE AGENDAS OF ACTION AND RESEARCH**

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**Abstract:** How can we create settings for discourse and exchange between researchers and practitioners that fits with the different agendas of both parties? In this paper, we speculate about an alternative format to traditional academic conferences that might add value to community-based research venues like CIRN. We present *Double Dabble*, a concept we developed to organize a ‘feminist day of making’ in a public museum. The event brought together theorists, practitioners and the public around a shared interest in feminisms, crafts and activism. Collectively, we bridged the gap between feminist theory and practice by pairing people from different backgrounds for in-situ collaboration. The result of this approach was a varied program with six interactive workshop stations, an equally active engagement of visitors, participants and organisers in a relaxed informal atmosphere, profound networking between individuals from very different disciplinary backgrounds and the co-creation of a strong sense of togetherness. Based on our reflections on these outcomes, we speculate on the implications the *Double Dabble* concept could have for academically framed venues around transformative, community-based agendas such as CIRN. We conclude that a reduced focus on publications could be in favour of fostering cross-disciplinary exchange, deeper discourse, and more productive action while supporting network members in individually shaping their participation. By engage novel ways of exchanging ideas, we could re-centre the needs of practitioners.

**Keywords:** Academic Conferences, Practitioners, Interdisciplinarity

## **Exchange between Researchers and Practitioners**

There is much academic interest in how information and communication technologies (ICTs) can become powerful tools for communities. Researchers all over the world work together with different kinds of communities to explore the specific technology potentials and design opportunities in their contexts. On the other hand, with the pervasiveness of technologies in every-day life and the increasing possibilities to design one’s own tech, there has been also a significant number of initiatives that driven by communities themselves or by their allies in charities, municipalities, NGOs, third sector, industry, etc. There is much opportunity for collaboration and reflective discourse between these academic researchers and non-academic practitioners. In which settings can they however actually come together and interact with each other? Venues like the Community Informatics Research Network (CIRN) and the International Conference on Communities & Technologies (C&T) radiant examples for providing a space for such a reflective exchange between research and action.

## Academic Conferences serving Academic Agendas

We believe that conferences are one attractive way of creating discourse, however they have an academic tradition and as an event format they are clearly tailored to serve the specific needs of academic researchers and institutions. A closer look at the two examples of CIRN and C&T makes this point clearer.

CIRN is a vibrant network that consists not only of researchers, but also of archivists, artists and activists. The network takes pride in bringing such a diverse group of stakeholders together to foster productive discussions around their shared concern for the well-being of people and communities through more effective use of ICTs. CIRN is an attractive space to exchange experiences of facilitating transformative action in communities, to spark new project ideas, and form new powerful alliances in resource-constrained contexts.

C&T is a biennial international forum that was started out of a very similar motivation by members of the European association of researchers interested in socially-embedded technologies (EUSSET). The explicit aim was “stimulating scholarly debate and disseminating research on the complex connections between communities – in their multiple forms – and information and communication technologies”. To do so the 2019 conference welcomed interdisciplinary participation from “researchers, designers, educators, industry, and students from the many disciplines and perspectives bearing on the interaction between community and technology, including architecture, arts, business, design, economics, education, engineering, ergonomics, informatics, information technology, geography, health, humanities, law, media and communication studies, and social sciences.” Besides papers, posters and workshops, there was even a specific community case study track that targeted “a wide variety of non-academic actors (individuals and organizations) working with technologies to effect community relations.”

Both conferences demonstrate a genuine intent to bridge the gap between academia and the communities they conduct their research in. They actively invite non-academic stakeholders to participate in the conference. The CIRN committee, for example, stated on their website:

*“We are particularly interested in papers from researchers and practitioners that can address the challenges of locating community-focussed research within wider theoretical and practice frameworks.”* (CIRN, 2019)

While the invitation is directed both at researchers and practitioners, it also expresses a clear academic agenda of the event as a whole. The critical point is that by framing network venues like CIRN and C&T as academic conferences, their participants are bound to still operate within the confines of academia and its definition of ‘impact’ (at least to a certain degree). The emphasis on research, theories and frameworks frames the conference in the academic tradition. Impact is produced first and foremost in the scientific sense – by conducting research that is written up in peer-reviewed publications. There is merit for both academic authors and institutions, yet the question remains if non-academic practitioners benefit equally from writing papers. The format of an academic conference hence centres the needs of researchers regarding producing academic ‘impact’ and sets the focus on publishing papers. In turn, this runs the risk of primarily serving agendas of academia, rather than centring the needs and concerns of CIRN members in professional roles other than academic researchers.

Another disproportionality and issue with the predominant academic framing of such conferences is the cost of participation. The organisers of C&T 2019 arranged some sponsoring for a limited number of grants to support community organisations (especially from developing countries) to attend the conference – yet, without the guarantee to receive any funding, up to 700 EUR (or 1147 AUD) would have needed to be factored in for the full registration fee. Such conference fees and the accompanying travelling costs are often beyond the budget of practitioners from the third sector or those operating in under-resourced community contexts.

## Re-Thinking Conferences around the Involvement of Practitioners

We notice that conference organisers often use the term “practitioners” to refer to all kinds of non-academic conference delegates. For the purposes of this paper, we do so as well and hope to thereby highlight the way how we distinguish between those inside and outside of academia in the venues we shape. We are aware that the term “practitioner” dramatically over-simplifies their vast diversity of expertise, practices and agendas. However, using this very language in an overt critical way lets us as authors (re-)consider our own situatedness within this context, being (doctoral and early career) academic researchers ourselves. Again, this awareness is not to consolidate a paternalistic distinction between “us” and “them”. Rather, we want to express our genuine respect for practitioners as our invaluable allies, collaborators, and co-researchers in our community-based work and thus wonder openly how we can ensure that our discourse also serves their agendas.

We (as academics who have struggled to find funding to involve our very close non-academic co-researchers and co-authors) want to ask ourselves and CIRN as an interdisciplinary and community-oriented network: How important is the traditional focus on academic publications to the practitioners among us? Are the practitioners’ interests, needs, and skills met and represented in this kind of dissemination of work? Or are there different formats we could use to better make use of the diverse capacity and rich interconnectedness of our network? Ultimately, we ask ourselves, in what ways can we re-imagine conferences like CIRN or C&T to more equitably accommodate the needs and impact agendas of practitioners and academics.

In light of these questions, we share our experiences from organising an event outside of academic standards in a public museum in which we tried to bridge the gap between researchers and practitioners. *Double Dabble* was a feminist day of making that brought together theorists and practitioners around a shared interest in feminisms. Based on the outcomes and our own experiences organising and running the event, our intention is to speculate about *Double Dabble*’s fit as an alternative format that might add value to community-based research venues like CIRN.

## Double Dabble, a Feminist Day of Making

“*Double Dabble, a Feminist Day of Making*” was an event that took place in February 2017 at an art gallery in the North-East of England. In the event description it was written:

*“Double Dabble is an attempt to actively bridge the gap between feminist theory and practice. We want to engage in discussions around these topics and reflect on how social sciences and Human-Computer Interaction (HCI) can collaborate to build a more comprehensive understanding of each other’s expertise. To show how social sciences and a more comprehensive understanding of theory could influence the practical work that is done in HCI; and how the pragmatic work of HCI could inform feminist theory in the social sciences. By engaging in a hands-on day of making, we hope to create a comfortable, open, engaging, and friendly environment for exchange, negotiation, and reflection.”* (fempower.tech, 2017)

To give some context to it, the event formed the first public initiative of fempower.tech, a Newcastle-based group of intersectional feminists who joined forces around the aim to raise awareness of feminist issues in Human Computer Interaction (HCI). Even though the group was founded in an HCI research group part of Newcastle’s School of Computing, it has been diverse in terms of disciplinary backgrounds and academic roles of its members. The main purpose of creating fempower.tech was to provide a channel for discussion and a platform for actions at the broad intersection of technology, society and politics in which everyone interested could participate – no matter if they were students, post-docs, lecturers or professors, no matter if they had their scientific backgrounds in informatics, social sciences,

applied health sciences or engineering, and no matter whether they were from industry or academia. All members share an interest in feminist values or even identified their work being feminist. Yet, in the founding period many members (especially those from a technological background) expressed their concern about not feeling knowledgeable enough about feminist theories and hence would be uncomfortable about calling themselves feminists. The aspiration to increase the confidence in our own feminist identities prompted us to explore the interconnections between theory and practice more deeply. The Double Dabble event was an opportunity to broaden the discussion even more and to actively involve people who were not part of fempower.tech.

### The Double Dabble Format

To facilitate a deeper exchange between theory and practice we developed an interactive event format for Double Dabble: We distributed a call for interested feminist theorists and practitioners, asked these volunteers for a brief self-description and a statement of their interests and used this as a basis to pair theorists and practitioners to organise a workshop-like activity together. Based on thematic overlaps in their statements, we organisers tried to set up teams of two (hopefully unknown) individuals from different backgrounds. The volunteers were introduced via e-mail several weeks ahead to the event to give them sufficient time to get to know each other, come up with an idea together and to prepare their activity.

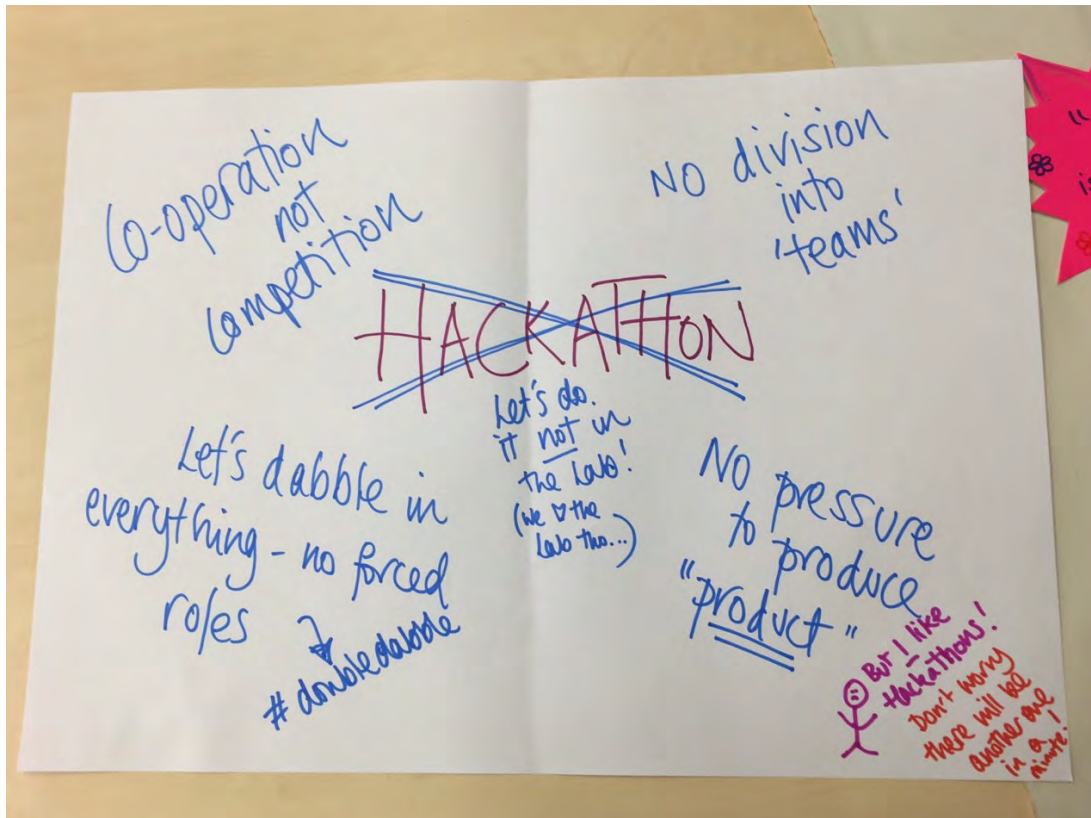
### Outcomes

The result of this approach was a varied program with six interactive workshop stations. The volunteering theorists and practitioners came up with very original ideas for their stalls. They addressed different feminist topics by combining their respective skills and expertise, as can be seen in this overview:

- **Textiles Plus Data!** A computing scientist and a physicist co-created an interactive textile-based data visualisation together with the audience.
- **A female epic and/ or a pre-Internet fanfiction:** An expert in English Literature hosted a stall to create a Emily Brontë-inspired fanfiction.
- **Women's Work** was an activity to reflect on the devaluation of women's work through knitting or crocheting a coaster.
- **Crafting Strength:** A criminologist and e-textiles engineer invited visitors to embroider muscle tension sensors with designs of prisoner tattoos.
- **Taking Up Space** was a participatory practical experiment of a geographer and a stand-up comedian to feel how power postures affect confidence.
- With her **Zine Machine** a computing scientist with a philosophy background documented the outcomes and conversations on the day.

The event brought together theorists, practitioners and the public around their shared interest in feminisms and hands-on making. Roughly 50 people attended throughout the day, and even though not everyone could stay for the whole time, there was an atmosphere of deep engagement at all time. People crafted, discussed and learned just as much about theoretical concepts as they learned skills and engaged practically.

With its focus on making, *Double Dabble* was to some extent similar to a hackathon (Irani, 2015), a popular event format that engages attendees actively in design-sprints of short periods of time. However, in contrast to actual hackathons, there was no prize that people could win for their ideas or artefacts. Instead of competitiveness, *Double Dabble* placed emphasis on togetherness and self-paced experimentation. We organisers eventually came to call it an anti-hackathon (see figure 1), as the event allowed for informal engagement in a relaxed atmosphere. Instead of talking at each other, people talked with each other and listened carefully.



**Figure 1: One of the zine pages elaborated on Double Dabble as an anti-hackathon.**

*Double Dabble* managed to bridge the gap between feminist theory and practice by operationalising active encounter and exchange between both. The event was co-created on several levels. Through inviting theorist and practitioners, they co-created the event program together with us organisers. By pairing the volunteers beforehand, they co-created an activity that they likely would not have done in the same way if they had been operating as individuals. Needing to come up with an idea together pushed them gently out of their respective expert comfort zones and engage more actively with the skills and ideas of their partners. Finally, it was the visitors, volunteers and organisers altogether who co-created the feminist day of making on the day itself. The interactivity of their stalls allowed museum visitors to not only engage deeply but also contribute actively and creatively. Having all the stations operating simultaneously, filled the space with a friendly atmosphere of engagement and excitement. Most of all they co-created a strong sense of togetherness with their in-situ collaborations. Despite people coming from very different disciplinary backgrounds, they seized the opportunity for profound networking. At the end of the day, all the attendees seemed to have made many new acquaintances and some of them were even talking about collaborating more with each other in the future.

## **Speculations about Re-Designing Conferences**

Based on the outcomes described above and our own reflections as organisers of the feminist day of making, we believe that *Double Dabble* could present an attractive alternative format for events that try to facilitate exchange between people from diverse backgrounds. While we developed the format specifically in the context of feminist topics and crafting activities, we consider it to be applicable in any other thematic context and we can imagine *Double Dabble* to be used in other settings that do not involve any creative making as well. Therefore, we assume that *Double Dabble* could be of interest for CIRN and their chosen task of bringing together its diverse community of researchers and practitioners around a shared interest in community informatics. Applying *Double Dabble* as an (partial or full) alternative

format to the conference would however mean significant changes on several levels. More specifically, the implications we see would involve reorganising the program, redistributing the labour and restructuring the discourse.

In regard to the program, adopting the format would mean that talks and paper presentations of papers would not make up the major part of the program, anymore. Instead volunteers would come up with sessions that they assume to be most suitable for their interest and objectives. This could be an educational class to disseminate knowledge or skills, an interactive workshop to let participants experience something for themselves, a panel or roundtable discussion to further a debate about a very specific issue or any other new idea for facilitating an interactive program block. On the feminist day of making, we had all stations operating at the same time. In this way, we created an interesting and dense program, however we realise that this program structuring decision had the implication that stall hosts themselves could not engage much with the stations of other volunteers. For a longer event (such as a conference that lasts for several days), we hence suggest doing this slightly differently and schedule only one session or very few sessions taking place at the same time. Many CIRN delegates appreciate the conference being single-track and not needing to decide on which of the sessions to attend. Of course, this program structuring decision also has logistical implication in terms of organising enough rooms of an adequate size.

With respect to the distribution of work, we note that Double Dabble is relatively intense in terms of the organisation of logistical matters. With volunteers offering different kinds of sessions, they will also have different requirements for rooms, set-ups and equipment. However, at the same time, the Double Dabble format outsources most content-related preparation work on its participants. The 'only' task the for the organisers in this regard is to recruit volunteers and to pair them based on their backgrounds and stated topics of interest. For the feminist day of making we did this pairing 'manually' by receiving statements via email, reading through all of them and then discussing possible pairings in the group. However, for an event of a larger scale, we could also very well imagine the assistance of an online form to gather the information on backgrounds (i.e. scientific discipline, identifying as researcher or practitioner) and topic interests in a more structured way. Overall, we estimate that the workload is comparable to the one that conference organisers have when curating the sessions of a full conference programme.

Finally, the Double Dabble format also affects the way how the discourse structured and this is mostly evident in how contributions or session outcomes are documented. With the mentioned redistribution of organising labour also comes a redefinition of the preparatory work in terms of content. Indeed, this might be the most radical aspect from the perspective of academic standards. So far, people interested in contributing to a conference submit papers, notes, posters or other work-intensive documents and hope for being accepted after a rigorous reviewing process. This model depends on a lot of voluntary work (both for those submitting, reviewing and organising this process) and is more likely to be affordable for researchers who gain the most value of getting their submissions published in case of acceptance. Again, the conference format with peer-reviewed proceeding publications predominantly serve the agendas of research impact and creating quality measures for such. However, if we want to seriously move away from this tradition in order to involve non-academic delegates more equitably, then it should not necessarily be about the papers, but about how they spark conversations. Double Dabble is explicitly not about the production of scientific publications but about starting a more active involvement in shaping the discussions that take place at the event and to providing an opportunity for participants to engage with each other more profoundly. Hence significantly less time would be needed for interested event attendees on the first step of applying to contribute to the event. So far, we have also not considered any rigorous quality-assuring procedures for deciding on acceptance or rejections. Depending on which scale the Double Dabble format would be adopted, we would argue that such a procedure might not even be needed. While in the short term this means the loss of the academic "gold" standard of the conference format, this does not mean the total loss of publications. We can very well imagine that a CIRN event in a Double Dabble format could provide the collaborative basis for building new strong alliances between researchers and



practitioners and that researchers could publish the outcomes of these collaborations through other specifically academic channels (e.g. journals or other academic conferences). In this vision, CIRN would then rather be the starting point for new work than the end point where previously conducted work is presented. With such a strong focus on networking and active critical engagement it would maintain a low threshold for practitioners to participate and provide a generative experimental space for initiating new exciting work and fostering debates on eye-height no matter the respective backgrounds.

Ultimately, the decision which event format is best for a venue like CIRN depends of course on its underlying agendas and which aspects are prioritized. This becomes particularly evident when it comes to the intention of reaching out beyond the confines of one's own scientific community and there is an attempt to make the event equally attractive to practitioners. Organisers must then be very aware which agendas are prioritised and which kind of impact they want to produce. Our intention is not at all to criticise endeavours that subscribe to the agenda of producing research impact and acknowledge that conferences with published proceedings serve the purposes of advancing academic debates well. Rather, we want to open up a space for speculations in case there is also another agenda of opening up our discussions towards the participation of non-academic stakeholders. We believe this is necessary in times where we conduct research with increasingly participatory research methods and communities are often not only our 'subjects' but often also our collaborators or even co-researchers. As doctoral and early-career researchers doing community-based research, we often encounter the ethical dilemma that we would like to share our academic success and attribute our research partners with the research impact we produce together, however scientific publications are often of not much value for them.

With this ethical concern in mind, we can summarise the benefits and disadvantages of using the Double Dabble format for fostering an alternative model for researcher-practitioner-exchange as follows: We acknowledge that it might be a risk to apply this model for CIRN as we have not organised any other Double Dabble since the Feminist Day of Making and we have no experience in applying the format on a larger scale than a one-day-event. We also respect that Double Dabble requires a lot of organisation and preparation work (yet likely to a similar extent as conferences) and that its outcomes are likely to not fit the standard ways of reporting impact. On the positive side however, the event format is flexible enough to embrace the diversity of expertise that practitioners can bring into a venue and to let them tailor (a part of) the event to their own needs. Moreover, Double Dabble maximises the opportunity for profound networking and provides significant potential for initiating new collaborations through the active involvement of all delegates. Finally, without the publication of proceedings there might also be an opportunity to keep the registration costs lower and more affordable for non-academic participants.

## Conclusion

The intention of this paper is to stimulate some discussions at CIRN on how we actually bring together academic researchers and practitioners around our shared concern for community informatics. In our contribution to this discussion we reflected on academic conferences constituting an event format that is tailored around academic agendas and hence being limited in equitably catering for the interests of both researchers and practitioners. Reflecting on the question how an alternative event format could look like that is more focussed on exchange and discourse instead of publications and presentations, we shared our experiences with using the Double Dabble format to organise a feminist day of making. We conclude that a reduced focus on publications could be in favour of fostering cross-disciplinary exchange, deeper discourse, and more productive action while supporting network members in individually shaping their participation. In this way, we believe that venues could re-centre the needs of practitioners and engage novel ways of exchanging ideas.

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# CO-DESIGNING AN OPEN SOURCE BROADBAND MEASUREMENT SYSTEM WITH PUBLIC LIBRARIES

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**Abstract:** This paper presents findings from a participatory design workshop with public librarians and information technology practitioners to gain their insights on the development of an open source broadband measurement system for public libraries across the United States. Participatory design has been a key strategy in community informatics to engage users in the design, implementation, and evaluation of information and community technology (ICT). This engagement assumes that those most impacted by ICTs should be involved in making decisions about how these technologies are developed. While findings from previous studies have shown the value of using participatory design in community informatics projects, fewer studies have investigated how such design processes might be used to develop open-source technology systems with public libraries. Our study seeks to address this gap in the literature by focusing heavily on the participatory design elements in our data collection and analysis. Findings from our qualitative analysis of the workshop data reveal that public libraries want more knowledge of their broadband networks to better communicate with their patrons, respond to their communities' digital needs, and justify the importance of robust internet connectivity to their funders. We believe these findings show the value of using participatory design in community informatics with public libraries, as well as the benefits of sharing co-design techniques with researchers and practitioners in the field.

**Keywords:** Participatory Design, Open Source, Broadband, Community Informatics, Public Libraries

## Introduction

Public libraries in the United States have taken significant steps in recent years to engage their communities in conversations about their libraries' collections, programs, and services both inside and beyond their walls. The emergence of social networking tools to foster greater engagement and online collaboration, as well as efforts to reimagine the physical spaces of libraries to foster both virtual and face-to-face social interactions, have paved the way for imaginative thinking about the role of public libraries in society. From the Chicago Public Library's YOUmedia Learning Labs (Chicago Public Library 2019) to the Digital Public Library of America (<https://dp.la>), public libraries have become incubators of new ideas, technologies, and platforms while remaining grounded in their "core values of librarianship" (American Library Association 2019). Throughout these developments public libraries and their partners, including many design-oriented researchers, have embraced the use of participatory design methodologies to spark community conversations in both virtual and physical spaces. Several scholars around the world have written about their use of participatory design with public library staff and patrons to re-design public library spaces and information services. While many of these studies have sought to engage library patrons in participatory design efforts, fewer have examined the use of participatory design as a way for researchers to collaborate with public library and IT staff to co-design new technologies in community informatics contexts.

This paper seeks to address this gap in the literature by presenting findings from a one-day participatory design workshop with public library services and information technology (IT) professionals. The workshop was designed as part of a research project funded by a grant from the U.S. Institute of Museum and Library Services (award #LG-71-18-0110-18) and led

by researchers at Simmons University, Measurement Lab, and Internet2 to develop an open source broadband internet measurement system with public libraries. The core research question driving this project is this: *How can public libraries utilize broadband measurement tools and training materials to develop a better understanding of the relationship between library network infrastructure and digital services?* This paper presents findings from a qualitative analysis of data collected during our participatory design workshop to answer this question and gain a deeper understanding of the need for broadband measurement in public libraries, as articulated by the public library staff, administrators, and their IT counterparts who participated in the workshop. Our findings show that participatory design techniques helped to surface the need for broadband measurement tools in public libraries for the following purposes, including to: secure funding for robust broadband connectivity; increase access to internet services; and build and maintain the important relationships that promote digital equity. Early participatory design research studies served as part of the theoretical framework and methodological approach for our analysis and findings presented below.

## Literature Review

### Participatory Design

Participatory design is both a research methodology and a design practice focused on including users of computer systems in the creation of these systems. Emerging in the 1970s as computers were introduced into industrial workplace settings, participatory design (PD) grew in response to the negative effects of technology, such as deskilling and dislocation of workers (Kensing & Blomberg 1998). During this time, several Scandinavian countries saw the potential of PD to address the growing power imbalances between trade unionists and their employers. In response, researchers began working with unions to include workers in decisions about systems design. As Greenbaum (1993) explained, “participatory design implies that workers as users of computer products should take part in the decisions that affect the system and the way that it is designed and used” (p. 28). One goal was to ensure that workers would retain some level of ownership and control over their knowledge about technology, which they saw as integral to their ability to negotiate their working conditions. Kensing & Blomberg (1998) explained the relationships that developed between researchers and trade unionists led to many benefits for workers, including the knowledge they gained to increase their bargaining power and to be informed about management’s plans for new technology (p. 170).

One particular strength of PD as a design strategy is its focus on building “collective resources” (Asara 2000; Ehn & Kyng 1987; Kraft & Bansler 1993) for workers and unions. As Asara (2000) explained:

*The “collective” here indicates that the intention was the empowerment not of individuals in their workplace but of the trade union collective in bargaining situations, while “resources” indicates the value placed in information resource gathering on the part of trade unions. (p. 265)*

This Collective Resource Approach, also known as the Scandinavian model (Bjerknes, Ehn, & Kyng 1987), was embraced by employers who saw the potential of involving workers in the design of technology systems to provide an edge for their companies during a time of increasing global economic development. Researchers have also noted the complex cultural and organizational challenges that PD faced due to structural barriers inherent in the Scandinavian model of industrial relations, along with a growing hostility toward unions in the United States (Kraft & Bansler 1994). Even with these challenges, scholars have noted PD’s potential in bringing researchers and workers together to build knowledge about technology, formulate their goals, and promote their interests (Kensing & Blomberg 1998, p. 170).

Participatory design techniques have since evolved across several disciplinary fields, whose scholars have contributed a broad range of perspectives on the design of socio-technical systems (Kubicek 1983; Mumford 1987/2006), the values inherent in the design of these systems (Friedman 1997; Friedman & Nissenbaum, 1996; Suchman, Blomberg, Orr, & Trigg 1999), and in the field of computer supported cooperative work (Bratteteig & Wagner, 2016; Kensing & Blomberg 1998; Simonsen, Karasti, & Hetzum 2019). These areas of research and practice have extended PD's original concerns while continuing to emphasize the importance of including users in the design of information and communication technologies. PD's focus on building local knowledge, enhancing communication, and addressing power inequities are particularly relevant to the field of community informatics.

### **Participatory Design in Community Informatics**

Community Informatics has proven to be an ideal discipline for the use of participatory design. This is because of the field's focus on engaging communities in the design, use, and evaluation of information and communication technology to support community development goals (Bytheway, Rhinesmith, & Wolfe 2015; Denison, Sarrica, & Stillman 2014; Gurstein 2000; Peddle, Powell, & Shade 2008;). This synergy between PD's inclusion of technology users in the design of ICTs and CI's focus on community engagement has led researchers to contribute a number of exciting case studies and ethnographies often in partnership with community-based organizations. For example, in Carroll and Rosson's (2007) study of their Civic Nexus project, which was a collaboration between community informatics researchers at Penn State University and 11 community-based organizations in Centre County, Pennsylvania, which is also where the University is located, PD was used to help organizations develop the "capacity to analyse, plan for, and meet their own IT requirements" (p. 249). Carroll and Rosson explained that PD was particularly effective in assisting the groups to gain a deeper understanding of their organization's technology requirements, develop the management skills needed to oversee both people and technology systems, and ultimately to be in control of their IT systems and infrastructure to support the mission and vision of their organizations (p. 256).

Eubanks (2007/2011) used participatory design, along with popular education and participatory action research, with women at the YWCA in Troy-Cohoes, New York as part of a strategy to address the "distributive paradigm" in community informatics. Eubanks showed that rather than simply distributing computers to address a lack of access to technology, particularly in low-income communities, PD can be used to engage those most impacted by technology. This approach presented novel ways to address the "digital divide," by engaging the women at the YWCA in creating their own articulations of this deficit-based perspective. For example, Eubanks worked with the women to co-design several workshops and activities that helped to surface the women's everyday experiences with technology that were often oppressive. As Eubanks (2007) described, "The insight that ICT, state service offices, and structural inequality combine to create a system of disempowerment proved enormously productive for our collaborative educational processes, both in conversation and in collaborative project design." By engaging the women of the YWCA in these collaborative processes, women shared their own knowledge and revisioned digital equity to focus on using ICTs to address the real structural inequalities often underpinning technology divides. These and other examples in CI have highlighted the alignment between participatory design and community informatics.

Public and academic libraries have served as both research sites and partners on community informatics initiatives with academic researchers. Public and academic librarians have used participatory design techniques to engage their users in the design of library spaces. These activities reflect the move toward creating "participatory networks" (Lankes, Silverstein, Nicholson and Marshall 2007) with public libraries at the core (Dalsgaard, 2012; Dalsgaard & Eriksson 2013; Serholt, Eriksson, Dalsgaard, Ducros 2018; Rasmussen 2016). Because PD offers such as a diverse range of activities and methods for gaining feedback from participants, it has been a particularly effective strategy for co-designing both physical

library spaces (Council on Library and Information Resources 2012; Derr & Tarantini 2016; McArthur, 2015; Meunier & Eigenbrodt 2014; Rhinesmith, Dettman, Pierson, & Spence 2015) and virtual library services (Kautonen & Nieminen 2018; Valdivia & Subramaniam 2014). Researchers have also seen the opportunity to use PD as a way to design not only the spaces for library programs and services, but the actual programs and services themselves (Guo & Goh 2018; Subramaniam 2016). For example, Subramaniam (2016) documented several PD techniques, employed by her colleagues in the Human-Computer Interaction Lab at the University of Maryland, that can be used by teen services librarians to help capture and promote youth voices in their libraries. While community informatics often includes library and information science researchers, as well as public libraries as sites for CI projects, fewer studies have considered how researchers can work together with public librarians and their IT staff to co-design networked information systems as part of a strategy to better understand their libraries' broadband infrastructure.

## Methodology

### Participatory Design Workshop

In October 2018, during the first phase of our research and design, our team brought together representatives from our year 1 public libraries (see Table 1 below), along with additional experts with backgrounds in library and IT services, to participate in a full-day PD workshop in Chicago, Illinois. The goal of the workshop was to identify both the technical specifications for the pilot measurement system, as well as some of the initial content to be included in the broadband measurement platform training manual, which will build on the work of Internet2's IMLS-funded technical broadband assessment toolkit (Spellman, Werle, Block 2017). In this section, we describe the techniques that were used during the workshop as well as the key themes which emerged from the co-design methodology used by our workshop facilitator.

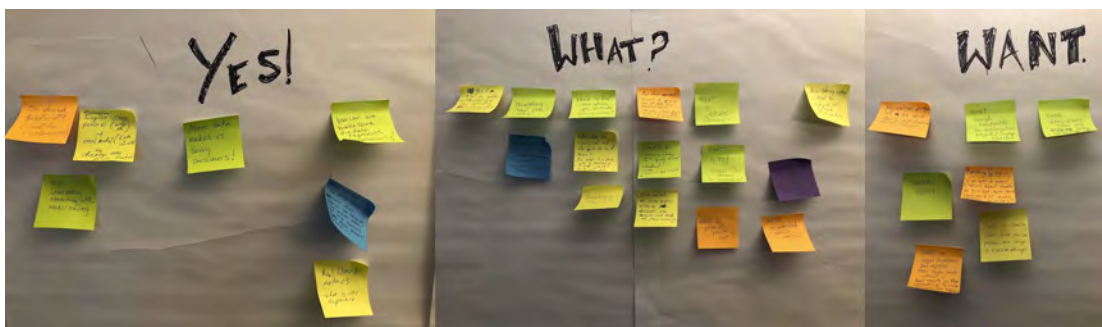
**Table 1. Year 1 Public Library Participants**

Library Name	Library Location	IMLS Locale*
Bennington Free Library	Bennington, Vermont	Town, Distant
E.P. Forester Library	Ventura, California	Suburb, Large
Hendrick Hudson Free Library	Montrose, New York	Suburb, Large
Hollis Public Library	Hollis, Alaska	Rural, Remote
Thomas J. Harrison Pryor Public Library	Pryor, Oklahoma	Town, Distant
Regency Park Library	New Port Richey, Florida	Suburb, Large
Twin Falls Public Library	Twin Falls, Idaho	Town, Remote
Rondo Public Library	St. Paul, Minnesota	City, Large
St. John's Library	Portland, Oregon	City, Midsize
Truro Public Library	Truro, Massachusetts	Town, Distant

\* Source: "IMLS Locale" data from 2016 Public Library Survey Data available here: <https://www.imls.gov/research-evaluation/data-collection/public-libraries-survey/explore-pls-data/pls-data>

For the workshop, our research team had the opportunity to work with Laurenellen McCann, a social practice artist and organizer, and the founding trainer of *Build With*, a facilitation practice focused on participatory design, community technology, and institutional culture change (<https://www.buildwith.org/work>). We were incredibly fortunate to have Laurenellen's expertise in workshop facilitation, participatory design, and community technology for our session. In the lead-up to the workshop, our research team worked closely with Laurenellen to co-design the workshop activities, which we hoped would help us to receive feedback from the participants and begin to build a community among our year 1 public libraries. Along with inviting library services and IT staff from the 10 libraries in our first year, we also extended an invitation to a small group of professionals with expertise in public libraries, networked information systems, and broadband measurement. Representatives from 9 of the 10 libraries in our year 1 cohort were able to attend and we had a total of 30 participants, including members of our research team, involved in the day-long participatory design workshop.

This paper reports findings from our analysis of the transcripts from the following four workshop sessions: "Why Measure Broadband in Public Libraries?", "A Day in the Life", "Time Travel, Part 1", and "Time Travel, Part 2" (see Appendix I for full agenda). "Why Measure Broadband in Public Libraries?" was arranged as a fishbowl-style format inviting participants representing rural, suburban, and urban libraries to share their collective wisdom and insights into why libraries might measure broadband, as well as the community goals that might be achieved by having access to better broadband measurement. "A Day in the Life" was designed to engage every participant in the room to reflect on the patterns in their daily library and IT workflows and to dig more into the details on where technology and social needs in these contexts collide. This activity asked participants to reflect on their own before joining in small groups to share their reflections with each other and discuss the commonalities and differences between their responses. During the design sessions, participants were asked to write down their thoughts on sticky notes, post them on the walls, perform gallery walks to reflect on what others' had written, and then come together at the end for shared reflection and discussion. Throughout the entire day, participants were encouraged in similar ways to write down their thoughts in response to what resonated with them ("Yes!"), what they had questions about ("What?"), and things that they knew they wanted ("Want.") for their public libraries and for their communities as an outcome of the broadband measurement research project (See Figure 1).



**Figure 1: "Yes! What? Want" Collaborative Note-Taking Activity**

During the two afternoon sessions, "Time Travel Parts 1 & 2" our workshop participants formed teams and began a journey into an abundant future for their communities. Our workshop facilitator, Laurenellen asked the groups to respond to the following questions: "What does the world look like if everything we wanted to bring to fruition within our communities were possible? What if we could offer every service we've always wanted to offer, play every role our communities wanted us to play?" The teams documented the futures they made possible through this visioning activity and then reflected on each other's visions. During the second part, small groups worked to expand their ideals into more realistic terms,

mapping what they needed in order to get to that abundant future in concrete, but still in visionary terms. At the end of the session, teams pitched their concepts to the group and received feedback on post-it notes.

To maintain and encourage a space of expansive, visionary play, rather than completely ignore the intersecting systemic oppressions, resource inequities, and other structural barriers to library communities' well-being and success, participants were encouraged to note where these barriers appeared in their dreaming, name them, and then put them aside as they envisioned what would happen if and when the specific barrier was removed and deconstructed. In this way, we were able to invite futuristic dreaming connected to the present, tracking and acknowledging the many structural, institutional, and interpersonal barriers that currently inhibit library and community well-being, as well as depicting life beyond them without erasing their very real impacts on people and place in the present. In addition to creating a platform for future-facing possibilities, this method also distilled actions the participants could take in the present, both in their home library systems and working through cross-field solidarity, to deconstruct these blockages. For example, participating in municipal transit system design, identifying racist zoning policies and after school programs that advantage or disadvantage children based on their race, combatting monopoly behaviour from telecom providers, etc. By placing barriers to success in a future context, we not only paint a richer future image from which we can understand library goals and broadband needs and desires over time, we can better see what these dreams difficult to achieve today. Appendix II includes photos of the results of the four group's visioning work, highlighting what they believed an abundant future looks like in their communities with their public libraries at the centre.

#### **Power-aware design**

The structure of the workshop, and the emphasis on dreaming, was informed by *Build With's* practice of *power-aware design*. Power-aware design is a method of participatory craft that proactively considers and plans to disrupt and engage with systemic, historic, and interpersonal power dynamics in order to create participatory environments that shift power, are accountable to anti-oppression practices, and that encourage free expression and learning. Where some methods of design strive to only include participants, power-aware design asks what systems and dynamics excludes participation, especially from those most impacted, and establishes design protocols to respond.

For our workshop, in order to enter into a space of open sharing, design, and inquiry, we held a number of challenges based on participant differences and similarities. Our participants came from different regions and climates (notably spanning a variety of rural, urban, and suburban areas), and we intentionally gathered together folks from IT backgrounds alongside folks who focus on communal programming and service provision. This, on its own, could create a variety of inequitable power dynamics in design, from urban elitism crowding out or diminishing participants with rural knowledge, to the tech-centrism of the design questions and discussion intimidating or excluding participants who focus on direct community service. However, these dynamics get even more complex when we consider participant identities: the vast majority of our participants were white; we had a roughly even split of women and men; most folks were in their middle age; and there were many different class and educational backgrounds present for our work. The dynamics of these and other intersecting identities outline additional potential barriers to participation, ranging from the potential for white men to interrupt other participants and dominate conversation whether or not they have expertise in the topic, to white women erasing the experiences and knowledge of women of color and perhaps even the communities of colour they serve, to leaving the burden of talking about or acknowledging the impacts of race on participants of colour, and so on. Understanding the many ways in social patterns lead to silencing or overburdening some participants and otherwise impact or disinherit participants' ability and desire to speak freely and/or contribute, we set out to construct a design space that actively engaged with power and reset



some of the rules, while respecting that each participant would still operate at their own speed of trust.

To do this, we structured the workshop to move through a sequence that started from the individual and slowly moved out to one's workplace, community present, and then community future. This progression, and our maintained focus on social and communal outcomes even during technical discussion, was designed to give participants the chance to test the space, risk discomfort while still having access to comfort zones, and contribute to the activities in ways that may better match the ways in which they felt more comfortable participating. Throughout this progression, we wove in exercises for introspection and group collaboration that made space for extroverts and introverts alike and allowed for tactile processing and sharing alongside written and auditory processing and sharing. By catering to the many ways in which people play and process (rather than defaulting to workshop norms of auditory processing), we invite deeper participation possibilities for a wider range of people and increase the chance of risk-taking in communication and problem-identification. These exercises coupled with the workshop progression supported sharing across expertise, inviting participants focused on social programming to contribute to technical discussions and participants focused on IT to share in visioning the future of broadband-enabled community-centred library services.

The purpose of these four workshop sessions was to introduce our broadband measurement system to the year 1 library participants, while working together to understand the potential community benefits of the technology, rather than focusing solely on the technology itself, from the perspective of the workshop participants. The participatory design workshop facilitated by Laurenellen provided us with the space and collaborative techniques that our research team needed to understand these goals and to ensure that the measurement system could be responsive to these future-looking ambitions.

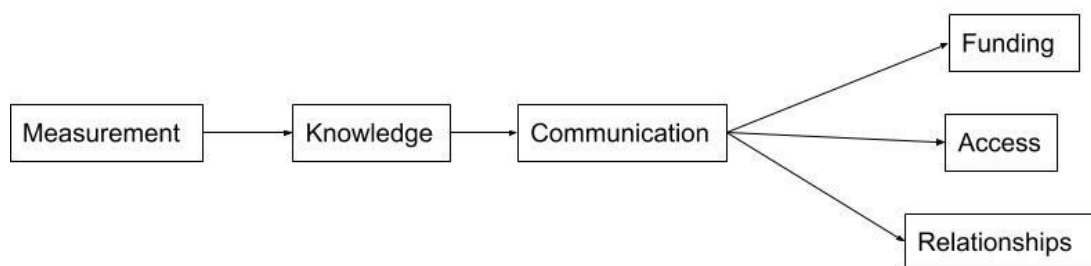
### **Data Analysis**

The discussion and feedback in the four workshop sessions mentioned in the previous section were recorded, transcribed, and analysed by this paper's first three authors using qualitative analysis software. For the analysis of the transcriptions, the paper's second and third authors used "process coding," which Saldaña (2016) described as an inductive coding strategy useful for understanding the "routines and rituals of human life" (p. 111). Process codes utilize gerunds, or "-ing" words, to show action taking place in the interview or focus group transcriptions. While coding the workshop transcriptions, the researchers determined the four workshop sessions described above were the priority as they directly address the experiences, expectations, and beliefs of the participants. "Routines and rituals" were exemplified particularly in the "A Day in the Life" workshop sessions, as well as the other three, which is why this particular method of coding was chosen.

During and after the first cycle coding, the second and third authors of this paper developed several memos to reflect on their codes and collaborate with each other, which also helped to understand where and how the codes connected. The researchers compared codes through the process of review which allowed them to both refine their analysis and reflect on their own process for interpretation as part of the analysis. After the first level coding was completed, the researchers began to develop potential threads by pulling together codes with similarities and greater frequency than other codes in a single document. The patterns that emerged in the document of collected codes and threads helped the researchers answer the overarching research question. The patterns recorded in our findings reflect the collaborative nature of how we understand public libraries' network needs, as well as how they understand themselves and their work in communities. They may also help shape a narrative around broadband networks and measurement in public libraries that empowers and encourages librarians to move forward with their needs in such a way that they can construct the systems that best serve them. The first three authors of this paper worked together to develop the final threads that are presented below.

## Findings

The workshop participants described the need for broadband measurement at their public libraries, in what we describe in this section, as part of a multi-step process. This logic, outlined below, follows the overarching motivation of public libraries: access for all. During the workshop, participants expressed this focus on access repeatedly and identified two related limitations of access related to broadband connectivity in their libraries: 1) unreliable broadband; and 2) a general lack of knowledge, understanding, and comfort with broadband internet as a public service provided by libraries, including its usage and limitations inside the library. These two limitations go hand in hand as a lack of knowledge limits librarians' understanding of whether broadband is the issue when there are connectivity challenges. It also limits their ability to advocate and negotiate for better broadband service when needed. These observations of limitations with regards to broadband access in public libraries frames our attempt to show the multi-step reasoning for measurement as articulated by our workshop participants. Our findings follow a similar angle of questioning and conversation that aligns with how the participatory modules of our workshop were actually ordered and designed. The multi-step reasoning for measuring broadband is represented in the following Figure 2 below:



**Figure 2: Why Measure Broadband in Public Libraries?**

The remainder of this section breaks down each of these steps as separate key themes that emerged from the workshop. While the steps presented in Figure 2 overlap somewhat in their sequence, the themes represent major findings from our analysis.

### Measurement

During the workshop participants articulated the value of having data about the performance of their broadband networks. One of the key points made during the “Why Measure Broadband in Public Libraries?” and “A Day in the Life” workshop sessions is that public library staff currently do not have access to consistent, reliable data about the broadband speeds and quality of service of their broadband internet connections. The library services participants mentioned ongoing technical issues that occur in their daily work but often cannot point to the direct cause of the issues. For example, library staff explained that when their library’s internet is slow or inefficient, they often have difficulty identifying whether their broadband connection was the problem or whether it was something else, such as older public computers. Some participants noted that they did have a sense that when the network slowed down it was due to the fact that many patrons were using the network at the same time. This was also more evident when patrons used the network for high-bandwidth purposes, including when children play Roblox, a popular online game in many public libraries. But when the network slows down, several of our workshop participants explained that it is often difficult for them to identify whether it is the network, the public computers, or something else entirely causing the problem. As one participant during our “Why Measure Broadband in Public Libraries?” workshop shared:

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*My ignorance of all this is profound, and I know that I would provide better service and be a better librarian to the community if I had more knowledge, more in-depth, technical knowledge of how it all works. [...] I hate that feeling of when the patron comes up to me and says, "I can't get on," and I say, "Well, try it again" because I can't really—I don't really know of anything else to say.*

This lack of knowledge limits both the explanations they can give to patrons as well as the solutions they might put in place to solve the problem.

The participants identified the disjunction between knowing the problem and knowing its source as a central issue. As library staff, they are accustomed to answering questions and seeking out the knowledge to answer those questions as part of a central function of their role in the library. As such, they can't adequately provide answers to questions such as "Why is the internet so slow?" and they take that gap in knowledge very seriously. Patrons want to know why something is happening and librarians want to be able to answer that, whether it's through knowledge they themselves have or knowledge that they know how to find. Our workshop participants expressed this knowledge as being essential in the provision of accurate information for patrons coming to the public library.

### Knowledge

Access to broadband measurement data can lead to greater knowledge about the information systems used by public librarians. In the transcripts and during first level process coding, the second and third authors identified a recurring code pattern of "wanting to know" or "wanting to understand" in the conversations participants were having and experiences they were sharing with the group. Knowledge and understanding for library staff is a fundamental part of the work they seek to achieve and the services they aim to provide. That is, they seek to provide knowledge for others which relies on their ability to inform. To inform, they rely on their own ability to know and understand something in order to share accurate information that patrons can use and build on. Our workshop participants identified a gap in this knowledge and understanding about their broadband networks, including the speeds at which they run, as well as what hinders or helps their functioning. As such, our workshop participants expressed the desire to fill that gap in order to better serve their patrons.

Workshop participants also expressed their need for more knowledge and understanding about broadband in order to increase their confidence about broadband and ultimately to be more effective in their jobs. Library staff may either have data or anecdotal information about the issues patrons regularly experience using their library's internet connectivity. But in order to be able to clearly identify the main sources of any given issue, they want to be more confident in their ability to do so. Participants acknowledged the need for accurate data on their broadband networks, but also the need to develop more knowledge, understanding, and confidence in using the data. As one of our participants stated:

*[O]nce a year we have to put in a report to the state[...] that includes things like the internet usage[...] the usage you use and really writing down on a piece of paper using hash marks is really hard to maintain an accurate count. We have no idea whether we're using all their broadband or a fraction of it or whether we're going to run out[...]*

The example above helps to show not only state level interest in broadband measurement data but also the difficulty that library staff have in collecting and understanding what exactly is being represented by the data. In other words, our library and IT staff participants identified multiple ways in which they often lack both the information and the confidence to effectively work with data about their public libraries' broadband networks.

The nature of libraries as an area of regular instruction and learning relies on information professionals who have enough ground to stand on that they are not blown off course or

overwhelmed by an issue for which they have no reference. If library staff are confused, it takes the focus away from instructing the public while they work to understand it themselves. In this way, the library staff's knowledge and understanding surrounding broadband measurement hinges on the need to communicate better, not only to patrons, but to their colleagues and to other institutions as well as to people funding their institution.

### **Communication**

The desire for better communication was a very strong theme that emerged across several workshop activities--an idea deeply tied with the desire for increased knowledge. Variations on phrases such as "proving success," "justifying expenses," "framing value," "sharing stories," "communicating importance," and "communicating need" were found across our workshop transcripts. These phrases underpin our broad definition of communication, which follows knowledge as informed by measurement, and leads to multiple desired outcomes. We identified communication in this context as having three key inflections: 1) communication as explanation, 2) communication as justification, and 3) communication as leverage.

Hand in hand with the desire of library staff to have more robust knowledge of their broadband networks is their desire to be able to better communicate with, i.e., explain to, patrons and other stakeholders, especially regarding issues surrounding public access technology in the library. During the workshop, library staff - especially public services staff - emphasized their discomfort in not being able to adequately answer or address patron's questions regarding the speed of the internet. Communication as explanation encompasses this desire to provide patrons with accurate information regarding broadband services. Communication as justification is chiefly the ability to articulate evidence and knowledge in a compelling way to make a case for something. In the framework of measuring broadband, the evidence and knowledge will be data provided by our measurement system, along with the confidence that will come from library workers' understanding of the data. Communication as leverage is appealing to funders and other powerful stakeholders by communicating with data. Justifying the need for more funding was frequently and explicitly mentioned in the transcripts as the following example illuminates:

*[Measuring broadband is] important because I need to justify the expense, so I need to know what we're getting, make sure that we are getting what we paid for and to be able to tell my funding institution that this is what we have, this is how we're using it, this is how it's benefitting our community. So I need to know for sure with good, solid measurement, and then I sound really intelligent to my council....*

This passage shows that knowledge clearly precedes communication, which in this case is the process of demonstrating to the "funding institution" the value of broadband and thus providing the leverage needed to argue for it. The justification of needs relies on "sound[ing] intelligent," which is knowledge based communication that is dependent on "good, solid measurement."

### **Funding, Access, and Relationships**

During the afternoon sessions at our workshop, participants shared some of what they saw as possible outcomes of having solid, consistent broadband measurement, increased knowledge of internet service quality, and better communication regarding technology in public libraries. Participants had an opportunity to imagine their "library of the future" in the first afternoon PD workshop activity, "Time Travel Part I" (see Appendix I). At the start of this session, participants were given the following prompt, written by our workshop facilitator Laurenellen McCann:

*The year is 2029. Your library and your communities have not only survived, things are going exceptionally well. You're serving the public in a way that you've already*

*dreamed of. What does that dream look like? What if there were no resource constraints, if barriers of all sorts were removed, and everything went perfectly? Imagine an abundant - even unrealistic future - what could happen.*

This visionary exercise, while intentionally idealistic, provided a strong sense of what our participants saw as the pillars of service offered when broadband quality and service is present. In this fantasy, participants have unlimited access to resources (which assumes robust funding) as well as stronger communities and collaborative relationships. These points were not just far-reaching dreams, but viewed by our workshop participants as potential outcomes of having access to consistent broadband measurement data and the increased knowledge and ability to better communicate about the data at their libraries. In other words, the outcomes of this multi-step process were the tools that our participants described as having the potential to: secure funding for robust broadband connectivity; increase access to internet services; and build and maintain the important relationships that promote digital equity.

Funding emerged as a thread across all session transcripts. Informed appeals for better funding leads to better results. Phrases such “framing” or “showing” value, “representing efforts,” and like shown above, “justifying” expenses comes up repeatedly. Measurement, knowledge, and communication are the buoys by which funding appeals can happen. Relatedly, access is fundamental to the purpose of public libraries, and measurement is in service of that purpose. Increased access relies on quality, consistent internet connection. In the visionary “Time Travel, Part 1” PD workshop there was a lot of language around “adapting” and flexibility; “perfecting security,” and being “always open.” These dreams are all tied into increasing access for all, which is dependent on having a quality internet connection.

Lastly, the same participants in that session repeatedly emphasized the overwhelming desire for better community, civic, and library relationships that underpin this access. These relationships are not simply external - they include improving interaction between the public services, IT, and reference staff within a library. External goals include improving inter-library networks and communication to leverage digital services. Lastly, our workshop participants expressed the desire to increase their library’s reputation as a community centre or “hub,” by which access to the internet is a fundamental part.

## Discussion

The findings presented above helped our research team not only to understand the need for broadband measurement in public libraries, but also showed us the value in using participatory design in community informatics projects with public libraries. Our findings support those found in previous studies that show the value of participatory design for improving “understanding between groups of users” (Meunier & Eigenbrodt, 2014, p. 225) and viewing public librarians as “design partners” (Subramaniam, 2016, p. 12), which can help shift power dynamics between various groups, each with a stake in public library internet access. In our case, we found that participatory design techniques, led by our facilitator Laurenellen McCann, helped our workshop participants to articulate the potential outcomes of having access to broadband measurement data. These were articulated as increased funding, greater access to information, and strengthened relationships between individuals both internal and external to a public library. By using participatory design in our workshop, we also hope that our participants might consider using similar co-design methods back home in their own communities to involve library patrons as “co-creators of knowledge” (Miettinen, 2018) about the spaces and services found in public libraries.

At the same time, the use of power-aware in our participatory methodology design helped to identify some of the tensions that existed during the workshop. For example, there were certainly challenges in our attempt to bring together IT professionals alongside those who focused more on communal programming and service provision. For example, even though our intention was to include participatory design activities that allowed everyone to share

their everyday experiences both with and alongside technology systems in their public libraries, several of our participants, particularly the white, male IT network administrators still tended to dominate these conversations pushing the discussions more to the technical, rather than social concerns. The use of power-aware design provided a framework to mitigate these challenges. More specifically, Laurenellen McCann's excellent ground rules document (see Appendix III) included the "WAIT" framework ("Why Am I Talking?" / "Why Aren't I Talking?"), which hung on the wall in front of the room to serve as a useful reminder throughout the day that everyone's knowledge and expertise mattered.

The use of participatory design to develop a broadband measurement system with public libraries in our study also connects to earlier research on the value not only of user-centred design in enabling more informed technology users, but more so in its attempt to address "the thornier issues of control in the workplace" (Greenbaum, 1993, p. 31). Whereas the Scandinavian approach to participatory design focused on promoting workplace democracy, our project is perhaps similarly concerned with enabling front line library workers, as well as their managers, and their IT staff, with the information they need about their broadband networks to be able to better support the mission of their organizations. While our project may not provide workers with better leverage in negotiating contracts with their employers, it most certainly may enable them with the information they need to advocate for better broadband connectivity. As our findings show, participants saw the need for broadband measurement as a strategy to gain better knowledge and understanding about their broadband networks, which our participants stated could help them to better communicate with their patrons, respond to their communities' digital needs, and justify the importance of robust internet connectivity to their funders and other key stakeholders. In other words, our work supports the Scandinavian model in making sure that library workers have more ownership and control of the information they need about technology in their workplace, which can help them in supporting the library's mission--to provide equitable information access for all.

## Conclusion

In this paper, we presented findings from a participatory design workshop with public library workers, managers, and IT professionals to gain their insights into the co-design of an open source broadband measurement system for public libraries across the U.S. Our findings revealed a multi-step process that our participants articulated as being part of the value of having access to measurement data about their libraries' broadband networks. Participants also described multiple ways in which communication could benefit those with a stake in their libraries' public library internet access. We described these benefits as outcomes of the following: communication as explanation; communication as justification; and communication as leverage. The workshop participants described several possible outcomes of having increased knowledge and understanding of such data, which included more funding for broadband, greater information access, and stronger relationships.

The findings in our paper support those found in previous studies that include similar benefits of using participatory design in public library projects, particularly in offering opportunities for public libraries to invite members of their communities to co-create knowledge about the role and value of public libraries in today's society. We believe the findings in our paper make a contribution to the community informatics literature on public library co-design projects and offer concrete techniques and strategies that can be used to increase knowledge and understanding of technology systems in public libraries, as well as to create more confidence and power among public library workers to support the core values of librarianship, particularly their role in providing equitable information access for all.

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17th CIRN Conference, Monash Centre, Prato Italy, 6 Nov - Friday, 8 Nov 2019

Refereed Paper

Valdivia, C., and M. Subramaniam. (2014). "Connected learning in the public library: An evaluative framework for developing virtual learning spaces for youth." Public Library Quarterly 33(2): 163–185.

Appendix I. Workshop Agenda

# Measuring Library Broadband Networks: Participatory Design Workshop

## Workshop Agenda

October 24, 2018

Conference Chicago at University Center

525 South State Street Chicago, Illinois 60605

Arrive by 8:30 for breakfast and to go over important documentation for the day's research and collaboration.

**9:00a**            **Welcome and Context**

We start the day by establishing ourselves in space. We'll ground ourselves in the history and present of our work together, review our goals for the day, set some ground rules, and get to know each other through a network mapping exercise.

**9:50a**            **Break**

Grab coffee/tea, stretch your legs, use the bathroom, whatever you need.

**10:00a**           **Why Measure Broadband in Public Libraries?**

Drawing from our collective brilliance and experience, we'll examine the case for measuring broadband in public libraries in rural, suburban, and urban settings through a fish-bowl style panel of participants in the room.

**11:00a**           **A Day in the Life**

We'll explore patterns in our workflows and community service, and dig into more detail on where technology and social needs in our respective contexts collide, through a generative exercise.

**12:00p**           **Connecting Data and Community**

Georgia and Chris from the Open Technology Institute will give a quick overview of how collecting data on broadband measurement supports our community-facing work.

- 12:30p**      **Lunch!**  
Eat, collect and post your notes, check out Georgia and Chris's demo stations, jog in place, etc.
- 1:30p**      **Time Travel, Part 1**  
We'll form teams, and then begin a journey into an abundant future. What does the world look like if everything we wanted to bring to fruition within our communities were possible? What if we could offer every service we've always wanted to offer, play every role our communities wanted us to play? Team will document the futures they makes possible, and reflect on each other's visions. making a project parallel to the personal map we made earlier
- 2:50p**      **Break**  
Get snacks, explore the worlds your colleagues create, walk outside, check email
- 3:00p**      **Time Travel, Part 2**  
Small groups work to expand their ideals into more realistic terms, mapping what we need to get to that abundant future in concrete, but still visionary terms. At the end of the session, teams will pitch their concepts to the group and receive feedback on post-it notes.
- 4:30p**      **Final Reflections**  
We'll gather as a group and reflect on the explorations of the past, present, and future of our work that we accomplished together, and mark commitments for what happens next.
- 5:00p**      **Wrap!**
- 6:00p**      **Dinner**  
We'll be gathering from 6 to 9:30 at [The Dawson](#), 730 West Grand Avenue



Appendix II. Outcomes of Visioning Work

# BUT THAT WILL NEVER WORK!

- if there are truly no barriers + resource constraints, there are no libraries + no institutions

## ABUNDANT FUTURE:

- UNLIMITED CITY BUDGET
  - PLENTY OF CUSTODIANS  
ENGINEERS  
BUILDERS
  - ALWAYS SAFE + NO JUDGEMENT
  - FACILITATES COMMUNITY CONVERSATIONS
  - COFFEE MACHINE
  - BOOK DELIVERY @ HOME
  - WE BUILD ON TRUST
  - ~~WHA~~ EVERYONE HAS A CONNECTED DEVICE/CHIP - NO PASSWORDS  
NO SECURITY RISKS
  - PRIVACY IS TOTALLY PROTECTED
  - UNIVERSAL LITERACY / UNIVERSAL TRANSLATOR
  - KITCHENS / ART STUDIOS / GARDEN / MAKER / COMPOSTING / SUSTAINABILITY
  - 24/7 HOURS / 365
  - FLEXIBLE SPACE
  - individual, small group, large group spaces
  - loud + quiet spaces
  - LENDING LIBRARY OF EVERYTHING
  - PERSONAL PATHWAYS | PEOPLE'S UNIVERSITY
  - SLEEPING, EATING, BATHING, OK LAUNDRY
  - DO YOU LIVE IN THE LIBRARY?
  - ALL LIBRARIES ARE CONNECTED - EVERYWHERE
  - YOU ALWAYS TALK TO A HUMAN
- RULES BROKEN:  
CORPORATIONS  
CLIMATE CHANGE  
PATIENCE

# FUTURE LIBRARY IS 'A PLACE OF DISCOVERY' [The Community Social Center]

- A place you want to go not have to go
- Able to provide X to anyone
- 100% literacy
- Seamless Community Partnership
- Have Virtual AI experience / Matrix Style
- Appeal to EVERYONES interest
- Available 24/7
- 100% Accessibility
- ADAPT to Social & Tech changes

## Rules to Break

- Physics & MATH as we know it!

## But it will never work

- Budgets
- Time
- HUMAN BEHAVIOR
- 100% Literacy Rate

## This Future Looks Like:

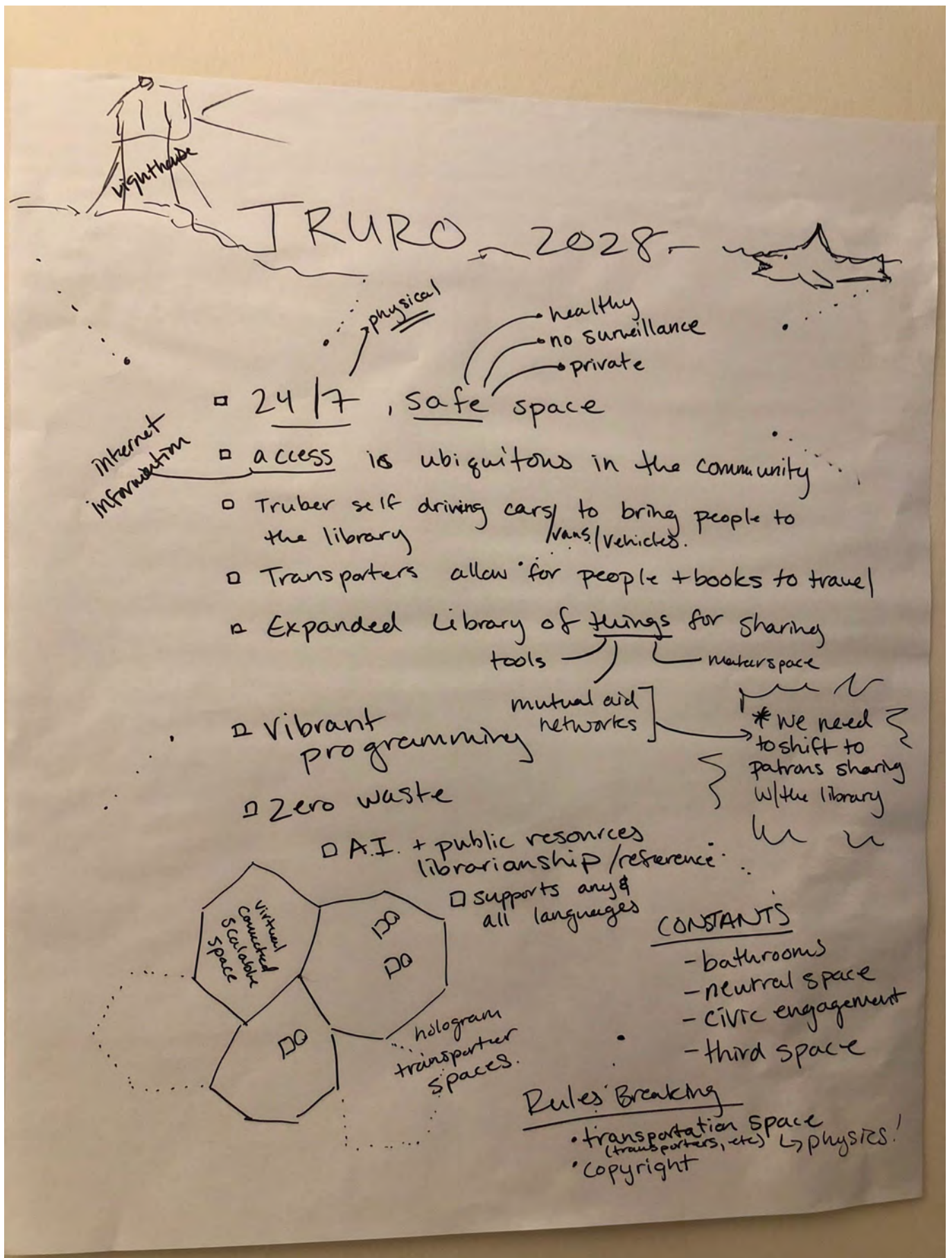
- Green building, carbon neutral, earthquake & tornado proof
- Funding isn't tied to tax base or pedantic funding bureaucracies
- Libraries are community centers for all services
- We are a flexible community space for sharing resources
- Libraries collect data, protect it, and provide access.
- We have stronger collaborations across all library institutions
- We build & support our own technology systems
- Our virtual spaces are as engaging as our physical spaces

## But it won't work because...

- "We've always done it this way..."
- DRM, vendor lock-in
- Administrative/bureaucratic challenges are massive barriers to institutional collaborations & resource sharing.
- ... because Capitalism

## Rules/Things that can make it happen:

- We need an open-source model that allows immediate buy-in from individual libraries that still allows for local control & distributed architectures



Appendix III. Workshop "Ground Rules"

# GROUND RULES

- x Assume good intentions, ACT IMPACT AWARE
- x "I" statements / we only speak for <sup>experiences</sup> groups <sup>we're</sup> part of
- x Free 2 pee
- x PLAYFULNESS in INQUIRY
- x BE PRESENT
- x WAIT - WHY AM I TALKING. >  
- WHY AREN'T I TALKING. >



# SMART CITIES AND PARTICIPATORY PLANNING: A CAUTIONARY COMPARISON

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**Abstract:** This paper critically explores the humanitarian promises of both smart cities and participatory planning in their various iterations, seeking to clarify a way forward for urban planning that incorporates technology in service of alleviating – rather than exacerbating – existing societal inequities. To do so, the paper will first outline a brief history of smart cities and describe the wide array of definitions that have been applied to them, then discuss points of concern regarding the past and future consequences of a smart city approach to urban planning. The paper will then propose participatory planning as a tentatively more equitable alternative to smart cities, highlighting case studies in the approach that have succeeded in centering and empowering community residents. However, in order to caution against the very real possibility of the participatory planning approach functioning in similarly exploitative ways as the smart city approach, the paper will also present participatory planning projects that have fallen short of centering and/or empowering community residents. The paper will conclude by suggesting the foundations of an urban planning framework that avoids the pitfalls of the smart city approach while maintaining the most promising aspects of the participatory planning approach.

**Keywords:** Smart cities, Urban planning, Infrastructure

## Introduction

In the past decade, two distinct approaches to urban planning have grown in influence alongside one another: the *smart city* approach, and the *participatory planning* approach. Broadly speaking, the smart city approach relies on public-private partnerships to build – sometimes from the ground-up – urban areas which use the data collection of residents' everyday actions to drive algorithmic infrastructure processes and decisions. Also broadly speaking, the participatory planning approach integrates information and communication technologies (ICTs) into various aspects of urban life with the goal of empowering community residents (as cited in Staffans & Horelli, 2014) to collectively determine the operations and development of the places and spaces they inhabit (Gurstein, 2014). While each of these working definitions are actively contested and operationalized in a wide variety of ways, common to all interpretations of both approaches is a promise of bettering the daily lives of city residents on individual and communal levels.

This paper critically explores the humanitarian promises of the smart city and participatory planning approaches in their various iterations, seeking to clarify a way forward for urban planning that incorporates technology in service of alleviating – rather than exacerbating – existing societal inequities. To do so, the paper will first outline a brief history of smart cities and describe the array of definitions that have been applied to them, then discuss points of concern regarding the past and future consequences of a smart city approach to urban planning. The paper will then propose participatory planning as a tentatively more equitable alternative to smart cities, highlighting case studies in the approach that have succeeded in centering and empowering community residents. However, in order to caution against the very real possibility of the participatory planning approach functioning in similarly exploitative ways as the smart city approach, the paper will also present participatory planning projects that have fallen short of centering and/or empowering community residents. The paper will conclude by suggesting the foundations of an urban planning framework that avoids the pitfalls of the smart city approach while maintaining the most promising aspects of the participatory planning approach.

## Smart cities

### History and definitions

Incorporating ICTs into urban planning has a long history, beginning with the “wiring” of cities during the spread of cable television and telecommunications-driven public services (Viitanen & Kingston, 2014). One of the key markers in this trajectory was the “smart growth” strategy of the 1980s’ New Urbanism movement, which encouraged the use of ICT-based architecture and industry to address the economic, spatial, social, and ecological issues present in modern cities (Söderström, Paasche, & Klauser, 2014; Hollands, 2008). The conceptualization of a city run on fully networked infrastructure driven by resident data, however, did not develop until the mid-1990s when the late architect William Mitchell founded the Smart Cities research group at the MIT Media Lab (Allwinkle & Cruikshank, 2011; Sadoway & Shekar, 2014). During this period, a number of cities labeled themselves as “smart” simply for implementing ICT infrastructure, developing mechanisms of e-governance, or attracting high-tech industries to foster economic growth. Three cities, however – Adelaide, Australia, and Cyberjaya and Putrajaya, Malaysia – were either planned or re-planned as autonomous urban areas running entirely on optimized automation and machine learning (Söderström, Paasche, & Klauser, 2014).

About a decade later, the smart city approach experienced a renaissance of sorts as private IT companies increased their interventions in the public sector amidst the 2008 financial crisis. At the head of this tech sector intervention was IBM, whose then-CEO Sam Palmisano gained significant media traction by arguing that the world’s cities must invest in technological infrastructure in order to gain economic efficiency and resilience. Three years later in October 2011, IBM registered the term “smarter cities” as a trademark, though that action did little to prevent other commercial players – such as General Electric, Cisco Systems, Hitachi, and Siemens – from influencing smart city approaches to urban governance (Söderström, Paasche, & Klauser, 2014). And influence they have: a 2014 report commissioned by the European Parliament shows that 240 – over half – of EU cities with over 100,000 residents have implemented or are planning to implement varying degrees of smart city infrastructure, including open data portals, e-commerce, networked transportation, and ICT-enabled energy grids (Millard, 2014). Other international examples of urban areas incorporating smart city technologies into their operations include San Diego, United States (a “City of the Future”); Toronto, Canada (in partnership with Google’s sister company Sidewalk Labs); Singapore (under its IT2000 plan to create an “intelligent island”); Bangalore, India (self-proclaimed as the country’s own Silicon Valley); and Brisbane, Australia (focusing on tech-driven environmental sustainability), to name a few (Hollands, 2008; Scola, 2018).

The number of cities describing themselves as smart is almost as large as the number of definitions for the smart city. Hollands (2008) contends that a city’s “smartness” must be based on something more than its incorporation of ICTs into urban planning processes, for such incorporation has been standard practice in cities for nearly four decades now. Yet, an adequate definition of the smart city phenomenon cannot exist solely in negative terms. Hollands continues on to argue that the key element of a smart city is its use of digitally networked urban infrastructure – including transportation, housing, public services, and business services – as a means to enable socioeconomic development and environmental sustainability. Similarly, Komnino’s (2008) oft-cited definition of the smart city focuses on the embedding of ICTs in urban areas in order to transform life and work to facilitate the bringing together of residents for purposes of “innovation” and “problem-solving” (as cited in Allwinkle & Cruikshank, 2011). Another definition formulated by Harrison et al (2010) proposes three pillars of the smart city: *instrumentation*, enabling the collection of resident-generated live data through a variety of inconspicuous electronic devices; *interconnection*, meaning the integration of those data into computing platforms across city services; and *intelligence*, referring to the analysis and optimization of these data in order to inform urban

operational decisions (as cited in Chourabi et al, 2012). Washburn et al (2010) and Dirks and Keeling (2009) put forth narrower definitions, understanding the smart city respectively as a collection of computing technologies applied to critical urban infrastructure, and as the organic integration of digital systems across urban sectors (as cited in Chourabi et al, 2012). Finally, offering definitions that are shorter, vaguer, and not necessarily dependent on the technological networking of urban areas, the Natural Resource Defense Council (n.d.) and Toppetta (2010) contend that smart cities are those which improve the efficiency, sustainability, equitability, and livability of urban settings (as cited in Chourabi et al, 2012).

It is this paper's contention – in line with the work of Greenfield (2013); Gurstein (2014); Hollands (2008); Sadoway & Shekar (2014); Söderström, Paasche, & Klausner (2014); Staffans & Horelli (2014); and Vanolo (2014) – that embedded in this multiplicity of smart city definitions is a set of common assumptions about the nature of the problems that modern cities face (Hollands, 2008). Further, this paper contends that these assumptions primarily serve not the residents of cities, but the “limited political agenda of high-tech urban entrepreneurialism” (Sadoway & Shekar, 2014). In other words, while the ontological specificities of smart cities vary between definitions, these definitions all share a promise of neoliberal “solutions” to deep-seated systemic inequities that offer the most rewards – in the form of influence and profit – for the IT companies at the helm of smart city initiatives. This framework of tech-driven neoliberal urban planning can have profound consequences for city residents and the inequities under which they already live.

### **Concerns: The exacerbation of existing inequities**

Integral to the rhetoric and mobilization of smart cities is an assertion that alleviating the poverty, polarization, and ecological crises that the residents of modern cities face is simply a matter of perfecting urban design and management (Gibbs, Krueger, & MacLeod, 2013). This type of “silver bullet” strategy towards addressing societal inequities is common amongst the self-proclaimed philanthropists of the tech industry's upper echelon.

For example, in July 2018 Elon Musk – co-founder and CEO of SpaceX, Tesla, and Neuralink – tweeted his “commitment that [he] will fund fixing the water in any house in Flint that has water contamination above FDA levels” (Barrett, 2018). Musk, of course, was referring to the water crisis that the residents of Flint, Michigan have been experiencing since 2014 when insufficient water treatment led to the leaching of lead from water pipes into the drinking water, exposing over 100,000 residents of the 57-percent Black population to toxic lead levels (Flint water crisis, n.d.). With a net worth of \$20.8 billion (Elon Musk, n.d.), Musk could easily provide the city of Flint with the estimated \$55 million it will need to replace all of its old lead water pipes (Milman, 2018). However, even this hypothetical charitable action would not address the much more deeply rooted economic consequences of racism, which many (The Editorial Board, 2016; Egan, 2017; Merchant, 2017) contend led to the federal and state governments' decision to change Flint's water source from Lake Huron and the Detroit River to the cheaper Flint River (Flint water crisis, n.d.).

Musk's approach to the Flint water crisis is but one of innumerable cases where – in the neoliberal era, spearheaded politically in the early 1980s by U.S. President Ronald Reagan and UK Prime Minister Margaret Thatcher – services that have historically been public through federal government funding (such as access to clean water) are becoming increasingly privatized, and issues that require systemic solutions are taken up by for-profit interests. One key aspect of this privatization that pervades smart city discourse is the deregulation of corporations that purport to tackle social problems and improve ordinary people's lives, with talk of “removing legal and regulatory barriers” due to the importance of the “smooth implementation of smart city initiatives” (Chourabi et al, 2010). And yet, such deregulation often exacerbates the very problems that private actors attempt to solve, or creates new problems altogether. For example, between January and May 2018, five taxi drivers in New York City took their own lives out of self-proclaimed despair from the demoralization and economic hardship they faced as ICT-based ride-hailing companies like Uber and Lyft have pushed out competition from the 91-percent immigrant population

making up the city's professional driving workforce (Salam, 2018). A deregulatory measure largely responsible for this high-tech monopolization of NYC's driving industry is the legal permission given by the city's Mayor Office and Governor Andrew Cuomo to ride-hailing companies to put an unlimited number of vehicles on the roads, whereas the number of taxi medallions granted each year remains regulated (Kadrigamar, 2018). As such, though ride-hailing companies purport to "help transform cities into safer, more efficient, and more beautiful places" (Uber, 2019) and "deliver significant environmental benefits" (Lyft, 2019), the influx of Uber and Lyft vehicles in NYC and elsewhere is not only progressing in the opposite direction of the latter goal (Kerber, 2019) but has created a new problem of financial difficulties and severe hopelessness for taxi drivers.

Uber's response to the U.S.' first legal regulation of ridesharing companies clarifies the industry's prioritization of maintaining its free-agent status over the wellbeing of real people living in urban areas. In September 2019, California legislators approved a bill known as AB5, which requires ridesharing companies to treat contract workers as employees and consequently grant them access to basic worker protections like a minimum wage and unemployment insurance (Conger and Scheiber, 2019). Uber responded to the new law by not only flat-out refusing to abide by it, but by arguing that the work of drivers is "outside the usual course of Uber's business" – which it went onto define as "a technology platform for several different types of digital marketplaces" (West, 2019). In essence, Uber was denying the role of actual people in its business operations, and attempting to absolve itself of responsibility in exacerbating systemic poverty and worker exploitation. This misanthropic response does not inspire confidence in the company's claims of bettering cities for the benefit of the people living in them, or of alleviating the structural challenges of urban life.

The cases above exemplify Vanolo's (2014) assertion that market-based approaches to the systemic inequities that materialize in cities often "mask other perspectives, such as the possibility to rethink the capitalist system in entirely different ways." As Gibbs, Krueger, & MacLeod (2013) note, while the 2008 sub-prime mortgage crisis and subsequent global recession could have prompted a "fundamental questioning of market-based approaches" to alleviating urban issues, it instead led to the intensification of neoliberal urban planning frameworks – such as that of the smart city – dependent on corporation-driven privatization and deregulation at the expense of resident wellbeing. Of course, given the massive profits – over \$300 billion in global investments by 2030, according to the UK's Technology Strategy Board (Viitanen & Kingston, 2014) – that multinational tech corporations stand to gain from smart cities, it's not difficult to see why these entities are exerting their power to not only shield their preferred market-driven strategies from mainstream criticism, but to present them as the most effective solutions to the inequities wrought by financial crisis. The specific dimensions and consequences of this neoliberal smart city model are discussed below.

### **Manufacturing crisis**

One explanation for the aforementioned variety of smart city definitions is that, without a "well-defined conceptual core," the smart city allows its proponents to "use the term in ways that support their own agendas" (Vanolo, 2014). With this ontological flexibility, not only can corporate stakeholders craft a model of urban planning that offers them optimal influence and profit, they can also present the problems of cities in ways that urgently mandate ICT industry solutions (Söderström, Paasche, & Klauser, 2014). Söderström, Paasche, & Klauser invoke Callon's (1986) seminal paper on "obligatory passage points" ("OPPs," hereafter) to lend theoretical basis to this corporate problematization of cities. Starting from the notion of an OPP as a place, institution, practice, or procedure that – through various material and conceptual constructions – becomes unavoidable, Callon describes the creation of OPPs happening through "the definition of the problem that needs to be solved" by "actors [who] will be in a position to solve the problem."

To demonstrate the ways ICT firms have discursively constructed themselves as "key actors in the development and implementation of [...] urban management solutions" through smart cities, Söderström, Paasche, & Klauser use IBM's Smarter Cities campaign as an example. As these scholars argue, IBM's website presents its Smarter Cities as "utopian

mirror images” of traditional urban landscapes through a “before-after demonstration” of urban problems where such issues as traffic, crime, poverty, and waste are portrayed as old photos in an exhibition called “Before the City Got Smart.” The effect of this demonstration is twofold: to depict the current status of cities as “grim” and “close to a fatal breakdown,” and to imply that – in the fictitious present of the ubiquitous smart city – the supposed breakdown has been reversed. To continue the IBM example: the company commissioned a series of studies released in 2009 and 2010 which – unsurprisingly – identified business as a “core system” of smart cities, the capacity for which included the inclusion of ICT firms and a strong networked technology sector (Chourabi et al, 2010). IBM’s marketing strategy for their Smarter Cities campaign offers a clear picture of how major players in the ICT industry have problematized the city and positioned themselves as key players in developing solutions for their own influence and profit.

### **Myths of neutrality and infallibility**

IBM’s commissioning of studies to support its own business ventures raises another dimension of concern regarding the smart city: the mythological positioning of smart city proponents as neutral and, relatedly, their solutions as infallible. Behind the ICT industry’s broad motivations is a desire to eradicate human error, with a dichotomous assertion of technology as reliable and people as the cause of uncertainty (Viitanen & Kingston, 2014). Implicit in this assertion of the messy and chaotic nature of cities is an anxiety regarding the types of people who have historically lived in urban centers – namely, poor people of color. This racist desire to “tame” disproportionately Black and brown city residents is clear in such existing urban policies as NYC’s “broken windows” policing, which targets low-level offenses like marijuana possession for arrest with the aim of “cleaning up” disorderly behavior to prevent more serious crimes (Chen, 2018). As highlighted through the examples below, the racial bias implicit in existing non-ICT-based urban policies like broken windows is unlikely to disappear after algorithms have been integrated into them. However, this very argument that algorithms can make unbiased decisions free of human error is key to the growth of smart cities, which attempt to base urban infrastructural processes on algorithms due to their perceived superiority over planning methods directly involving humans.

Greenfield (2013) employs a statement by Siemens – a major vendor working on smart cities – to elucidate the urban technological determinism invoked by the ICT industry: “Several decades from now cities will have countless autonomous, intelligently functioning IT systems that will have perfect knowledge of users’ habits and energy consumption, and provide optimum service.” As Greenfield notes, Siemens’ statement implies three fallacious assertions: that the world is “perfectly knowable” through technical systems, that one technological solution can be universally applied to each individual and collective human need, and that this ICT-based solution can be implemented without bias or distortion. Greenfield continues on to correctly identify that, “[h]owever thoroughly Siemens may deploy their sensors,” the company will only ever be able to capture and algorithmically operationalize those qualities of human existence that are numerically quantifiable or amenable to modeling. Additionally, Greenfield points out that it’s wholly unreasonable to assume that even those limited quantifiable qualities could be technologically sensed with perfect accuracy, seeing as the same humans whom ICT firms hold responsible for making the world an undesirably uncertain place are those not only generating the data, but those creating the algorithms and hardware that will be used to do the sensing.

To concretely push back against smart cities’ implicit claims of scientific objectivity, Greenfield raises a number of examples. One example is the simple fact that values for air pollution in a given location can vary depending on the height at which a sensor is mounted by only a few feet. Another more in-depth example is that of the RAND Corporation’s intervention into the management of NYC in the 1970s. Chartered with the goal of translating former U.S. Secretary of Defense Robert McNamara’s “systems analysis” management strategy from the Pentagon to an urban setting, the NYC-RAND Institute was launched in 1973. Its first project was to use FDNY incident response-time data to algorithmically determine the optimal distribution of fire stations. RAND made its first methodological flaw

in choosing as the basis for its model the time firefighters arrived at the scene of the fire rather than the time at which they actually began fighting the fire, then compounded that flaw by refusing to acknowledge NYC's ubiquitous traffic as a factor in response time. Compounded further by racism, RAND's recommendations led to the decommissioning of fire battalions in some of the city's most vulnerable sections, resulting in the entirety of the South Bronx – a disproportionately Black and Puerto Rican borough – as well as large swaths of Manhattan and Brooklyn burning to the ground. Though algorithmic technology has advanced considerably since the 1970s, RAND's devastating foray into urban planning serves as a lasting example of the acute fallibility of ICT-based systems that ignore the role of human behavior in both their creation and implementation.

In addition to the examples Greenfield provides, the fast-growing system of predictive policing further illustrates the consequences of an algorithm-driven model of urban policy that views itself as operating independently of existing social inequities. Predictive policing uses algorithms to inform decisions about who is likely to commit a crime, become a repeat offender, or be the victim of a crime. A significant element of predictive policing is a process known as "risk assessment," wherein an algorithm assigns to an incarcerated individual a score that purports to predict the likelihood that this individual will commit another crime. Proponents of risk assessment claim that the process can foster a less punitive legal system by "correct[ing] for the subconscious bias of police, judges and probation officers" (Barry-Jester et al, 2015). However, a 2016 analysis by ProPublica found that, through the risk assessment process, Black defendants were 77 percent more likely than white defendants to be labeled a higher risk of committing a future violent crime and 45 percent more likely than white defendants to be labeled a higher risk of committing a future crime of any kind (Angwin et al). Behind risk assessment proponents' optimistic claim is the perceived neutrality of algorithmic tools, including risk assessment software that asks such supposedly race-neutral questions as "what is your highest level of education" and "do you have a job." But as ProPublica's analysis demonstrates, because we live in a society marked by racial inequities in education and employment, and because the tools were built by people who themselves are unlikely to be free of bias, ICT-mediated predictive policing processes like risk assessments have little promise of changing a U.S. incarceration system that disproportionately affects Black people.

Clearly, the turning over of urban management to an algorithmic toolset is a decision not immune from human error or sociopolitical underpinnings, and can have profound consequences for city residents. Of these consequences, one becoming ever more ubiquitous is the surveillance-driven influence that powerful algorithmic entities are gaining over society at large.

### **Privacy and surveillance**

In early 2018, outrage ensued when it was revealed that Cambridge Analytica – a political data firm hired by Donald Trump's 2016 presidential campaign – had gained access to the private information of over 50 million Facebook users (Granville, 2018). While Facebook's facilitation of data-based political influencing is of course egregious, it is also indicative of a fast-growing economic model that Zuboff (2019) calls "surveillance capitalism." Inherent to this model is a process by which ICT companies – led by Google and Facebook, though increasingly joined by Microsoft, Amazon, and others – claim people's experiences and inner lives as "free raw material for hidden commercial practices" like behavior prediction and advertisement targeting. Zuboff devotes a section of her 2019 theoretical tome to smart cities, calling the city "a petri dish for the reality business of surveillance capitalism." Indeed, with their dependence on continually gathered resident data through ICT technologies that "weave themselves into the fabric of everyday life until they are indistinguishable from it" (Crang & Graham, 2007), smart cities offer the potential for immense informational knowledge and control for whomever has access to such vast swaths of data.

In addition to ICT firms, another entity that has historically been interested in the data-driven technological networking of cities is the U.S. military. Since the events of September 11, 2001 and the Islamophobic War on Terror (Kundnani, 2015) launched swiftly thereafter,

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the U.S. military has characterized cities and urban infrastructures as new “battlespaces” in which to identify, track, and pursue “lurking insurgents, terrorists, and other targets” in what is presented as a dual effort to “securitize homeland cities” and “counter insurgencies within war-zone cities” (Crang & Graham, 2007). A key aspect of this urban “terrorist tracking” is the development and deployment of ICT-based sensing and surveillance systems, such as the solar-powered “prototype pervasive processors” known as “smart dust” that were released in 2001 in California’s Bay Area to communicate environmental data to the Pentagon. One programmatic example of the ways in which ubiquitous computing technologies in urban settings are being portrayed and deployed as key mechanisms through which to wage the War on Terror is the Combat Zones That See (CTS) project. Launched by the US Defense Advanced Research Projects Agency (DARPA) at the start of the U.S. invasion of Iraq in 2003, CTS aims to embed thousands of video cameras in urban areas in the U.S. and abroad to provide on-the-ground algorithmic sensing of individual city residents and motion-pattern analysis across whole cities for military operations. Unsurprisingly given the collaborations between the U.S. military and local law enforcement – such as the 1033 Program that allows the transfer of arms and ammunition from the Department of Defense to state agencies (Wofford, 2014) – this type of mechanistic targeting of city residents is also being employed in cities across the U.S. to the effect of exacerbating already egregiously disproportionate incarceration rates of Black people (Stein, 2018).

Harkening back to the corporate narrative of cities being problematically unpredictable, Daniel Doctoroff – chairman and CEO of Sidewalk Labs, responsible for the implementation of Toronto’s smart neighborhood Quayside – responded at a roundtable series for Quayside to a question about data management by saying, “There are cameras everywhere anyway. There’s chaos out there. Together we can bring order” (Scola, 2018). Indeed, cameras have become ubiquitous parts of the modern city (Holder, 2018), to the effect of facilitating the racist targeting efforts of the U.S. military and law enforcement agencies in the name of bringing “order” to the “chaos.” Smart cities represent an extension of such efforts, and could provide even greater levels of control to the institutions of the U.S. state that purport to act in the interests of national security through the wholesale monitoring of entire populations.

### Gentrification

In addition to offering an important venue through which the U.S. state can ramp up its surveillance of society’s most vulnerable, smart cities threaten to exacerbate existing societal inequities through gentrification – the displacement of longtime and/or low-income residents as an urban area becomes prohibitively expensive due in large part to the increased influence of business interests. While the smart city approach often highlights the economic successes, innovation, and urban regeneration of the cities that have become creative tech centers, what is obscured are the rapidly rising rents, evictions, and protests by existing residents that are also taking place in these cities (Hollis, 2014). For example, in 2012 San Francisco’s late Mayor Ed Lee hailed the city as the “innovation capital of the world” due to the tech industry’s prominence there, but failed to link the presence of multinational ICT firms to San Francisco’s status as the U.S. city with the fastest-growing wealth gap and the highest housing cost in the country. Additionally, little has been said about the sizable secondary workforce required in urban tech centers and smart cities to service the dining, entertainment, and leisure desires of ICT professionals (Hollands, 2008). As such, while much of the discourse surrounding smart cities promises a universal raising of access to urban information technology, education, governance, public services, and more, what has been happening in practice is the creation of “dual cities” where wealthy ICT professionals and poor “secondary” workers live in drastically different conditions (Hollis, 2014).

One clear example of the consequences of smart city-driven gentrification is the effect that the creation of the “coworking capital of the world” in Downtown Los Vegas has had on existing residents (Hollis, 2014). By spending \$200 million of his own personal fortune, Zappos.com CEO Tony Hsieh developed a “supposedly lifeless area” about a mile north of the Strip into an entrepreneurial tech hub. In doing so, Hsieh disappeared the area’s existing community—such as shopkeeper Hassan Massoumi who said of Hsieh’s urban creation: “My

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wife and I came here when no one else would. For 10 years, we worked seven days a week – not one day of vacation. Then one day, Tony Hsieh’s people tell us to get out of there.” Similarly, the regeneration of London’s Shoreditch district into “Tech City” has displaced local residents as multinational tech corporations like Google, Cisco, McKinsey, and Intel have come to dominate the area (Agyeman & McLean, 2014). Home in the 1980s and 1990s to struggling artists and venues that catered to marginalized groups (such as a well-known jazz club and gay bar), Shoreditch since the mid-2010s has seen the consistent pricing out of its longstanding residents in large part due to tech-based commercial gentrification (Anthony, 2018).

In exploring the future of tech-augmented urban planning, it would be ahistorical and irresponsible to ignore the gentrification that has typically come with the development of urban hubs for technological innovation. Unfortunately, the way in which smart cities have been discussed in the mainstream and mobilized thus far has done little in the way of alleviating gentrification-related concerns regarding their implementation.

### **Green capitalism**

A final way in which smart cities fall short of and often achieve the opposite of their humanitarian promises is through their outsourcing of environmental resilience to the ICT sector, thus increasing the power that corporate actors – largely responsible for the continued acceleration of global climate change – have to promote their pro-growth interests (Viitanen & Kingston, 2014). Though smart city discourse claims to use “technology to increase sustainability and to better manage natural resources” (Chourabi et al, 2010), this paper contends – in line with Viitanen & Kingston (2014) – that environmental values are incompatible with a capitalist economic paradigm that depends on the continued plundering of natural resources for unceasing profit accumulation (Williams, 2010). For example, despite claims of the inherent environmental superiority of digital technologies over “dirty” energy sources like fossil fuels, the physical data centers required of ICT firms like Facebook to store massive amounts of consumer information use more than 90 billion kilowatt-hours of electricity per year generated by roughly 34 giant coal-powered plants (Danilak, 2017). Given the dominance of data in the smart city paradigm, the amount of energy needed to store an exponentially increased amount of digital information would be vast, and such energy-heavy interests are likely to continue winning out over practices of environmentally responsible urban planning given the capitalist paradigm in which smart cities operate.

The environmental consequences of ICT infrastructure can also intersect with and exacerbate economic inequities, such as in China where in 2005 98 percent of those working in the enormous e-waste recycling industry were employed in the informal sector, where they were offered no health insurance, no unemployment or pension plans, little professional training, and very low salaries (as cited in Viitanen & Kingston, 2014). Not only is it likely that the “smarter” a city gets the more e-waste it will create, it is also likely that the inequities driven by two-tiered employment between workers who implement ICTs infrastructure in smart cities and workers who deal directly with the environmental consequences of that infrastructure will only widen.

This paper has so far argued that because of the neoliberal paradigm in which it operates, the smart city approach to urban planning both exacerbates existing societal inequities and facilitates the creation of new ones. Particular dimensions and consequences of the smart city approach that achieve such exacerbation and facilitation include the manufacturing of urban crises that can only be solved through “silver bullet” for-profit measures, the presentation of those for-profit measures as apolitical and infallible, the increased surveillance of ordinary people to serve the corporate and military interests of the U.S. state, the tech-driven gentrification of cities, and the continued plundering of natural resources in the name of profit growth. All of these aspects of a smart city approach to urban planning serve to disprove the claims of proponents that the approach will alleviate the inequities that pervade modern urban spaces.



## Participatory planning

Some authors (Agyeman & McLean, 2014; Allwinkle & Cruikshank, 2011; Chourabi et al, 2012; Hollands, 2008; Staffans & Horelli, 2014) present their own valuable critiques of smart cities, suggesting methods of reforming the approach so as to alleviate their particular concerns. However, it is this paper's contention that the smart city approach is inherently neoliberal – and thus inherently exploitative – due to its dependence on public-private partnerships, its for-profit strategy of eradicating deeply embedded historical inequities without taking on the broader systems of oppression that caused them, and its fundamental operation via the constant collection and commercial mobilization of resident data. For these reasons and their particular dimensions and consequences discussed above, this paper suggests doing away with the smart city approach to urban planning in favor of an approach which employs technological means as but one tool of centering city residents in shaping the places and spaces they inhabit, and empowering those residents to collectively push back against the systems of oppression responsible for the inequities – whether economic, racial, ecological, or otherwise – that they experience on a daily basis.

One approach to tech-augmented urban planning that has the potential to achieve these goals of resident justice is that of participatory planning. Drawing from theoretical strands in information science and human geography, this paper's interpretation of participatory planning is an urban planning approach which studies, designs, and practices the application of ICTs in cities as one tool for the individual and collective empowerment of residents (as cited in Staffans & Horelli, 2014). Central to this interpretation are the fields of *community informatics*, which focuses on how communities are employing ICTs to support their “quests for well-being” (Gurstein, 2014); *neogeography*, which draws upon access-focused principles of modern librarianship and information science in an attempt to democratize geographic information systems (GIS) through a collection of “non-expert” practices, tools, and users (Byrne & Pickard, 2016); and *Public Participation GIS (PPGIS)*, which seeks to balance technical knowledge with community experience and need in the planning processes of particular urban contexts (Baibarac, 2014). These approaches all speak to an acknowledgment that has been growing in popularity among certain groups of urban planners since the 1992 meeting of the World Commission on Environment and Development and the Rio de Janeiro Earth Summit. This is the acknowledgment that – in order to foster both environmental and social sustainability in urban contexts – planning and policies must revolve broadly around dialogue between public stakeholders at various levels, and specifically around the thoughts and actions of residents who transform cities through their everyday practices.

Participatory planning alternatives to smart cities can be found in Sadoway and Shekar's (2014) proposal for “smart citizenship” and Gurstein's (2014) proposal for “smart communities.” Though I disagree with the maintenance of the term “smart” in these proposals due to its framing of existing communities and residents as somehow lacking in intelligence, both alternative approaches locate non-institutionalized power in and encourage the transfer of institutionalized power to community residents. For example, smart citizenship comprises the “engage[ment] of citizens in complementary digitally mediated and face-to-face processes that respect local knowledge systems” in service of “active and critically reflective civic-cyber debates” about “ICT praxis in relation to local needs” and “technological control” (Sadoway & Shekar, 2014). Smart communities take a similar approach, outlining an explicitly anti-neoliberal model that emphasizes citizen involvement and ICT mediation in the delivery of public services, venues for public scrutiny of municipal governance and infrastructure, and availability of transparent information regarding budgeting, housing, health services, and more (Gurstein, 2014).

The following section offers real-world case studies grounded in the fields of community informatics, neogeography, and PPGIS which provide starting points for possible models of a participatory planning approach to tech-mediated urban planning that centers and empowers residents.

### Exemplary case studies

The first example of participatory planning comes from Gordon and Manosevitch (2010), who through a pilot project called Hub2 utilized the online virtual world Second Life to augment community deliberation in the planning of a neighborhood park in Boston, Massachusetts. Hub2 revolved around the process of “augmented deliberation,” in which a group of people deliberates in a face-to-face setting while being simultaneously immersed in a virtual environment. In a series of 90-minute sessions, up to 15 Boston residents gathered in a local community center to collectively explore on laptops a virtual version of the neighborhood park being planned. Each participant was given a digital character that they could move around the virtual park space, and asked to verbalize their observations of how the space was set up with statements like “these paths need to be accessible,” or “there needs to be sufficient foliage to act as a buffer...” For every observation the participants made, a design professional would immediately render a rough approximation to be added to the virtual space being explored. Participants were also asked to act out scenarios with their avatars as different types of people who might utilize the real-life park, such as an old man in a wheelchair, a small child, and a woman with a dog. The last 20 minutes of each session were reserved for participants to offer general commentary and notes on specific aspects of the park. All renderings, commentary, and notes were then saved as a “virtual sketch” and made available to the broader neighborhood community, including residents, architects, planners, and developers.

By “[t]ransforming plans and designs into inhabitable environments,” the Hub2 project used virtual technology to empower community residents not only to evaluate proposed spaces, but have an active say in the way their urban spaces were being constructed. Indeed, in post-session interviews, participants expressed feeling that “they were not just talking, they were engaging with stakeholders in a way previously not possible,” and that such stakeholders were “genuinely interested in their engagement.” These testimonials suggest that, from their participation in Hub2, community residents would feel driven in the future to exert further sway on the urban processes they had previously felt were happening only around them instead of in conversation with them. However, as Gordon and Manosevitch note, though community residents felt empowered through the augmented deliberation of Hub2, the professionals involved in the park’s planning expressed a common attitude of “not be[ing] prepared to yield much control to non-professionals.” This challenge highlights the presence of local power structures and their ability to facilitate the continuation of systemic inequities, consequently speaking to the need for participatory planning to holistically encompass multiscale urban phenomena in its design and implementation. Further, the challenge of the significant financial, technical, and physical resources required of the Hub2 project demonstrate the additional need for participatory planning to challenge the broader systemic oppressions that limit such resources in many urban areas (usually disproportionately along lines of race, gender, immigration status, and other dimensions of identity).

Another exemplary case study is the work of Transparent Chennai (TC), a non-profit group based in Chennai, India that was launched in 2009 by a team of multidisciplinary researchers in partnership with community residents to take actions to address such urban infrastructural concerns as solid waste management, public toilet availability, and pedestrian safety (Sadoway & Shekar, 2014). Through community surveys, PPGIS efforts, and face-to-face meetings and interviews, TC works at the grassroots with lower-income residents of Chennai to pressure public officials into addressing deficiencies in access to public toilets and urban walking routes. For example, TC has set up an online PPGIS portal in which Chennai residents can aggregate and visualize urban infrastructural datasets by building their own GIS-based maps with layers like “toilet deficiencies” and “safe/unsafe routes for walking.” TC has also conducted numerous participatory interactive design workshops where Chennai residents can voice their needs and desires regarding sanitation and pedestrian issues and design, which TC then collects in reports used to pressure local public officials. Through these efforts, TC has taken a bottom-up, tech-augmented approach to participatory urban planning where Chennai residents can raise concerns and ideas to their municipal government and collectively

draw awareness to the inequities that concentrate public toilets and walkable routes in wealthier neighborhoods.

The example of TC provides particular guidance regarding urban planning efforts that involve the collection of resident data. In contrast to the surveillance-driven data collection of residents' everyday movements in the smart city, TC operates on a purely opt-in model where residents can choose to provide feedback to Chennai's institutions of urban governance and in the process reveal as much or as little about themselves as they like. This model prioritizes resident autonomy and trusts their on-the-ground expertise, rather than assuming from a corporate vantage point that market drivers are better indicators of resident need than are the experiences of residents themselves. However, like the above case of Hub2, TC's complex undertaking highlights the need for more broadly systemic initiatives to address issues of funding, labor, and poverty that pressuring the Chennai municipal government for more public toilets cannot solve alone.

### Cautionary case studies

In addition to the above case studies in community informatics, neogeography, and PPGIS which work to center and empower urban community residents in meaningful, tech-augmented ways, there are also examples of projects attempting to do similar work but whose methods and outcomes are more in line with the neoliberal smart city approach discussed above. Such case studies are important to highlight in order to make explicit the assumptions that can result in exploitative urban planning even amongst well-meaning parties, and clarify a way forward for participatory planning.

These cautionary case studies exemplify the concerns raised by Burrows and Ellison (2004) and Byrne and Pickard (2016) that GIS and neogeography, respectively, each have the potential to either alleviate or exacerbate existing societal inequities depending on how and by whom the practices are mobilized. As Burrows and Ellison (2004) note, though the increasing accessibility of GIS has led to such positive community outcomes as those of Hub2 and TC, it also provides the means by which groups of relatively high sociopolitical status can identify and negotiate geographic space across social dimensions with the effect of further widening gaps between rich and poor. For example, wealthy parents in urban areas like London and New York have already been using GIS-based tools to identify "good" schools for their children to attend based on racialized statistical dimensions like crime and poverty rates. Byrne and Pickard (2016) also make an important critical contribution by noting that participation rates in urban governance among community members vary with bias towards high-income residents such that access to ICTs does not guarantee participation or equity. However, the authors correctly note that access is a "precursor" for both participation and equity, "and is therefore necessary for breaking down barriers." Additionally, Byrne and Pickard's critique further highlights the need for participatory planning approaches to address issues of systemic inequity in conjunction with efforts to alleviate smaller-scale urban concerns. These critiques are important to keep in mind when evaluating and mobilizing participatory planning efforts.

One example of a PPGIS effort that falls short of centering and empowering community residents is that described by Balassiano and Seeger (2014) regarding their work with a "rural new gateway" community of primarily Latino residents in Perry, Iowa. Defining rural new gateways as U.S. communities that grew in the 1990s by more than 100 percent through increases in immigrant populations, Balassiano and Seeger explore the possibilities of utilizing PPGIS to share knowledge about community resources among foreign-born residents in an effort to alleviate their segregation from residents born in the U.S. The specific method the researchers employ is cognitive mapping, an ICT-mediated participation tool that visually depicts how people mentally acquire, organize, and store information. Though Balassiano and Seeger draw upon previous studies which suggest that "[c]ognitive mapping can [...] help people gain control over their own lives," in their findings section they make the definitive assertion that "the workshop approach empowers individuals by facilitating the sharing of community-specific information" without citing any empirical evidence – survey results or

participant interviews, for example – that such an observation came directly from community residents. This seemingly ill-informed assertion is concerning given that it hints at an obscuring of resident input to uphold a research agenda. Additionally, it suggests a dictation of what mechanisms residents need to feel empowered and involved in their communities, evoking troubling similarities to assimilation rhetorics used throughout history to force marginalized residents into complicity with the local status quo. The researchers engage in a similar dictation when they argue for the necessity of their study via the assertion that, “Latinos are engaged in local affairs and are committed to community betterment, but do not regularly work to influence decisions made by elected leaders or governmental agencies.” In so arguing, Balassiano and Seeger paternalistically imply that by not undertaking lobbying or electoral activities, Perry’s Latino residents are not adequately participating in public life and by extension are “engage[d] in passive and active self-segregation.” As such, the study takes a top-down approach to tech-augmented urban planning that falls prey to the similarly patronizing – though, admittedly, not surveillance-driven – approach of smart cities.

A second PPGIS case study which raises concerns that should be considered in future participatory planning efforts is that of the “urban spacebook” experimental co-design approach undertaken by Baibarac (2014) in Dublin, Ireland. In an attempt to “stimulat[e] greater participation in the democratic process” of Dublin’s municipal governance, Baibarac employs three technospatial experiments with city residents: the creation of a written and visual diary of participant movements throughout the city over the course of one week, the creation of a digitized version of these diaries through the tracking of participant movements with a GPS smartphone app, and the creation of a collective mapping database where participants could visualize their individual and collective movements. While participant interviews indicated an at least temporarily heightened awareness of their knowledge and daily use of Dublin, as well as the formation of a common basis upon which to discuss their urban area, the constant tracking of residents’ everyday movements harkens back to the ubiquitous data collection at the heart of smart cities. In this study participants *opted into* tracking their own movements, but the model of day-to-day tracking could set a dangerous precedent for similar municipal initiatives that – rife with such data – make themselves open to exploitation by entities whose interests are not in line with the empowerment of community residents. This possibility begs the question of whether it is ever appropriate for citizens’ movements to be tracked on such a granular level by state – not to mention corporate – actors.

## Next steps

This paper has attempted to clarify a path forward for a tech-augmented urban planning approach that utilizes ICT technology as one tool in centering and empowering community residents to undertake both city-specific and broader systemic efforts to shape their urban areas and address the structural inequities that manifest themselves in particular local contexts. To do so, the paper first laid out the particular dimensions and consequences of the inherently neoliberal smart city, arguing that despite proponents’ promises of alleviating urban social issues, the smart city in reality has either exacerbated existing inequities or created new ones. Presenting participatory planning as a tech-mediated urban planning framework that could serve as an alternative to the smart city approach, the paper described both exemplary and cautionary case studies regarding the promises and perils of the participatory planning approach.

To conclude, the paper will summarize facets of tech-augmented urban planning that should be either avoided or encouraged in future efforts toward a resident-centered participatory planning.

Facets that should be avoided include the turning over of municipal governance to corporate ICT interests, the fallacious assumption that urban inequities will be alleviated through “silver bullet” measures that ignore broader societal power structures, the assertion that any urban planning measures are free from bias or political influence, the constant data collection of residents’ everyday lives, the pricing out of existing residents through

gentrification, and the “green capitalism” model of unceasing tech growth masquerading as environmental responsibility.

In contrast, facets that should be encouraged include the following, described in turn in further detail:

- *The centering of the knowledge, experiences, needs, and desires of community residents in urban decision making.* This process depends on the creation of effective feedback loops between residents, planners, and local governmental bodies. Some of these feedback loops can be created in the electoral arena, such as with community advocates running campaigns and winning local elections, and fostering strong collaborations between governmental bodies and urban planners. More importantly, these electoral feedback loops can be fostered by governmental bodies being responsive to their communities – whether city residents voice their opinions at the ballot box or in the streets – and not to corporate interests. Beyond the electoral arena, urban planners must be trained not to think of themselves as the experts in the design and content of cities, but as those in a position to implement solutions demanded either implicitly or explicitly by city residents – especially those most marginalized. Planners must foster public/professional feedback loops not only by asking residents to come to them with suggestions, but by conceptualizing themselves as residents and embedding themselves in the very community they hope to serve.
- *The empowerment of residents to challenge systemic forms of oppression that exist within and beyond their own communities.* In many ways, cities serve as microcosms of the inequities and socioeconomic challenges that pervade society at large. The residents, planners, and local governmental bodies of any one city will not be able to do away with broader oppressive forces, but they can work together to identify where those broader forces manifest themselves in a particular city. This process of local identification is itself a step in a more liberated direction – in acknowledging where inequities exist in a city, power can be reallocated and views of what happens in a city can be shifted. For example, if a Black person gets shot and killed by a police officer and community members stage a protest in the streets, instead of telling protestors that they should be responding differently or increasing the level of policing in the city to confront protestors, city stakeholders can recognize the broader forces of racism and police brutality that are coming to play in a local context. Such a recognition can then inform a community-centered response, and an involving of community members in the decision-making process. On the urban design side, residents must be afforded ample public space in which to congregate, organize, or otherwise use as they see fit without interference from surveillance or commercial activity.
- *The acknowledgment of the inherently political, non-neutral nature of urban planning decisions.* At base, planners and others in a position to facilitate change in urban areas must ask two questions that should guide their work: “Who asked for this?” and “How will it affect the lives of residents on various scales and timelines?” These questions become especially relevant when a corporate entity is asking for a level of urban influence. Residents, planners, and governmental bodies must all do the work of reading between the lines of supposed solutions to various urban challenges, applying special wariness to entities that promise “silver bullet” measures.
- *The collection of resident information through opt-in measures that do not constantly or inconspicuously track day-to-day movement.* The collection of resident information is important and necessary in an urban context for many reasons, such as voter registration, education enrollment, and policy influencing. However, this collection must largely be opt-in, and – especially when the collection is mandatory for public safety and health – the data collected must be treated with the utmost care. Data collection based on constant tracking as well as with the involvement of corporate entities should be avoided.
- *The regulation of ICT firms entering urban areas coupled with measures of socioeconomic sustainability like rent control and affordable housing.* Cities must be

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responsive to the effects of the number and type of corporate entities doing business in an urban area, then correct for disproportionate effects with regulations and policy. These corrections can target corporate entities themselves with regulations, or provide safeguards for residents who face systemic threats like gentrification.

- *Additional regulatory measures for entities involved in energy-intensive industries with a promise of livable alternative employment for any residents currently working in such industries who may be laid off due to such regulations.* As climate change becomes an ever-growing existential threat to cities and humanity at large, urban areas can be at the forefront of transitioning to an energy-efficient and climate-friendly economy.

This group of measures to be encouraged can pave the way forward for a participatory planning approach to tech-mediated urban planning that avoids the exploitative nature of smart cities while centering and empowering community residents to make their urban spaces centers of true equity and participation.

While each of the six aforementioned measures are critical in slowing, halting, and/or rolling back the consequences of smart cities, they must be viewed holistically in order to achieve their full potential. What stems from that holistic viewing is the realization that, without the replacing of neoliberal capitalism with a system that prioritizes people over profit, cities will always be at the mercy of corporate interests – whether technologically mediated or not. Many of the reforms suggested above can be accomplished, at least in part, from within our existing neoliberal system of surveillance capitalism. But for a future city where residents need not defend themselves from the colonization of their inner lives in the name of market rates, we'll need a holistic restructuring of an exploitative economic system governing our cities and our world.

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# A DIGITAL ANTI-POLITICS MACHINE? EXPECTATIONS FOR ARTIFICIAL INTELLIGENCE AND DATA TO SOLVE COMPLEX SUSTAINABILITY CHALLENGES

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**Abstract** This paper analyzes expectations expressed in policy texts about the assumed relationships between data, artificial intelligence (AI) and the implementation of the sustainable development goals (SDGs). The focus is on the optimistic expectations loaded into the technological package of AI and data to solve complex sustainability problems. The paper's starting point is Twitter. Here, international actors publish tweets about AI and sustainable development, and direct attention to interlinked information and policy documents. The focus is motivated by a partnership between a UN initiative called Global Pulse, and Twitter. AI is expected to solve sustainability problems ranging from global climate change to diagnosis of illnesses, and big data is expected to contribute better informed decisions among politicians. For example, a UNDP tweet describes AI as a "formidable tool" for governments and the public sector to achieve the SDGs. The material will be analyzed with theories from studies of digitalization and digital participation, and critical analysis of development. The results from the study will be relevant for actors who work with digital inclusion, civic tech, environmental information and ICT4SDG. Research questions deal with the consequences for politics and civic participation. The analysis discusses how the expectation for AI to solve complex sustainability issues is a form of digital anti-politics machine, in relation to James Ferguson's classic work on development, since conflicts of interest and trade-offs are neglected and the digital world is portrayed as a level playing field.

**Key words:** SDGs, AI, digital divide, political participation, Twitter

## Introduction

New technologies may change our relationship with the world and politics, concerning both our way of communicating and our way of solving different issues. The interplay between artificial intelligence (AI), the challenges of sustainable development and the use of social media by political actors is deeply embedded in these two problematics. The aim of this paper is to describe and analyze tweets and interlinked material containing expectations about the ability of the technological package of AI and data to solve complex sustainability problems, and what it implies for political and democratic decision-making. The following research questions are posed:

- How is the relationship between AI and SDGs described, and what are AI and data expected to contribute to?
- How is AI supposed to solve problems? Who is expected to benefit from AI and data (i.e. the sustainability ambition to "leave no one behind")?
- What are the implications of presenting big data as a solution to sustainability problems (and better decisions) and in what ways are the tweets and linked documents related to the concept of an anti-politics machine (Ferguson, 2002)?

AI is expected to solve a multitude of problems, from social to environmental ones, and to contribute to sustainable development, i.e. democratic governance practices. However, AI is a technological package that is still being formed, and expectations seem to outrun the actual examples of how it will be applied. Its effects, consequences and even lifespan are still unknown. In fact, it may evolve into something else. It is not a fixed technology. Despite this, as discussed in this paper, the world is presented as a level playing field (Eubanks, 2011), where technology will help us solve

complex problems where conflicts of interest and how to prioritize between different interests, trade-offs and political controversies are neutralized.

In this context, the paper concerns the optimistic discourse about AI as contained in Twitter messages, so-called tweets, from the United Nations Development Programme (UNDP) about AI and how it will help implement sustainable development. In these tweets, the UN loads AI with expectations, as in this example:

*Are you an optimist or a pessimist when it comes to Artificial*



*Intelligence? Here are some ways we use #AI as a tool to solve the world's most pressing challenges to meet #SDGs. #NextGenUNDP (@UNDP April 1, 2019)*

The illustration accompanying the tweet states: “AI for social good; a technological nudge for development”.

The UN has drawn up the Global Agenda 2030 for sustainable development and 17 Sustainable Development Goals (SDGs). The SDGs were adopted in 2015 by the UN, and there are already some studies linking artificial intelligence and sustainable development (Agarwal, 2018; Rothe, 2018, Unwin, 2017). However, with the hype around AI, critical studies are warranted. Since the UN, and particularly the UNDP, is a global agenda-setting actor when it comes to technology, paying attention to the way it conceives the relationship between AI and the implementation of the SDGs is justified. The study is further motivated by previous attention to technology and development, showing that the benefits of information and communication technologies (ICTs) is not evenly spread (McNeill, 2005; Eubanks, 2011). This observation is equally relevant when we approach AI and big data as technological artefacts whose benefits are inequitably distributed.

What is meant by AI? AI refers to the ability of machines to mimic the way the human mind learns and solves problems, and is a multidisciplinary field associated with computer science, with influences from mathematics, statistics, cognitive psychology, and linguistics (Maymí & Lathrop, 2018). The term was coined in 1956, and it “continues to be characterized by cycles of excitement, marvel, and disappointment” (Maymí & Lathrop, 2018:71; also, Dreyfus, 1974). Here we take AI to be a technological package associated with machine learning, blockchains, and big data. Even if it is not a new technology, the area of application – the SDGs – is new. The UNDP can then impart the technology with a new values framework in the same way the World Bank has done with the concept of “less developed countries”, as highlighted by Ferguson (2002). The novelty makes it relevant to discuss what imaginaries relate to it and what political consequences these have. Social imaginaries have been defined as “the creative and symbolic dimension of the social world, the dimension through which human beings create their ways of living together and their ways of representing their collective life” (Thompson, 1984:6). Digital tools have been charged with the expectation of solving problems and dissolving boundaries (i.e. liberating people from their geographical or physical context and the technology considered to be merely virtual) since their inception. ICTs have been attributed visionary expectations for development (Rothe, 2018; Unwin, 2017).

The McKinsey Global Institute, a firm focusing on the global economy (2018a), and often mentioned in UNDP tweets, can be used as an example of an imaginary. The consultancy firm has published several reports on AI. It is also a provider of big data solutions (Kshetri, 2014) and thus has vested interests in views of AI and data. The idea of “AI for social good” is discussed in different instances – from the diagnosis of skin disease to resilience to climate disaster.

Studies of tweets are interesting since they direct our attention to political agenda-setting (Elvström, 2018) in daily communication practices (Duncombe, 2017). Tweets can be analyzed to understand what political actors focus on, what kind of political orientations they aim for and how they see the world more generally. That Twitter is used for agenda-setting is taken as a given here, and the text focuses on the expectations and associations that are expressed in tweets and related documents.

## The United Nations Development Programme and the “Data Revolution” for SDGs

The mission of the UNDP is to “eradicate poverty while protecting the planet” (undp.org). Another general mission within the UN is to contribute to development that leaves no one behind, where people can participate and the different SDGs form an indivisible whole (UN, 2015). On its website the UNDP provides information about the Strategic Plan for 2018-2021 and how to achieve the SDGs. The vision is to help countries achieve sustainable development by *eradicating poverty* in all its forms and dimensions, *accelerating structural transformations for sustainable development* and *building resilience to crises and shocks*. (UNDP, *Strategic Plan for 2018-2021*, our italics). The Strategic Plan mentions digital technologies and advances in AI having “transformative implications for economies and societies, *offering tremendous potential for progress*” (ibid.). The UN also mentions a “Data Revolution for Sustainable Development”. In the UNDP’s own words (undp.org, 2017):

*A data revolution for sustainable development is underway, reshaping how knowledge is produced and used, policy is formulated, and governance is redefined and enacted around the world. At its core, it is about people—as users, producers, beneficiaries, and owners of data—who must be at the centre of accountability and participatory mechanisms for the 2030 Agenda and in turn be closely involved in the delivery of the new development agenda.*

Framing the “data revolution” in such a way is an indicator of the tremendous disruptive potential the UNDP assigns to AI for solving sustainability and democratic issues.

In the related UN AI Policy, it is observed that “Much of the big data with the most potential to be used for public good is collected by the private sector” (United Nations, 2018). This point is relevant to mention with regard to policymaking and the potential power relations at stake. To understand the UNDP’s use of social media, the partnership between the UN initiative *Global Pulse* and Twitter is interesting. “Twitter and *UN Global Pulse* today announced a partnership that will provide the United Nations with access to Twitter’s data tools to support efforts to achieve the Sustainable Development Goals, which were adopted by world leaders last year.” (UN, 2016) This is explained as follows: “The partnership will allow UN development and humanitarian agencies to turn the public data [real-time information] into actionable information to aid communities around the globe.” (UN Global Pulse, n.d.b.). This fits with the use of big data.

*Global Pulse is a UN initiative working to promote awareness of the opportunities big data presents for sustainable development and humanitarian action, forge public-private data sharing partnerships, generate high-impact analytical tools and approaches through its network of Pulse Labs and drive broader adoption of useful innovations across the UN system.* (UN Global Pulse, n.d.)

The private sector can feed the anti-politics machine as an information and blueprint provider.

## Methods and Material

The paper builds on an analysis of tweets from the UNDP and interlinked documents. A tweet can now be up to 280 characters long. It can be retweeted, i.e. shared by another user. We decided to “harvest” the tweets manually. Fifty-seven tweets were collected from February 24 to April 21, 2019. Some are not explicitly about AI but are more generally about data, digital applications (apps), “digital potentials”, drones, and digital divides. All the harvested tweets are of a similar character: along with the 280 characters are other intertextually connected documents, a picture, a gif or a video. Some selected stories are repeated several times. A common pattern in these tweets is to mention a general topic (e.g. gender equality or ocean conservation), and then to present a specific, local initiative tackling it, often by giving the names of the entrepreneurs. The account @UNDP has an astonishing number of tweets – more than 57 000 have been posted since the Twitter account was opened in

February 2009. The logic in the tweets seems to be directing the reader's attention to something and persuading them to visit websites, watch videos or read reports.

In the analysis we first establish that there *is* a connection between AI and the SDGs, with examples. A qualitative content analysis of the tweets and related documents is performed and focuses on normative ideas inscribed in them through the words connected to the technology. This analysis is used to see how AI and data are constructed as fundamental for the implementation of the SDGs, and as a social good. We will not specifically analyze emojis, though it should be noted that they are used as a strategy to include more information than what the limit of 280 characters allows. However, when tweeting about International Women's Day, for example, the fact that there are female emojis with different skin colors is important since it relates to social justice. This digital identity politics should not be neglected, although it will not be studied in this paper.

### **Theoretical Approach: Anti-Political Machine, Development and Democratic Inclusion**

When studying the digital divide, Virginia Eubanks stated that cyberspace has often been portrayed as a "fictive friction-free space" (2011:28). But technology is not neutral. In the words of Judy Wajcman: "Technologies embody, and advance political interests and agendas and they are the product of social structure, culture, values, and politics as much as the result of objective scientific discovery" (2007:582; also Khan, 2018; McNeill, 2005). In a similar manner, environmental justice scholars Pellow and Parks (2002) problematize Silicon Valley as a creative innovative hub by making use of historical data that focuses on struggles over land and highlights socio-environmental consequences (Pellow and Parks, 2002). High tech has been represented and imagined as the opposite of old-fashioned, fossil fuel-driven industry, as "digitally clean, trafficking in information rather than goods, thriving on creativity rather than muscle" (Pellow and Parks, 2002:1), while servers and production actually require huge amounts of energy and resources that complicate the work to combat climate change and e-trash, for example.

In his work on international aid and the "development industry", James Ferguson builds on Michel Foucault's concept of power and discourse. Discourse is seen as a practice with real effects, but not necessarily the ones expressed or intended. Furthermore, planned interventions "may produce unintended outcomes" (Ferguson 2002:400). Ferguson shows how development projects turn out to serve highly capitalized farmers and producers rather than the poor. At a first glance these may seem like side effects of unsuccessful attempts at engineering transformations, but they do in fact contribute to depoliticizing effects, what he calls "the anti-politics machine". The institutional rationales and theoretical premises required are governmentality: "economy and society must be within the control of a neutral, unitary, and effective national government... responsive to planners' blueprints" (2002:403). Here "representations which ignore the political character of the state and the bureaucracy and downplay political conflicts within the nation-state are the most useful" (ibid). These are so-called apolitical interventions, according to Ferguson. Ferguson developed the analysis of the anti-politics machine in an international context with an analytical focus on governmentality. We have thus decided to incorporate "governance" due to the way in which this term has gained momentum and developed a new meaning that goes beyond the scope of governments. Governance focuses "on the role of networks in the pursuit of common goals" (Kjaer, 2011: 3-4) that blur the public/private separation (ibid.). Nowadays not only states, but also non-governmental organizations, companies and individuals are recognized to influence politics. In this setting actors are expected to take rational decisions without conflicts of interest or the like. And the private sector plays an influential role in providing data and analysis in the field of AI. Ferguson argues that the "development industry" reduces poverty to a technical problem and promising technical solutions, and de-politicizes poverty (2002:407). This seems similar to the way AI and big data are presented as solutions to complex sustainability problems as "neutral" blueprints. This is what we will call a digital anti-politics machine.

## Tweets and Connected Texts and Videos

### How are AI and data described, and what are they expected to contribute?

To analyze the material, we have observed the words associated with AI, since these words are part of how AI is constructed. In tweets and interlinked documents, words like *revolution*, *transformation*, *formidable tool*, *harness opportunities*, *tremendous potential for progress*, and *benefits* are used. Furthermore, the concepts used in relation to “data” are interesting. We read about how data is *harvested* and *mined*, referring to recognized industrial activities. AI is described as the future and coupled with “next generation” or “NextGenUNDP”. One tweet says: “... we've made innovation part of our DNA” (@UNDP March 12, 2019), which refers to another type of modern technology, namely genetic engineering. AI and data are expected to help with a variety of activities ranging from real-time analytics of food prices, to monitoring and mapping of climate and environment, optimized food distribution, predicting food shortages, scheduling predictive maintenance of public infrastructure, dealing with inefficiency and corruption, and traceability of products for fair trade, to problem-solving and “better decisions”.

The UNDP mentions the McKinsey Global Institute as being knowledgeable about AI and SDGs in the interlinked material, which justifies including an analysis of that material.

*#AI is not a silver bullet for all of humanity's problems. But it could be a formidable tool for govts & the public sector to achieve the #SDGs. @McKinsey\_MGI offers 160 cases of #AI for #socialgood.*  
(@UNDP Feb 25, 2019)

The way “formidable” is associated with AI is central to this text. Of course, the very affordance of a tweet requires simplifications from the author and necessitates a curious click on the interlinked material to find out more. The accompanying illustration says: “Using AI to help achieve Sustainable Development Goals”. In a tweet from March 29, 2019, @UNDP writes: “We use #Tech tools to make better sense of data to make the world a better place. Here's how: [#SDGs](http://ow.ly/vYEh50ovejt)” (@UNDP March 29, 2019, tweet). Since the tweet does not describe how this is to be done, it is necessary to click and continue to the website in order to find out. When we click on the link, this is the text that appears on the screen: “Sustainable Development Goals. Harnessing the Digital Revolution”. The word “harnessing” is a ubiquitous term in UN documents about AI and digital tools. Harnessing data is required to achieve the data revolution for SDG: “Better data and statistics will help governments track progress and make sure their decisions are evidence-based”, according to [undatarevolution.org/about-ieag/](http://undatarevolution.org/about-ieag/). To better understand this logic or imaginary we can also cite the UNDP and its website which states that: “A data revolution for sustainable development is underway, reshaping how knowledge is produced and used, policy is formulated, and governance is redefined and enacted around the world.” (undp.org, 2017.)

In an interlinked video, “Harnessing the digital revolution” (Ramos & Steiner, 2018), technology is portrayed as transforming sustainable development. Other titles of interlinked videos read: “What can data do for climate change?” and “Using AI to help achieve Sustainable Development Goals”. In a tweet by @UNDP on April 18, 2019, “harnessing digital potentials” is mentioned. Similarly, blockchains are expected to “disrupt sustainable development and create a more peaceful, greener and equal world” (@UNDP April 19, 2019). The assumption here is that discourse has an intimate relationship with the constitution of our society and reality. The expectations expressed in the tweets are powerful and performative (Porter & Randalls, 2014). Thus, it is interesting to study whether AI and access to data really imply a reduction in extreme hunger or poverty, for example. Can the poor and the hungry “harness” the real-time information on commodity price dynamics, and who is the expected user or beneficiary? The number of undernourished people in the world has been on the rise since 2014, reaching an estimated 821 million in 2017, according to an FAO report (2017) on the state of food security. Meanwhile, the notion of predicting and preventing phenomena is central to discussions about AI and has been important in weather reports and meteorological studies.

A report titled *The Future of Knowledge* which was co-produced by different offices within the UNDP refers to negative sentiments about AI that have been identified by harvesting information in

digital media. These sentiments mostly relate to “AI ethics and the replacement of human labour with machines.” (UNDP 2018:38.) A parallel can be drawn with what Ferguson argues about planners’ blueprints that the neutral, unitary and national governments are supposed to follow (2002). However, the fact that not only public administrations but also companies and individuals are expected to benefit from and use this information for their decisions can be the consequence of a shift from “governmentality” to “governance”.

The documents and websites are extensions of the tweets in which we get an idea of the actual potential – but also the challenges – of AI and data. It is as if the possibilities are expressed in the tweet, and the challenges in the interlinked document. For example, according to the report written by the McKinsey Global Institute, “AI-enabled wearable devices can already detect people with potential early signs of diabetes with 85 percent accuracy by analyzing heart-rate sensor data. These devices, *if sufficiently affordable*, could help more than 400 million people around the world afflicted by the disease.” (2018b.) These are then conditions that will have to be dealt with to make AI a solution. And in the case of benefitting the most vulnerable and making sure “no one is left behind,” paying for these solutions is not an option. In other words, AI is seen as a great opportunity to achieve the SDGs, and if risks or challenges are mentioned in the material, they are described as easily circumventable. Before moving on to the potential obstacles of applying AI and data to solve complex sustainability problems, we will look at examples of how AI and data are currently used.

### Examples of How AI and Data Are Currently Used

Who is expected to benefit from AI and data, i.e. the sustainability ambition to “leave no one behind”? To start out, it is important to note that AI is seldom defined or explored in detail, something that allows for different interpretations and a possibility to load the technology with a variety of expectations. Ferguson (2002) argues that there is a gap between academic knowledge and development agencies’ knowledge, which can also be the case for AI and its lack of detailed definition. The tweets often present local examples of AI and data. They are either a way to show concrete examples of how AI can be used, or to encourage more bottom-up approaches by individuals. Digital tech “is changing the world” to increase transparency and end corruption, according to the UNDP (@UNDP April 2, 2019). Among the examples, there are several tweets about girls and women who learn to code and develop apps that relate to the implementation of the SDGs and become part of the “tech revolution”, like a chat bot in the Philippines that helps citizens learn about their legal rights, and an app for people who have been victims of sexual assault in Myanmar. Girls who code are presented as a way to close the gender gap, since “only 22% of [#AI](#) professionals are women. Invest in education to close the [#DigitalGap](#). [#WomensDay](#)” (@UNDP March 6, 2019). The gender perspective is mostly presented in terms of access to ICT jobs.

The use of blockchain is regularly mentioned. One way of applying blockchain technology is for legal identification or official documents. Blockchain has “tremendous potential” to tackle problems with ID in situations like when registering for schools, obtaining health care or opening a bank account (UNDP, n.d.c.; also, UNDP, n.d.a.). The UNDP explains that blockchains “are often most useful in situations where there is insufficient infrastructure or where there is no natural candidate for a trusted operator” (UNDP n.d.c.). There are several examples of pilot projects and “small test cases” (McKinsey, 2018a). One pilot relates to migrants in Tadjikistan who are helped to send remittances and transfer money through a mobile app running on blockchain (UNDP, n.d.c.). In 2017, the World Food Programme tested a blockchain platform to enable Syrian refugees in Jordan to pay for food using an iris scan instead of cash or e-vouchers (ibid.). These solutions all build on shared data.

One example of the use of data for politics comes from Uganda, where politicians listen to data harvested from radio programs to get an idea of what people talk about, and thus supposedly let this information guide politics (UN Global Pulse, n.d.b.). This is related by the UN to expectations for new analytical approaches which “*if applied responsibly*, can enable more agile, efficient and evidence-based decision-making and can better measure progress on the [...] SDGs in a way that is both inclusive and fair” (ibid., our italics). The notion of using data for better informed political decisions is at the center here, but politicians may use information for politics that do not support the implementation of the 2030 sustainable development agenda, such as for the surveillance of groups

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that are found to be dissident (Zuboff, 2019). As people all around the world can come up with ideas to make the information more accessible and transparent, irrespective of social structures, wealth and culture, AI is represented as a technology with inclusive capacities, and available for individuals (cf. Wajcman, 2007; Eubanks, 2011). The notion of evidence-based decision-making neutralizes conflicts of interest, trade-offs that must be dealt with, and controversies over ideological standpoints.

### Data for Intelligent Decision-making

Some have noted that big data is “less about data that is big than it is about a capacity to search, aggregate, and cross-reference large data sets” (Boyd & Crawford, 2012). Big data is used to “support decision-making” mainly for market decisions, but lately also for the public sector “to generate actionable insights for policy makers” (UN Global Pulse, 2013). Big data is the basis for AI and is expected to solve societal problems with “better decisions”, and therefore provide better governance, similar to the Ferguson’s idea of blueprints. What implications does this have for notions about politics and international relations, including conflicts of interest, disagreements, limited resources and so forth?

*Big Data analytics is not a panacea for age-old development challenges, and real-time information does not replace the quantitative statistical evidence governments traditionally use for decision-making. However, it does have the potential to inform whether further targeted investigation is necessary, or prompt immediate response. [...] The question is no longer if Big Data can provide insights useful to global development and resilience, but how.*  
(UN Global Pulse, 2013)

Again, we see how the argumentation is built up. Big data is “*not* a silver bullet or a panacea, *but...*”. The message is clear – big data is a golden opportunity to solve sustainability challenges. Looked at from the other side, the existence of sustainability challenges and problems are identified as being based on a *lack* of real-time data and information. As such, sustainable development is reduced to a technical problem, i.e. developing and sharing the technologies necessary for stakeholders to make well-informed decisions. How much have politicians used statistical *evidence* in politics previously, and how could citizens harness cross-referenced data sets for participation? It is a rational view of how political decisions are formed and made based on “quantitative statistical evidence”, as stated above. The focus on governance, economics and society are shaped by different actors (states, but also NGOs, companies and individuals), and in this case the information gathered through big data is available on the market for decision-maker to use. The notion of a level playing field information can supposedly be used the same way everywhere and ignore local specificities, or class, race and gender struggles, etc. Considering big data in this way implies believing in a frictionless world with rational choice.

In an accompanying video to the tweet on inequalities (@UNDP March 26, 2019), the UNDP expresses that the “revolution in *availability* of data” will do good:

*+90% of the world’s data has been generated in the past 2 years. From [#UNBiodiversityLab](#) to harnessing [#spatialdata](#), [#Data4SDGs](#) accelerates [#ClimateAction](#). [@jamisonervin](#) explains our [#NextGenUNDP](#) innovations with [@UNEnvironment](#). [#UNEA4](#) [#SolveDifferent](#) (@UNDP March 11, 2019)*

In this tweet, the quantity of data is portrayed as helping to solve problems. Since data can be used to visualize inequality, another tweet announces that “data is knowledge” (@UNDP April 21, 2019). Here, the challenges of different interpretations of data are not mentioned, and data is presented as if it is self-evident. Decision-makers do not have to deal with trade-offs. One area for sustainable development where data is presented as being necessary for solving problems is climate change. In a three-minute long video titled “Effective Climate Action Requires Data-driven Collaboration” a representative from the UN initiative Global Pulse expresses himself as follows: “To achieve

sustainable development we must *harness this real-time ocean of digital data*". Among the images of drought, hunger and melting glaciers in the video, nothing is said about who should take responsibility and act on these, or about political negotiations and controversies. The situation is seen as friction-free.


*[This] third-party data sources such as hospital intakes, death counts and weather data, among others, to provide meaningful insights that local and international government and humanitarian agencies can use to make decisions on when, where and how to deploy resources.*  
(UN Global Pulse, n.d.c.)

This model does not consider what capacity hospitals have, for example, to deal with citizens who need to consult their services. This has consequences for the view of making better political decisions. Besides, having the information will not necessarily imply that actors know how to use it, or act accordingly. The notion neglects conflicts of interest and power and different ideas of how to distribute resources, like the idea of bureaucracy as an anti-politics machine (Ferguson, 2002), in addition to the idea that no material resources seem to be necessary.

As we pointed out earlier, the tech business is influenced by market logic where analysts also sell the technological solution. An example of how market logics and anti-politics may be united is found in an article by Kshteri, the first sentence of which reads "Big Data (BD) is *likely to be of tremendous benefit* to developing countries." (2014:1.) The article ends with the sentence "Governments, businesses, and individuals *are willing to pay for data when they perceive the value of such data in helping them make better decisions.*" (2014:17, our italics.) We must ask, though, who among the people living in extreme poverty will be able to pay for data as a commodity, and who is expected to benefit from AI and data (see Zuboff, 2019; Kshteri, 2014)? Is poverty an issue of making poor decisions?

### **International Digital Divides in the Light of AI and Data**

Digital divides have been studied by many scholars and have been the focus of policies from international to local levels. The UNDP recognizes that digital infrastructure is needed, and that a lack of infrastructure will contribute to a widened digital divide, just like the rise of 5G.

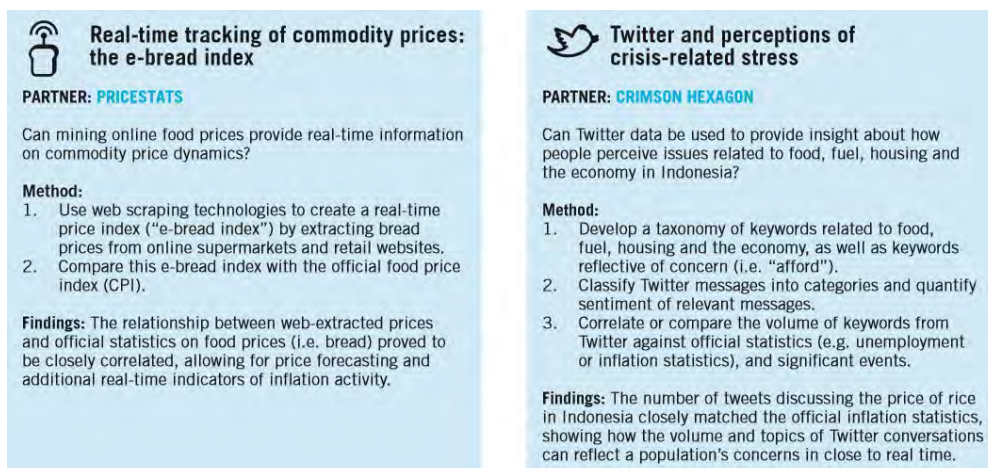
*The rise of 5G will widen the [#DigitalDivide](#) between rich & poor countries. From geopolitics, climate change to  tech, the very concept of inequality is evolving. (@UNDP March 28, 2019.)*

Perhaps the UNDP will assist, just like when installing Internet infrastructure (see Kshteri, 2014). With AI and data, the digital divide gains a new signification. The new digital divide is conceptualized in terms of data and information have-nots:

*Fundamental elements of human rights have to be safeguarded to realize the opportunities presented by big data... There is also a risk of growing inequality and bias. Major gaps are already opening up between the data haves and have-nots. Without action, a whole new inequality frontier will split the world between those who know, and those who do not. (UN Global Pulse, n.d.b.)*

This correlates to the notion of data as a precious resource that everyone needs to make evidence-based decisions. But here UN Global Pulse recognizes that there are inequalities in the world and existing digital divides. The conceptualization of the have-nots in terms of access to data is seen in the e-bread index (UN Global Pulse, 2013). Here the relationships between hunger and poverty, which are identified as central problems for the UNDP to solve according to its strategy documents, and political action, are connected to data. This allows for a discussion about who benefits from the harnessed data.





**Figure 1: UN Global Pulse, 2013**

The example above is interesting in relation to the vision in the UNDP *Strategic Plan 2018-2021*, and its vision of achieving sustainable development by eradicating poverty in all its forms and dimensions. Higher world market prices for food commodities increase the number of hungry people (Golay, 2010). However, speculation and the use of data have been identified by some as worsening the food crisis (Kshteri, 2014), rather than alleviating it. This implies that ICT does not necessarily benefit the poor, or "those we serve" and their purchasing power. We can also ask how the poor and the hungry can "harness" the real-time information on commodity price dynamics, like an e-bread index. Besides, if access to data and information is a substantial part of the problem, there is more to the digital divides than access to data, and this ought to be acknowledged in order to bridge the gap: the number of hungry and undernourished people has been on the increase since 2014. (See [unstats.un.org/sdgs/report/2019/goal-02](http://unstats.un.org/sdgs/report/2019/goal-02).)

## A Digital and Intelligent Anti-Politics Machine

The UNDP tweets are part of the organization's agenda-setting. The aim has been to investigate how the expectations for AI to solve complex sustainability issues is a form of digital anti-politics machine concerning common resources, building on Ferguson's work (2002). Policy and politics (governance) have been influenced by market logics where something can be sold and bought, namely technological solutions and data. One of several examples is that of AI-enabled wearable devices that can detect people with signs of diabetes; however, they are only solutions "if sufficiently affordable". Another aspect is that data on people's health can be used by market actors like banks or insurance companies which can deny access to services. Kshteri (2014) writes about the use of big data for improving farming practices and reducing hunger, but concludes that people will be willing to pay for data. This way of conceiving of the solution to hunger and poverty with data seems contradictory. Continuous unsuccessful attempts at producing change contribute to depoliticizing effects, or what Ferguson has called "the anti-politics machine" (2002) which is responsive to planners' blueprints. Data is presented as contributing to more rational and evidence-based political decisions – as if the complex sustainability problems have one rational solution (and are not made up of so-called wicked problems that require negotiations and trade-offs). This contributes to apolitical interventions that reduce poverty to a technical problem with technical solutions, something that de-politicizes poverty, hunger and exclusion.

The tweets contain techno-optimism in the sense that AI is presented "not [as] a silver bullet – but a formidable tool" – and becomes the technical and at the same time apolitical solution that Ferguson writes about. The tweets focus on possibilities to "harness" the power of technology, while linked documents contain sections about problems and challenges involved in allowing technology to drive development. The tweets and documents portray data as a resource, as a currency as we know it. This is interesting when we look at this notion from an individual poor and starving citizen's point of view. The use of data on real-time commodity prices certainly *is* gold for any company that wants to harness consumer preferences for business analytics and real-time decisions, but is of less use for a starving person. This is not to say that cross-referenced data for early warning of climate disasters or epidemics

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is vital. However, a more nuanced description or imaginary of when AI and data can help achieve the SDGs could be valuable.

The use of information and scientific evidence in environmental politics and to predict climate and weather is not new. However, “harnessing” data and using AI for the implementation of the SDGs is. Since most data is generated by companies, “data philanthropy” is suggested to alleviate the digital divide. All this indicates that the use of data for the implementation of SDGs is for the future, and the promises are conditioned on availability and affordability, which must be closely monitored in order to “leave no one behind” and not undermine democratic, political, and sometimes conflictual debates. The expectations are based on small test cases and pilots that see the playing field as level. We can thus ask how data can benefit the prevention of water pipe leaks (for example for people who do not even have water pipes). Risks are mentioned, but are portrayed as if they are easily resolved, implying that AI remains beneficial for reaching the SDGs and leads to better governance practices without questioning the measures and material that should be involved.

## Conclusions

In what ways is the UNDP expecting technology-driven disruption to contribute to the implementation of complex sustainability issues? First, the tweets present AI as a readily available solution to implementing the SDGs, but on closer inspection there are obstacles and conditions. The descriptions found in the tweets and linked documents show that data and analytics can be used for diagnosing problems and monitoring progress, but they say little about how to reach SDGs or solve sustainability problems. Second, the conception of AI and data has consequences for governance, where information and data are expected to be used in rational evidence-based decisions without conflicts of interest or structural inequalities. As such, if not a “panacea”, AI is portrayed as a “formidable tool” to use. Third, the anti-politics machine around AI disconnects knowledge from physical resources. Examples we have given concern the prevention of leaking water pipes or diagnosis of illnesses – it is as if maintenance work or treatments are performed by AI without resources. The imaginary that AI and data can contribute to the implementation of sustainable development is disconnected from power relations and the distribution of resources and risks, presented as a level playing field without frictions. It is therefore a digital anti-politics machine applied to governance: data, thought to be out of the physical world, is the basis for a rational, neutral decision-making process in a friction-free world. In this paradigm, actors find or provide information in the market to make policies that become a mere technical problem. This has consequences for the sustainability ambition to leave no one behind. However, this is not to deny that predictions for a tsunami are profoundly important information for people who live in affected areas to evacuate and find shelter. In this respect, AI is seen as a tool to achieve better governance for resilience.

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# POWER AND DIGITAL TECHNOLOGIES: A TRANSDISCIPLINARY DISCOURSE

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**Abstract:** We grapple with the grand challenge of increasingly mutating and rhizomic ICTs systems as forms of ‘power container of modernity’ (Giddens) or power-knowledge (Foucault) that can both enable and constrain our ways of thinking and acting in the world.

This paper reflects a transdisciplinary conversation between researchers coming out of very different disciplinary paradigms - an engineer, a data scientist, a philosopher and two journeyman-sociologists and historians with action orientations. Can we develop a common language or metaphors? Or in fact, is the problem one that is continual because digital technologies and their effects continue to evolve and impact in as things in themselves as agents in the world and even reaching comment understandings is a Sisyphean task?

Each of us has written a position statement with ripostes and rejoinders from the others. We have everything in common as humans, but in some ways, our intellectual orientations and limitations fragment us. We ask each other: ‘What are our intellectual and practical concerns?’ What can do we bring them together to influence what we think is important?

**Keywords:** Transdisciplinarity, power, knowledge, interdisciplinary, ICT, socio-technical systems

## Introduction

This paper tenders a diverse set of discourses prompted by an acknowledgement that we, as ICT affiliated disciplinarians have lost sight of each other in a dynamic intellectual climate where issues of power, technology, knowledge and agency are being argued, though not necessarily heard. In this paper, we, a group of five scholars, ask each other what our concerns about technology are. As we continue to debate the points of struggle against the ongoing penetration of technology and subsequent modes of acting, we realise we that our understanding of, and ability to control technology is quickly escaping our disciplinary researchers. We aim to start this conversation, not in an interdisciplinary workshop or steering committee, but in an article where our influence on each other’s position is brought about by our domain expertise, ability to communicate and commitment to inclusivity.

In motivating this exercise, we question how we have gotten here today, siloed conversations and research orientations that are potentially in opposition to one another. We recognise that one factor that may be subverting our efforts to tackle these complex problems is that we as scholarly researchers are crafting our arguments to be considered by our extra-disciplinary colleagues, not an invitation to our extra-disciplinary colleagues to enter a dialogue, but rather an emphatic and exclusive diatribe. Critically-orientated researchers have long since participated in multi-disciplinary conversations about the ethical, cultural and social implications of technology. Indeed, in recent years, sub-disciplines have developed which consider data justice, digital politics, ethical algorithms, dataveillance, algorithmic sovereignty and data privacy (Michael &

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Lupton, 2017). Similarly, computer sciences and engineering have diversified to including machine learning (ML), blockchain and immersive analytics, and autonomous robots. It is the commodification of these disciplinary outputs that, for the most part, drives the rapid technological advancements we consider here in terms of their social impact.

This organisational paradox is perplexing for an academy that proclaims a history of interdisciplinary collaborations. Interdisciplinary approaches see researchers work together to solve complex real-world problems through a collaborative analysis where disciplinary methods are transferred to others for new applications of analysis. While this approach emerges new synergies from this transfer of knowledge, the intent is to solve a problem, not to gain an understanding of the world in which that problem is contextualised (McGregor 2004). Perhaps, the nature of interdisciplinary research, cannot handle the complexity of contemporary socio-technical problems we seek to address. These projects do not transcend our ways of thinking about the social, or the technical, in a way that permeates our disciplines. Thus, the conversational gap is left open to continue to widen.

What we require is a transdisciplinary approach. This is where we, as researchers, conduct a dialogue to share our assumptions and methods to form a new way forward in to tackle such complex issues (Lattanzi 1998). Such an approach would see us move away from simply distributing our different analyses and application, 'to creating a space for shared dialogue, leading to joint analysis using new approaches that could not have existed without the crisscrossing of ideas to weave together a new web of knowledge' (McGregor 2004, p. 2). We should note, that we are not advocating for the demolition of disciplinary boundaries, but to transcend disciplinary boundaries when appropriate. To achieve this, we must first have an openness to Transdisciplinarity.

The process aims to open up avenues for collective thinking, reflexivity and mutual learning opportunities between researchers so that new questions can be asked, and knowledge can be formed in a contextualised manner, accepting that a common research objective which is motivated by the societal and scientific triggers generated from existing societal and scientific problems. As such, we attempt first to understand what it is that we are motivated to reach out to one another to ask: 'What are our intellectual and practical concerns?' What can do we bring them together to influence what we think is important? These questions we ask to 'dig deeper into dialogue and perspective sharing rather than first stop at the first satisfactory explanation of a problem' (McGregor 2014, p.6).

Today's entangled structures of knowledge, power, technology and agency are eliciting an entirely new generation of wicked problems which, as our paper explores, are a result of not just how power now flows in our datafied information society, but more generally, how we think and are affected by these powers. This paper draws upon our experiences as researchers to begin to understand how each of us perceives this state. In essence, this conversation is an effort to elicit the transdisciplinary problematization of the ever-evolving set of challenges, both technical and societal, brought about by advancing technologies. However, we must first determine what these challenges are.

## Fully Sick Dystopia

*Larry Stillman*

This paper takes a dystopic approach to the question of power (the theme of the conference) in relation to digital technologies and their effects. In this respect, my remarks are very traditional and follow a tradition of leftist thought inspired by Marx in his *Economic and Philosophic Manuscripts of 1844* and members of the Frankfurt School (Jay 1973). In fact, I am surprised how easy it has been to frame the problem without descending into silo-driven academic obscurity with its arcane language, buried deep in contemporary electronic search engines. Old-fashioned yellowing books and their old concepts have been mostly sufficient in this endeavour.

What do I mean by the administration of power in and through digital technologies, a theme of the conference? Following Marcuse (Marcuse 1968) and others, I see power as a structurally pervasive and soft influence on how influencing how people think and behave through the development of what is called false consciousness, commodity fetishism, or reification (Lukács 1971), and the corresponding the culture of narcissism (Lasch 1978). These cover up for surveillance, control and manipulation of data under the capitalist mode of production. These latter factors serve to separate individuals from a putative, liberated self, free of paralysing social and psychological control. In strictly Marxist terms not only are we alienated from control of the means of production, but it is also alienated from our 'species essence' 'species being' or *Gattungswesen* (Marx 1964, p. 112) In contrast, a less critical view of socialisation is very standard in sociology, found in the work of Durkheim and Weber and subsequent functionalist thinkers who provide a more positive view of socialisation in capitalist society (Berger & Luckmann 1966; Giddens 1968; Giddens 1971).

For Marxists, Zuboff's characterization of surveillance capitalism, as just a 'a rogue force driven by novel economic imperatives that disregard social norms and nullify the elemental rights' is deeply erroneous (Zuboff 2018, p.18). In fact, the surveillance capitalism that underpins it is not rogue but is integral to the immaterial innovation of contemporary capitalist project aligned with more social control and division soft hegemonizing and legitimizing structures (Poulantzas 1969) that have replaced brute violence in the west and (Bellamy & McChesney 2014).

In fact, we see the hard underbelly of soft electronic power which exists today in developed countries (and in the affluent strata in other countries): data for profit, forces for repression, suppression, extremism, cybercrime. This is all notwithstanding the enormous benefits that can also accrue via innumerable physical and virtual technologies (for example, the application of robotics and AI in health systems, or the simplicities of personal navigation via Google maps). Most of the world does not benefit, and in fact, third world factories with their slave-like conditions producing chips and devices for our benefit are a direct continuation of the crude factory conditions of the 19th century.

Consequently, from the perspective of a person working within the Information Technology discipline, albeit on a far-left wing, I take the view that referencing classical critical sociology is necessary for any transdisciplinary efforts to construct a pathway out of this dystopia, and we need to go back to basics in thinking about the meaning and purpose of technology. This is because these (white male) thinkers offered grand visions of social problems and forces that went across disciplinary boundaries before the emergence of the industrial model of academic work that has resulted in an unhealthy division of critique from technique. Sadly, there now appears to be little

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interest in dealing with larger social questions about the meaning of technology. Even in the Critical Theory wing of IS thinking, there is little direct referencing of the Marxist framework, even though so many of its insights are clearly derivative at a hop-and-a-step. More open political critique of the capitalist mode of production is largely absent, though it is on the way, but expressed in a tight disciplinary mode (Cecez-Kecmanovic & Kennan 2013).

There exists an increasingly monopolistic and homogenous digital system of social-technological control dominated by large-scale players and a corresponding orientation in academia. This contrasts with the originally artisanal and communal ethos of the internet. Today, the system includes the emergence of large-scale panoptical systems of social control, such as found in China where online technology has been embraced wholeheartedly as part of the drive to so-called modernisation, in the spirit of repressive intolerance. This is in contrast to the more open but ultimately manipulative tolerance found in the west. Remember too, that the Chinese model, with its system of facial recognition, fingerprints, firewalls, and surveillance is one that is adopted to an increasing degree in Western liberal democracies as well, as part of the justification for increased state power in the fight against international terrorism or perceived social deviation. Foucault's views on the nexus between power and knowledge equally apply in this context (Foucault & Gordon 1980).

In this regard, Habermas' short essays from the 1960s, which appeared in English in 1972, still sparkle with their incisiveness (Habermas 1972). They are also clearly influenced by Marcuse, whom he cites extensively in one of the essays. Habermas makes the point that there has been a separation of the practice of science (which obviously includes the development of technology) from the philosophy of science (the big questions). But at the same time, this has resulted in the suppression of critical social-consciousness in the technical areas, and the focus on what he calls seemingly autonomous objectified processes, such as the design of systems devoid of political interests or questions (p.55). He writes, condemning the academy and others, that this separation is fallacious and 'serves in the end merely to conceal pre-existing, unreflected social interests and prescientific decisions' (p.59).

Advanced technological society— and since Marcuse's time we have entered into the age of the internet— is consequently a 'political universe, the latest stage in the realisation of a specific historical project - namely, the experience, transformation, and organisation of nature as the mere stuff of domination' (Marcuse 1968, p. 14). We should also qualify the concept of an advanced technological society. In this case, digital technologies, due to their virtuality, can be imposed upon a physical entity at low cost, providing mass entry (for example, the mobile phone). Today, this also includes societies that are considered to be relatively undeveloped. Thus, the whole planet (and now beyond) is involved in this transformative project (Fuchs 2018).

The cultural aspects of this and their mediation via technology should not be underestimated as a reflection of power. As Kirsner observed many years ago, systems of domination consist of technical, social, institutional, and instinctual spheres (Playford & Kirsner 1972, p. 25). In the past, the instinctual sphere was seen to be affected via the culture of mass consumption and diversion as a fashion, the popular media, music or sport through the power of advertising.

Today, however, people seem to accept their role as instant consumers willingly, creators (or influencers) and servants of the seemingly wonderful virtual system which plunders their data and autonomy. In the 1860's, Marx, albeit briefly, spoke of the fantastic form of the fetishism of commodities (Marx 1976, p.165), in which people ascribe all sorts of values to things far beyond the actual physical cost of production (a



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simple example is the cultural and financial extraordinary value attached to some works of art). Half a century ago, Marcuse also suggested that to stay sane there is 'the need for modes of relaxation which soothe and prolong this stupefaction; the need for maintaining such deceptive liberties as free competition at administered prices, a free press which censors itself, free choice between brands and gadgets' (1964 p.7). And, as Haraway wrote in 1985, we now live with 'constructions of natural-technical objects of knowledge in which the difference between machine and organism is thoroughly blurred; mind, body, and tool are on very intimate terms' (p. 303). But as well, today, we can see that diversion includes the emerges of means of engaging in sophisticated anti-social (online bullying, harassment, doxing in a myriad of ways, as well as criminal activity, all made available through various platforms as well as the dark web.

More specifically, what is the character of the blurred-machine organic relationship that manipulates or is used to manipulate instincts in a monopolised system that is simultaneously stupeficient and exploitative? Simmel's 19th century observations of the effects of urbanisation, cosmopolitanism and the emergence of transactional, market-driven and often depersonalised relationships (2002) have been taken up by a number of writers. From Baumann, 'Flexibility has replaced solidity as the ideal condition to be pursued of things and affairs' (2000, p. ix), and Giddens, who emphasised the disembedding effects of modernity upon traditional mores, practices and particularly, modes of communication (Giddens 1990; Giddens 2000). Time and space have been collapsed and reconfigured through digital technologies. However, 'the transmission speed of communication does not improve the value of what people communicate. On the contrary, mediated communication lowers the quality of the communicative performance, as far as to deprive it of the support afforded by non-verbal language, proxemics, kinesics, etc.' (Fortunati 2002, p. 516). In fact, with a reduced sense of the other and multiple and partial identities, there is a potential for behavioural distortion such as that which plays out in exhibitionism and depersonalised political extremism. A recent publication suggests that Trump is the highpoint of this digital distortion of self: 'That there is no history and no objective truth beyond your immediate situational interests, and that reality resets with every tweet or click of the remote' (Poniewoziek 2019).

What is to be done? There is no easy answer. I do not suggest turning off the internet (though some regimes do this when threatened). Google, Facebook and others cannot govern themselves as either technical innovators or content providers and platforms, and governments are all over the place about what to do, depending on their ideological thrust. From the academic perspective, one (long-term) solution is to change the quality of research, development, education and to push for the incorporation of ethical and moral reasoning in technological faculties and a lot of noise in the public sphere on moral and ethical issues. We need to remember that it is only a quarter of a century since the first versions of Netscape became available and we had no premonition of what would be in a very open and fluid situation. Now that we know, there is an opportunity to educate a new generation coming through the system to think far more morally and ethically about their Brave New World. Twenty-five years of good agitation by those coming into the academy could make quite a difference to those who end up inventing the next generation(s) of e-monsters.

## **A Few Thoughts on Three Recent Books**

*Steve Wright*

After a number of false starts, I've decided to try once again to address the question posed of the relationship between power and technology. This time the idea is to approach this by discussing some of the central themes in three books that have made a certain impression on me. One, by Lizzie O'Shea, addresses the question of power and ICT in a wide-ranging social context; another, by Nick Dyer-Witford, Atle Mikkola Kjösen and James Steinhoff, examines Artificial Intelligence in terms of the relationship between capital and labour; the last, by Jason Moore and Raj Patel, look at today's ecological crisis through the prism of world systems theory. As a set of texts, they have the advantage of being quite readable, as well as considering questions around power (and, usually, technology) on different scales and timeframes. And they are quite topical, with the first two having appeared in print only in the last few months.

### **A History of the World in Seven Cheap Things: A Guide to Capitalism, Nature and the Future of the Planet**

The first of these, *A History of the World in Seven Cheap Things: A Guide to Capitalism, Nature, and the Future of the Planet* (Moore & Patel 2017) has a much wider sweep than the rest. Patel and Moore are as emphatic as the other authors discussed here that power and technology cannot be looked at separately from the question of capitalism, which they characterise 'not just as an economic system but as a way of organising the relations between humans and the rest of nature' (p.3). In an amusing introductory discussion, they suggest that 'the most iconic symbol of the modern era isn't the automobile or the smartphone but the Chicken McNugget' (p.5). Chicken has become a staple of the modern Western diet (*cheap food*), underpinned by the fast food industry (*cheap work*), which in turn relies on natural gas (*cheap energy*). It is above all at the frontiers of a global society that many of these cheap resources come to be marshalled, beginning with efforts 'to turn nature into something productive and to transform that productivity into wealth' (p.46). One of Patel and Moore's central arguments is that the notion of *Nature* as something external and counterposed to *Society* is itself a social construct. More than this, both Nature and Society exist today as *real abstractions*, in the same way that *Money*, *Capital*, and *the Market* exist as social forces with agency through which members of society are obliged to relate to each other. *A History of the World in Seven Cheap Things* emphasises the extent to which, over the past five hundred years, development has in large part been predicated upon the externality of costs – or in the words of one of the founders of the world systems approach, 'An essential element in the accumulation of capital is for capitalists, especially large capitalists, not to pay their bills' (Wallerstein 1997, p.4). From this perspective, today the biggest problem facing accumulation – that is, the process of turning money into commodities so as to obtain still more money through their sale – is that the *cheap* options of the past are becoming more and more difficult to find and harness. Increasingly, Patel and Moore conclude, 'Keeping things cheap is expensive', especially when outlays for maintaining social peace are added to the equation (p.182). *A History of the World in Seven Cheap Things* is a book above all about power relations. On the face of it, however, there is little said about technologies, except to the extent that the latter has been designed as means of development and social control. More to the point, almost nothing is said in the book about ICT as such, unless one understands

ICT in a very wide sense as technologies of mass communication that encompass not only computers and the Internet, but also print media. Instead, Patel and Moore's work is a counter-intuitive attempt to provide a reading of the global social setting within and through which the reasons and rationales of current technologies – including but not reduced to ICT – might be understood. In arguing for a frame of reference that they call *world-ecology*, the authors of *A History of the World in Seven Cheap Things* seek to make the case that the current global 'unequal arrangements – even those that appear timeless and necessary today – are contingent and in the midst of an unprecedented crisis' (p.38).

### **Future Histories: What Ada Lovelace, Tom Paine, and the Paris Commune Can Teach Us about Digital Technology**

Lizzie O'Shea's *Future Histories* (2019) is *broad* in a different kind of way, flitting across a range of topics and interests. It is also written in a manner that is more accessible to a general audience than the others. This is not to say that the other two books are badly written, let alone impenetrable for readers without specialist knowledge. Far from it – indeed, the prose of the third book, in particular, is elegantly crafted, as one familiar with Dyer-Witheford's earlier work has come to expect. It is too early to judge the market penetration of *Inhuman Power*, which has only just appeared, and *A History of the World in Seven Cheap Things* has clearly made an inroad beyond academic circles and into *quality* bookshops in the couple of years since it was published. All the same, I have no doubt that of the three, *Future Histories* – which also has just been released – is the most likely to succeed in terms of commercial success and reach. Prominent in the recent campaign opposing the Australian federal government's encryption bill (*The Assistance and Access Act 2018* [Cth]), in June 2019 O'Shea was presented with a 'Human Rights Heroes Award' by the UN High Commissioner for Human Rights. Subtitled *What Ada Lovelace, Tom Paine, and the Paris Commune Can Teach Us about Digital Technology*, O'Shea's book is wide-ranging, even eclectic, while remaining an engaging and even *easy* read. In a bravura performance, *Future Histories'* dozen chapters cover a lot of ground in examining ICT as a means for power: from online surveillance, the consequences of bias in design, the production of open source software, the labour market implications of new technology, and the question of who owns (and who should own) the output of digital labour. Her central argument is neatly summarized in the first chapter, where – having described the beauty of a 16<sup>th</sup> century automaton of a friar in prayer – it is asserted that:

[C]oncealed in many beautiful objects that we see and handle every day is the brutal labor history of places such as Shenzhen that testifies to the power of the process of commodification. Having replaced artisanal automatons with mass-produced robots, we start to treat others and feel like robots ourselves. Our current society reveres some kinds of labor and debases others, and the power of technology to improve our world and livelihood is not equally distributed. (O'Shea 2019, p.5).

Part of the appeal in O'Shea's writing lies in the sometimes surprising associations she makes: between Lovelace's work with Babbage, and the broader question of software development as a labour process; between Paine's rabble-rousing career as a pamphleteer, and how the social media of today might facilitate and/or obstruct participation in public debate; between the practical experience of the Paris Commune

one hundred and fifty years ago, and the contemporary possibilities of overcoming ‘social problems ... by empowering people to make decisions collectively’ (p.114). For those familiar with this subject matter, perhaps there will be nothing novel in all this, but the suspicion remains that *Future Histories* will be read quite widely (clues on that front include not only an audio version of the text available on Amazon, but a pirated digital version of the book having already been uploaded to a widely used online site for such material).

### **Inhuman Power: Artificial Intelligence and the Future of Capitalism**

With *Inhuman Power: Artificial Intelligence and the Future of Capitalism*, Dyer-Witthford, Kjosen and Steinhoff provide the most formally Marxist approach amongst these three books to the relationship between power and technology, even if what is advanced is very much a heterodox Marxist approach (2019). The *inhuman power* of the title takes its cue from one of Marx’s earliest accounts of capital as a social relation, through which human capacities are turned against, and reign over, the human beings from which they spring forth. As a rumination on AI, the book is divided between an initial survey of what narrow or weak AI means in practice today, what general or strong AI might mean for society and radical politics were it ever to be achieved, and – sandwiched in between – a reflection on some conceptual tools (class composition, social factory) that might be useful in making sense of all this. While the last part of the book is fascinating as both speculation and as a critique of Marx’s own conceptualisation of machines and of value, it is the first third, with its attempt to locate machine learning as a moment of workplace and societal restructuring, that is of most immediate interest. In challenging not only the accelerationist arguments propagated by the likes of Aaron Bastani but also the views of those who assert that nothing of substance has changed with the application machine learning to industry, *Inhuman Power* is part of an ongoing debate in left-wing circles around contemporary possibilities for radical social change. Finally, in what is undoubtedly one of the more novel aspects of their book, Dyer-Witthford, Kjosen and Steinhoff happily delve into the genre fiction written by Iain Banks and others, which has portrayed a range of scenarios where AI might become a social reality.

A key starting point of *Inhuman Power* is the definition of a machine presented by Marx in Capital Volume 1. If the origins of machinery from this perspective lie in what Dyer-Witthford, Kjosen and Steinhoff call the *genealogy of tools*, nonetheless the widespread use of machinery is seen as a fundamental leap forward in industrial development:

The machine, which is the starting-point of the industrial revolution, replaces the worker, who handles a single tool, by a mechanism operating with a number of similar tools and set in motion by a single motive power, whatever the form of that power. (Marx 1990, p.497).

For Marx, the labour-saving capabilities of machines in the workplace are deployed primarily not to reduce the burden of the employee, but rather to reduce labour costs. More than this, machinery is interpreted as a means of consolidating the power relationship between labour and capital in favour of the latter:

It would be possible to write a whole history of the inventions made since 1830 for the sole purpose of providing capital with weapons against working-class revolt (Marx 1990, p.563).

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Dyer-Witthford, Kjøsén and Steinhoff spend a lot of time in their book exploring how machine learning is used as a means to supplant humans within the production process (as an aside, they also address the ways in which human input continues to remain indispensable to machine learning – what has been labelled by others as *the paradox of automation's last mile*). One of their most important points, which resonates with the other two books, is the stress they place upon viewing all this from a world systems perspective. Following George Caffentzis (who has offered his own critique of Marx's discussion of machines, although that part of his work is not addressed in *Inhuman Power*), they insist upon the causal link between the replacement of humans by AI within the so-called advanced sectors of the world economy, and 'the expansion of the service sector and global sweatshops' elsewhere (p.24). In this respect, they also echo certain of the views presented by Patel and Moore, intimating that much of the drive for AI may be 'induced not only by technological breakthroughs, but by increasing frustration in finding cheap labour' (Dyer-Witthford, Kjøsén & Steinhoff 2019, p.24).

### Reflections

Power can be an ambiguous term, at least in English. Italian, instead, makes a distinction between two kinds of power – the power to do something, and power over something (or someone). Italian also distinguishes between *potenza*, which is latent (the ability to do something), and *potere*, which is the actual exercise of power. Does this then help explain why in English it is sometimes more common to think of power as a force or as a thing, rather than (also, often) a relationship?

More immediately, what is the nexus between power and technology in each of these books? All talk about power both as a relationship (power over others) and as a *thing* that facilitates action (power to do), but only Dyer-Witthford, Kjøsén and Steinhoff explicitly examine the connection between power relationships and power-*things*. For Patel and Moore, as mentioned before, there is little overt examination of technology as such, while there is often discussion of technology's use in practice (above all if we understand technology itself less as a *thing*, and rather, in its original meaning, as the practical application of science and knowledge). O'Shea also writes a lot in passing about power relationships and the power bound up with technology (and choices made in its development and application), but she is probably most explicit about the topic in her afore-mentioned acceptance speech:

Technological advancement is not just about intelligent design, clever cryptography or brilliant coding; it's also a function of power. To make technology work for people, we need to take this power back – and demand that the development of technology involves social, political and ethical considerations. Just because technology does certain things now, doesn't mean it couldn't do them better. And just because technology gives us the power to do something does not mean that we should. These tensions are not simply technological; they are political (O'Shea 2018).

And that is probably as good a place as any to stop for now ...

### Communities of knowing: Islands in the (data) streams

Mark Howard

Work-in-Progress

Every speaking subject is the poet of himself [sic] and of things. Perversion is produced when the poem is given as something other than a poem, when it wants to be imposed as truth, when it wants to force action. (Rancière 1991, p.84)

– Jacques Rancière, *The Ignorant Schoolmaster*

When our stated aim is a transdisciplinary conversation about technology, power and knowledge I think immediately of Jacques Rancière, and in particular his remark: ‘you cannot understand anything ... if you enclose yourself in the field of one discipline. A discipline is always the *anticipated implementation* of a decision about the relation of thought and life, about the way thought is shared.’ (Blechman, Chari & Hasan 2005, p.300). A discipline or discourse is, before everything else, Rancière claims, the erection of a territory and the objects that belong to it. Its methods are the *weapons* that institute and maintain the boundary (Rancière 2006), while the assumptions in play in disciplinary thought are used in a strategic fashion to disqualify certain agents and aggrandise others. Such distinctions, Rancière argues, accord with the fundamental prejudice that partitions society into *two humanities*: those who know and those who do not. This legitimises the dominance of certain classes – the active over the passive, intelligent over sensuous, and the educated senses over the raw/unrefined senses (Rancière 2009a; Rancière 2009b). The sovereignty declared over knowledge by disciplinary thought is common to knowledge practices within society and is a source of control over thinking and acting in the world—power.

While it is commonly proclaimed, and often without critical reflection, that knowledge is power, a contrary view is that it is not knowledge, but the *control* of knowledge, that is power. For those of us interested in political philosophy, the second iteration of the relation of knowledge and power is adeptly represented by Bruce Sterling, who avers that ‘knowledge is just knowledge. But the control of knowledge—that is politics.’ (2011, p.299.) Alongside the assertion of Rancière, this statement intimately links knowledge and power in a social relation of command—*politics*. While the declaration that knowledge is power is seemingly a claim of equivalence, Sterling’s assertion is a claim about power asymmetries and authority structures, a claim that fundamentally understands epistemology as social, and as such potentially unjust. This concern is pressing in the *info-glut* era, where ICT provides access to a multitude of conflicting truth claims but also consists of platforms that wish to regulate and order the flow of information (Andrejevic 2013). Consequently, the ability to assess the credibility and reliability of sources of knowledge is critical.

As agents in the world, we must continually choose between competing sources of knowledge, selecting what we believe to be credible and reliable. The social processes, institutions and procedures, and interpersonal influences common to our situation shape how we perform this task. This *epistemic system* promotes and validates sources of knowledge, often based on properties such as the social location and identity of the speaker or the interpreter (Andrejevic 2013; Goldman 2001). As such, discrimination between competing sources of knowledge is influenced by existing social norms of rational authority (Fricker 2011) and reflect existing social hierarchies. When experienced as an impediment to agency, epistemic systems may preclude certain communities from the analysis of their own social and political condition. The effect this has is to insulate intellectual spaces from particular epistemic contests, creating *in* and *out* groups. This spotlights how our attention may be resistant to intervention by *outgroups*, a situation observable in the recent phenomenon of *echo chambers* and targeted news feeds associated with social media. Social media platforms appear intent

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on bringing knowledge to and from the people, adopting the stance of expert, or intellectual, expropriating the public of its knowledge. This is contra the approach of French thinkers of May 1968, including Rancière, who suggest what is important is exposing why certain 'knowledges' appear while others do not.

Knowledge, by the account I offer, is a product of a social relation, and crucially, involves a relation of command (power). The control of knowledge is political and affords the capacity to enable, constrain, or direct thinking and acting within the world. As Rancière aims to reveal, conventions of meaning and significance that organise our experience of the world are a prerequisite of community, and this 'regime of the sensible' is what makes possible, while it also limits, our agency (Rancière 2006, pp.1-2; Rancière 2009b). Community membership accordingly requires, as Caroline Pelletier recognises, 'adopting its ways of knowing ... [and] new members are initiated over time.' (Rancière 2012, p.109). This relation of knowledge and power brings new meaning to the concept of the 'online community', and the place of ICT in society.

It is uncontroversial that digital technology (ICT), especially social media, is an important influencer and has become a source of secondary socialisation changing behaviours and attitudes of users, sometimes by design. As Fogg asserts, today computers [ICT] are taking on a variety of roles as persuaders, including roles of influence that traditionally were filled by teachers..., therapists, and doctors...among others. 'We have entered an era of persuasive technology, of interactive computing systems designed to change people's attitudes and behaviours.' (Fogg 2003, p.1)

As such, ICT systems have implications for social relations. While it can be argued that these systems can be designed to empower individuals and level hierarchies, what we tend to see instead is political power further concentrated by ICT platforms working as gate-keepers to social and political participation (Holt, Lang & Sutton, 2017). Further, as big data becomes increasingly necessary for the development and deployment of ICT, we must acknowledge, as Richards and King identify, that 'big data has power effects of its own, which privilege large government and corporate entities at the expense of ordinary individuals.' (2013, p.42). The leveraging of big data, at a minimum, raises issues of data ownership, data privacy, and surveillance, and an extension of these concerns is the potential for corporations and political institutions to monopolise access to data, effectively segregating it from the communities within which it is generated. This will be an efficient means to control knowledge.

Potentially, the ubiquitous spread of ICT, and a key enabler big data, will impact our relations with, and attitude toward, the world (natural, social, political) as it distorts and flattens our vision. Increasingly we may come to encounter and understand our situation through the lens of data: data is all. But we are not merely *rational actors*, and our world is not simply curtains of data. The fantasy of academic positivism, the purported objective or disinterested view from above that so long bewitched the social sciences, has seemingly captivated the computer sciences which now adopt a similar language of objectivity. Big data has taken the place of instrumental rationality, where, to recall Marcuse, speaks 'the mutilated, *abstract* individual who experiences only that which is given to him, who has only the facts and not the factors, whose behaviour is one-dimensional and manipulated.' (Marcuse 1968, p.182). Marcuse here is damning of the positivist social sciences, with their *positivist mentality* reducing humanity to the *one dimension* of instrumental rationality. He could well be speaking of ICT systems and the burgeoning field of big data, *machine learning* and artificial intelligence. Approaching the world as data, as a system to be analysed and manipulated, could have negative outcomes for us intellectually, socially and politically; it is also likely to be bad for that world and a majority of its inhabitants. When it is our relation to other

persons and knowledge of their situation that we obscure behind streams of data this seems particularly problematic, insofar as the real-world exploitation, bias, oppression, injustice and similar might be veiled, first by the data that is collected and, second by the very act of representing it as data.

The position occupied by ICT in society shapes our social ecology, enabling and constraining social participation, increasingly mediating citizenry, and is becoming fundamental to many important forms of participation, particularly social, political, epistemic and economical. While many of the ICT platforms present themselves as liberating and empowering, they remain hierarchical top-down systems that do not represent the ideal of the *people's assembly*, a public space for the exchange of ideas. While the ideal of the assembly, or *the common*, is volatile and a challenge to existing social structures, social knowledge aims to organise society by establishing a material order that stabilises our experiences and limits our thinking and acting in the world. It is the latter that is the ideal of ICT, which is inherently reductive as it attempts to automate thought by taking the complexity of human action and thinking and breaks it down into algorithms and lines of code which reflect the thoughts of its designers. This is why the place of technology within the structures and institutions of society must be contested, for at stake is the control of knowledge—politics and power—and the chance to be the poets of ourselves and our world

### **Datafication and *The Game*: Transdisciplinary intent as a counter-conduct for doing AI research ethically**

*Caitlin Doogan*

The intensified scrutiny of performance produces concomitant levels of vulnerability and insecurity. Teaching evaluations enlist academic subjects to ask, 'Am I good enough?'; measures of quantity (productivity and income generation) enlist academic subjects to ask, 'Am I productive enough?'; and evaluations of quality (impact and academic standards) enlist academic subjects to ask, 'Am I smart enough?' These three questions form the matrix in which generic subjectivities are constituted, performed and measured. They are not, however, only predictive of what will be recognised as quality teaching and research, but of anxious subjects and performances (Davies & Bansel 2010, p.4)

In my work and education in applied and empirical AI and machine learning research, I feel I resist a realm of academic conduct known as *the game*, a well-worn metaphor for the competitive academic environment. Being a data scientist and Transdisciplinary, I suffer the instability of self that accompanies the requirement to slip between discursive realms. The commitment to multiple, sometimes conflicting epistemologies and demand to exercise pragmatic gameplay has not assured me that the game does not force the abandonment of moral obligations and ethical responsibilities. Indeed, this preoccupation with the rules intrudes on my sense of self, in particular, my sense of ethics.

There is a valid perception that the university-based community of AI researchers lack a commitment to the normative ideals of ethical, responsible and socially impactful research. I argue that this is the result of the subjectivity created through hegemonic discursive practices and power-relations (Foucault, 1997), that is, neoliberal academia. In accepting that the game presents challenges to ethical and socially impactful AI



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research, I present a Transdisciplinarity intent as a strategy to reclaim commitment to ethical responsibilities as an AI researcher.

The ethics of algorithms is a current discussion that warrants attention from those academics who are training the next generation of AI researchers. While this group do not principally disagree with conduct of ethical AI, they have not made provisions for such practical knowledge within their mentoring of early career researchers (ERC) who are unlikely to gain competency in this research conduct. AI technologies are already so entangled in the way society functions, and we, as individuals, live our lives. Why does it appear then that as creators, we care little for ethical practice or the social consequences of our work? One possible answer is this:

We are incentivised not to care.

### **The datafied academic**

The neoliberal ideology has seen the ongoing marketisation of higher education, and the commitment of academics to servitude. Early critiques of neoliberal academia were concerned with the resulting reorientation of knowledge as universities became a 'site of capitalist circulation and accumulation rather than of reasoned argumentation.' (Hanke & Hearn 2012, p.12). The relationship between neoliberal academic governance and AI researchers can be explored using Foucault's concept of governmentality, a sophisticated form of 'power which has the population as its target, political economy as its major form of knowledge, and apparatuses of security as its essential technical instrument.' (Foucault 2007, pp.107-108). Here, the academic seeks forms of security through the demonstration of metricised performance targets, namely publications and grants (Kennedy & Hill 2017). These targets are ultimately constructed to achieve the universities ambitions, chiefly productivity and efficiency (Rose 1991). As the achievement of performance targets equate to survival, the academic becomes self-governing and responsabilised. In managing themselves, they shoulder the responsibility for both their own ambitions but also universities (Morrissey 2013; Gill 2009).

Governmentality is expressed in the neoliberal processes of universities by the linking of quantified performance to self-worth. The academic must participate in auditing and self-auditing practices to demonstrate that they are responsible and accountable. These exercises are Foucault's *technologies of the self*, eliciting self-governance through a commitment to improving on one's past performance (1997). Thus, the ambitions of the university become the ambitions of the self-governing academic, securing their viability and subjection. The datafied academic is self-driven to satisfy the university to not only survive but to psychologically reassure themselves that they are a good academic.

When discussing the datafication of the self, Foucault's concepts of governmentality and subjectivity are suitable to understand why the game is so rabidly influential on the AI researcher's ethical orientation. I posit that the speed and brutality of the game are by far the greatest in AI vis-à-vis other academic disciplines, a symptom of AI's role in automated capitalism. The capitalistic global market in which the neoliberal university competes introduces the much-hyped commodification of AI products into gameplay. These products are marketed to attract and generate the coveted industry funding for universities competing on the global stage. Thus, the commodification of AI research and increasing industry influence sees the datafied academic forced to conform to the resulting research and educational agendas of the university. The normative culture of AI research is less emergent than it is repressive.

I've never done an ethics application

– *Professor of Machine Learning, Australian University.*

By default, AI research for social impact is disincentivised for ERCs as this form of applied research nearly always requires working with complex data sets to address specific and contextual socio-technical challenges. For the responsabilised academic, failure to publish quickly degrades self-worth (Kennedy & Hill, 2017). Applied work is expensive, time-consuming and failure-prone, therefore presenting a risk to their psychological security. A further disincentive to such work is the difficulty in establishing its contribution within the disciplinary literature. The velocity of the AI publication cycle, a problem in itself, does not lend itself to the fostering of applied AI research, particularly to the less well-resourced ERC. Indeed, social impact is very rarely a criterion for AI disciplinary publication, and extended discussion justifying the efforts would be seen as a bizarre and rejection worthy inclusion.

The logistics of applied work presents a further obstacle to its motivation. Generally, AI researchers do not have the skills or knowledge to do socially motivated applied research, which requires the use of critically-orientated qualitative methodologies. Indeed, where data and algorithms are concerned, the hegemonic methodological doctrine remains firmly within the quantitative camp. There is no incentive to teach ERC's these skills and there is little recognition from within the AI research community that this is a problem. Published work may not translate well to applied contexts, limiting the ability to make use of this knowledge by other disciplines such as medicine. The use of prototypical AI research output may and has led to poor quality and potentially harmful work (Goto et al. 2019).

Ethical appraisal of AI research is considered a perfunctory administrative chore. It is neither taught nor mandated within the discipline, and while an ethics application is a self-auditing exercise, the AI disciplinary assumption is that it is not required if the research does not involve people as the subjects of that research. Indeed, an ethics appraisal logically contradicts efficiency targets as it slows down the progress of the research and is not considered productive within the discipline. Here, the datafied academic privileges the ambitions of the university over their obligation to the ethical conduct of the self. As such, the neoliberal subjects 'morality is intimately muddled with that of the entrepreneurial institution whose project is a pragmatic one of survival within the terms of government.' (Davies & Bansel 2010, p.9). In AI, research it is morally valid until the university says it is not.

### **AI for (what looks like) social good**

Publicly funded universities have a responsibility to distribute socially beneficial knowledge, which they demonstrate to government bodies generally, through sophisticated performance measurement frameworks (Martin 2011; 2013; Torres 2011). Predictably, the measurement of the ill-defined *social impact* of research presents a perverse incentive to the universities to focus on demonstrating the image of social impact, rather than ensuring that this is being done (Martin 2011). As a result, research culture has undergone 'a shift from valorising the content of research to the mere existence of the research in a numerical system.' (Kennedy & Hill 2017, p.777). The effect of datafying universities in this way is termed the impact agenda, where the higher the perceived social impact of a project, the more valuable it is for the university to promote that it could generate social impact.

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The impact agenda is a dangerous element in AI research. The ability to envision impact is necessary to attract public research funding, but to do so authentically requires social and application knowledge. While achievable in multi-disciplinary work, it is difficult to do in empirical AI research as the potential impact of the research is not always obvious. The datafied academic is incentivised to attract funding and may be inclined to embellish and fabricate the benefit of work that they will do (Chubb & Watermeyer 2017). As such, the rules of the game state that research is genuinely impactful, so long as it sounds like it should be.

Truly ethical and socially impactful AI research is both incentivised and disincentivised in manifestly perverse ways. In examining the underlying reasons for this from a Foucauldian perspective, further troubling questions have arisen. These questions pertain to the validity of the claims of contributions to knowledge and about who is the responsibility for how that knowledge is utilised.

### Transdisciplinary intent

The ethically responsible individual is fundamentally challenged in their role as an AI researcher by the de-incentivisation to conduct socially responsible work. However, the requirement to be conducted as a governed subject of any moral authority does not mean that ethical autonomy cannot be reclaimed. Indeed, this may be achieved by subverting self-governance via the generation of new counter-conducting practices (Foucault 2007). Counter-conduct is a form of resistance which offers sanctuary from such conflicts, by way of thought or reflection (Demetrio 2016). For the datafied academic, counter-conduct is achieved by the demand on the self to co-govern and redirect the mechanisms of those governing, thus resisting the ongoing 'mutual reinforcement of relations of power, knowledge, and subjectivity.' (Odysseos 2016, p.9). I offer that a transdisciplinary mindset is a counter-conduct to achieve this.

AI scholarship is already crushed under the deluge of contextual-less, discipline-bound papers. This situation is an expression of the same problem that Transdisciplinarity aims to address (Nicolescu 2007; 2002). That is, 'the helplessness of the application of a proliferation of knowledge and knowledge systems' (Martin 2014, p.77). The Transdisciplinarian rejects fragmentation and seeks to connect the object, AI research, to the subject, people.

A Transdisciplinary mindset requires directing efforts towards the social processes in which that research will be embedded (Jantsch 1972). The researcher must be willing to engage with extra-disciplinary knowledge as well as practical, personal and local knowledge. Ethical Transdisciplinarity requires the humility to recognise that 'no one perspective, discipline, sector or world view constitutes a privileged place from which to understand the world.' (McGregor 2015, p.115). As a counter-conduct, a transdisciplinary mindset is not satisfied to play the game by the rules. This does not mean acting as an intellectual risk-taker or institutional transgressor but by gaining the self-disciplined reflection and reflexivity needed to integrate knowledge into practice, so as not to commit this privileging (Augsburg 2014).

AI is in its infancy as a discipline and holds a tremendous capacity for innovation, currently commodified in neoliberal academia. While temporarily safe, the AI researcher cannot maintain a siloed mindset which offers only fragility and rigidity instead of the resiliency and adaptability needed to thrive and survive the dynamic gameplay of this discipline. Transdisciplinary intent allows the datafied academic to commit to the achievement of the ambitions of the neoliberal institution while gaining control over the mechanisms by which they do this. While the governed academic no longer has control over their research agenda, they can control the knowledge on which

their work is founded and the intent behind its creation. As such, transdisciplinary intent is a practice of counter-conduct that brings subjugated discourses to the fore and enable different ways of being and seeing.

### **A trilemma of power and the Internet: How globalization and the Internet break down political modernity**

*Eduardo Villanueva Mansilla*

The following contribution is part of a larger body of work centred on understanding the relationship between the performative side and the political side of ICTs and Internet practice, and how these affect the viability of nation-states such as those in Latin America. Practically that means trying to write alongside those lines, in dialogue with people from ICTD, digital media studies and Political science. I aim to figure out how to connect our differing concerns and realities with the potential for some unified understanding of what is important. What I have found it is most interesting in entering this transdisciplinary conversation is that I have been forced to shape my concerns into a narrative that is understandable to those that have very little in common with my experience, both in academia and in life. In response to the question of how to bring our concerns together to influence what is important, I propose a reversal: How can I get influenced by different outlooks and preoccupations?

#### **The premise**

The success of the Internet owes to the conjunction of a process and a state of mind. This process, globalization, is defined by the collapse of the Soviet *world*, reducing ours to just two of what used to be three worlds; also, globalization can be understood as the victory of a specific form of insertion of national economies into the world market, where capital flows are unhindered, financial services are all-powerful, and barriers to direct consumption of services and increasingly, of goods, fall one after the other (Cardoso 2009).

Now the Global South, faced with globalization as promoted from the triumphant hegemon, has opted to accept the notion that openness of markets and free flow of information is the ideology that brought democracy to the world, and that the future requires an acceptance of a combination of liberal democratic politics with liberalization and simplification of trade— globalization as understood in the 1990s. A new state of mind accompanies this triumphant economic process.

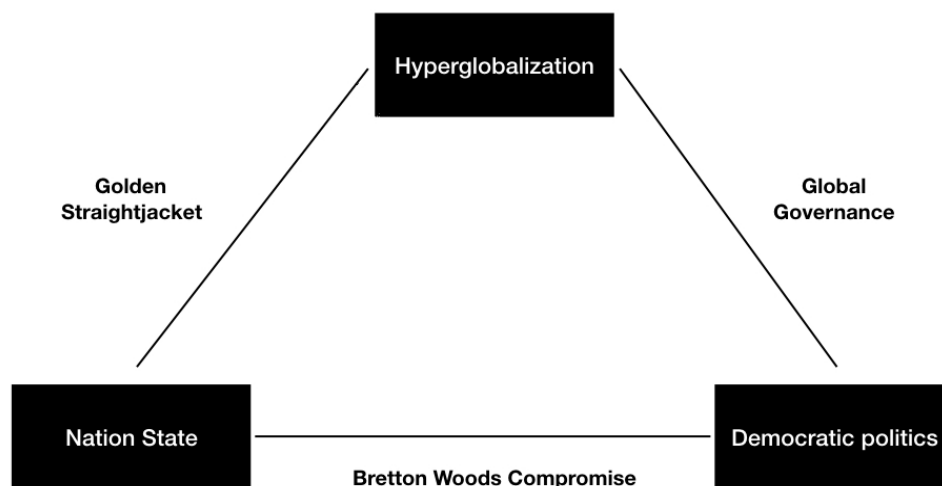
In the early 1990s, the Internet existed as a rather obscure if not opaque resource for academics and, aside from Africa and the old people's democracies, was accessible throughout most of the world. Under the auspices of the then current, pro-globalization Clinton administration, the *Net* transitioned from a channel of individual freedom as defined by hackerdom, into a political project, defined as a support for globalization.

The end of alternative understandings of development was evident by that time. One of the regions that tried very hard to establish its take of development, Latin America, had suffered a terrible decade of economic collapse and political crisis. Consequently, most Latin American countries were ready to shift gears towards an economic system that allowed for more accumulation and access to modern services. This meant ceding sovereignty while becoming part of the world system of trade and industry. Accepting globalization under these terms meant that these countries would be comfortably settling themselves into the midst of Rodrik's trilemma.

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Across the continent, globalization was exacerbating tensions and weaknesses already existing at the nation-state level. Inevitably those tensions would bear fruit in the form of serious conflicts over the capabilities of governments to drive policies geared towards local needs instead of global trends. These criticisms became more systematic after the wonderful years of economic expansion, the various crisis that shook the world in the 2000s. Critics contended that globalization demands global shaping of national laws and regulations and that increased speed of economic integration (enabling frictionless trade), required surrendering control over to international and or multilateral bodies. However, such action would result in diminished national autonomy and cession of sovereignty. If national autonomy were to strengthen, it would impede globalization; democracy necessarily falters when the rules and regulations are created to facilitate the interaction on global with markets instead of the protection of local industry and consumers.

Rodrik's trilemma (Figure 1) proposes that hyperglobalization, democracy and national self-determination cannot coexist and that one of them has to be surrendered away to achieve the other two (Rodrik 2011, p. 201).



**The Political Trilemma of the World Economy**

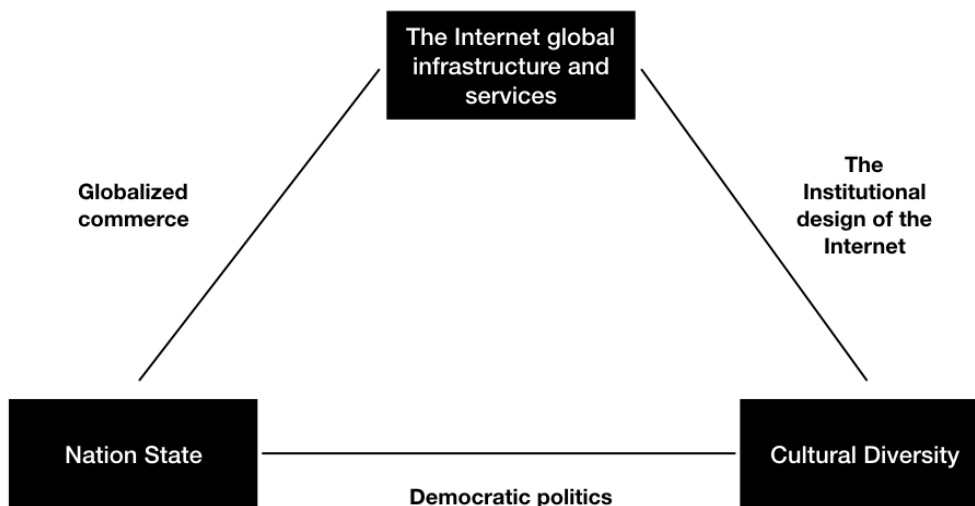
*Figure 1. Rodrik's trilemma or, the political trilemma of the World Economy. Here, national sovereignty, democratic politics and a state of hyperglobalization are mutually incompatible as two of these may be integrated but all three can never by simultaneously combined (Rodrick 2011, p. 201).*

The Internet is part and parcel of the paradox created by this trilemma. As it is a global system, defined by its openness to innovation and investment, accepting the full potential of the Internet requires an allowance for hyperglobalization, only limited by ancillary activity, local regulation or market conditions (i.e., customs, and transportation and delivery costs, for physical items). The increased demand for internet connectivity has necessitated significant investment in telecommunication networks. As a consequence, there has been ongoing integration with global telecom firms. Services accessible through the Internet are inevitably global. While this was the case in the 1990s, and remains so now, the difference between the leading search engine of

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the 1990s ,Altavista, and Airbnb, a contemporary online marketplace for arranging accommodation, is that the first one provided access to the Internet’s internal goods, i.e. links to other pages, and the second inserts itself into local economies, conflicting with local regulations set in place to protect both local industry and consumers— in both cases, it happens at a global scale.

From politics to cultural consumption, the Internet is a disruptive force that influences societies in equally negative and positive ways. However, the Internet is not under the control of local democracies, at least not a forceful, regulation-based way. Indeed, this is an impossibility as the Internet, as a global system is governed by a multi-stakeholder process that, though innovative, is driven by commercial interests. Thus, the decentralized online economy remains outside of the control of state actors’, even at the taxation level, as many horror stories in Europe testify (cf. Burton, 2019, among many others). Moreover, the Internet provides services that have changed access to local culture, but and allowed for questionable privacy-breaching practices. In other words, hyperglobalization run riot, thy name is Internet. Considering these ideas, I propose a modified Rodrik’s trilemma for the Internet can be proposed:



**The Political Trilemma of the Internet**

*Figure 2. The Political trilemma of the Internet.*

Globalized trade requires the nation-state to facilitate telecommunications, imports and service infrastructures necessary to provide for an attractive market for investors. At the same time, if the nation-state commits to democratic politics, it has to provide for an active and culturally diverse public sphere, meaning that room for a non-market based cultural policy must be left, as demanded by many different sets of local political stakeholders. However, to open up a country to the Internet means accepting its institutional design, the protocol politics that are setting up a model of symbolic

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goods circulation. This depends upon the availability not just of telecommunications infrastructure, but of the services and platforms that define the Internet as it is now, in the eyes of the consumer.

As with Rodrik's trilemma, there is an inherent conflict between any combination of these items. Either we choose two of them or one will be nullified or weakened, almost to the point of collapse by any given combination of the other two. The pressure of globalization places on emerging democratic economies is a manifestation of the need to maintain some level of political autonomy while sustaining the expansion of opportunities, of which the economic side of the Internet provides.

Of course, there are many potential opportunities to grow a creative and engaged local cultural arena through the Internet. It is not just the global commercial, cultural producers that count, as it has been demonstrated all around the world. However, it is not the case anymore that single mid-sized nation-states control what cultural items circulate their territory, what content their citizens engage with, or how content that conflicts with local expectations is handled.

While the significant disruption of policy autonomy brought by the Internet has only recently caused issues, this trajectory could be seen from the earliest moments. There were a significant number of positions that drew on the *nicer* potentials of the Internet, positioning it as a powerful engine of equality and democracy, but those dreams were overblown. Research since the early 2000s has demonstrated that the potential for enhancing democracy and cultural autonomy was concurrent with the potential to accelerate globalization. Additionally, recent research points to the fact that all around the world, individuals of all income levels expect to use the Internet for consumption and entertainment (Arora 2019). Add to this the clear trend towards post-truth politics that the Internet has facilitated, and the idealistic imagining of the Internet as a new home of the mind, Barlow's 'civilization of the Mind' (1996), seems like a nice but naive dream.

### **Power as what we do not have**

One thing that has become apparent since the generalization of Internet access, and through the history of ICTD and community informatics projects, is the way that digital technologies have been geared towards individual use, and consequently, the extraordinary capacity of these to empower individuals, even in the context of large organizations. Of course, firms are quite able to channel their vast technological capacities for profit-making purposes, but the issue here is the vast majority of consumer technologies available have been designed for individual satisfaction. In the early days, a collective solution to improve Internet access was popular, yet services were made to cater to individual interests and needs. Thanks to mobile telecommunications expansion Internet access has increased, but the fact remains that such technology empowers the individual as a consumer first. While there are many examples of individuals becoming rich or socially relevant through their astute use of these digital technologies and media, the vast majority of the public simply consumes. This trend to individuate is powerful and shapes our relationship with technology, our notions of public and social affairs, and in the end, with power as collective action instead of just formal institutionalized exercises of sovereignty. However, this creates a severe simplification of what is at stake. An example being Facebook's presentation to consumers that the solution of all and every problem lies in trusting that private actors will find a way to address all problems and provide for a solution in an easy package. It is just a matter of getting your Facebook account, and all will come to you. The acceptance of this by consumers sees the reinforcement of the individuation -

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commercial axis. Globalization scores another goal leaving ICTD to languish. This is because individuation means that the Internet, the most powerful mechanism ever invented to search and use content, and to communicate between people and firms, is defined by individual interests and skills and entirely shaped by their experiences. The Internet is a marvellous way to disrupt mechanical solidarities that are created by belonging to a community. This disruption is achieved through the development of organic solidarities based on interests and sociocultural coincidences that move beyond the immediate social experience resultant from personal interactions or mass media consumption. Even in its earlier state, the Internet provided for cultural experiences that were completely unattached to immediate sociocultural ones. These new experiences were reinforced by new mechanisms of communication across the Internet's new social networks. Nowadays, even our, *real world* social interactions are mediated by social media, and it is evident that the extension and variability of sociocultural alternatives offered by the Internet empower the individual beyond their immediate social conditions in a way that disrupts communities and social expectations.

Created for profit-making and disseminated around the world, it impossible to think of ICT (as created and run by the global giants) as existing in the public interest. Those that create these technologies have little interest in real public dialogue around any semblance of public interest, as public interest runs counter to theirs. Thanks to the absence of restraints that globalization consecrated as the road to global prosperity, we see artefacts emerge, such as algorithmic biasing, as a result of private interests run wild.

As all the actors involved in the Internet economy push for better connectivity and increased consumption, any solution to social issues becomes a road to individuation. Readily available commercial solutions to many social problems exemplified that technological determinism run amok, as well as a disguise of the real effects of individuation. Indeed, contested fields of politics become a narrative, performative exercise, ready to be used by those that define their politics as contention between different rages that hold very little power.

Social rage happens almost without warning. The political and social tremors that course through Latin American countries like Ecuador and Chile resulted in sudden and social explosions in late 2019. These express both the potential for the individuation of power—as people are able to share and multiply their indignation via social media channels—and the diminishing of actual power against economic systems that are designed to redistribute power from nation-states to the system. It is quite easy to promote rage against the machinery of global power. The hard part, for which ICT is not useful, is to translate that rage into significant collective action. Rage may stop the immediate causes such as local political corruption but cannot impose itself over the *machine*.

### **Newer shapes of power**

The existence of nation-states cannot be denied, and their diminishing power is self-evident. Asymmetries of power are palpable. By virtue of its market share, the EU can shape the privacy regulations in many non-EU countries as a result of the power it holds over actors like Facebook and Google, as they have done with GDPR. Other governments, such as the UK parliament, are not necessarily able to push their concerns directly with firms that have acted in ways that destabilize the polity, as they have tried with their condemnation of Facebook in early 2019 (Commons, 2019).



Work-in-Progress

Newer shapes of power demand newer forms of exercising power. Amid a climate emergency, the complete absence of a global polity is a testimony to our unpreparedness to face the real political challenges of the *Age of Confusion* (continuing the traditions of Hobsbawm).

While there may be no actual answers, there are several nonanswers, that is, responses that we know may not work. Foremost: Globalization has reached its limits, the gridlock denounced by Hale, Held and Young (2013) is clear and well-defined. How to create an alternative will demand some form of the global polity, and that may not exist as long as our global public sphere is privatized and run for profit.

Beyond that, digital technologies may be useful for small scale responses, and to ignite social rages, its performative slant prizes such moves. The one thrust that should come from those interested in making a global public sphere in the public interest viable is to remove as many layers of performative demands as possible and insist in a return to the ideals of modernity, of dialogue and fact-based rationality, but on a global and genuinely scale.

Easier said than done ...

Disclaimer: This text incorporates sections written for other papers that are under review for publication. Please do not quote or reference without previous authorization by the author.

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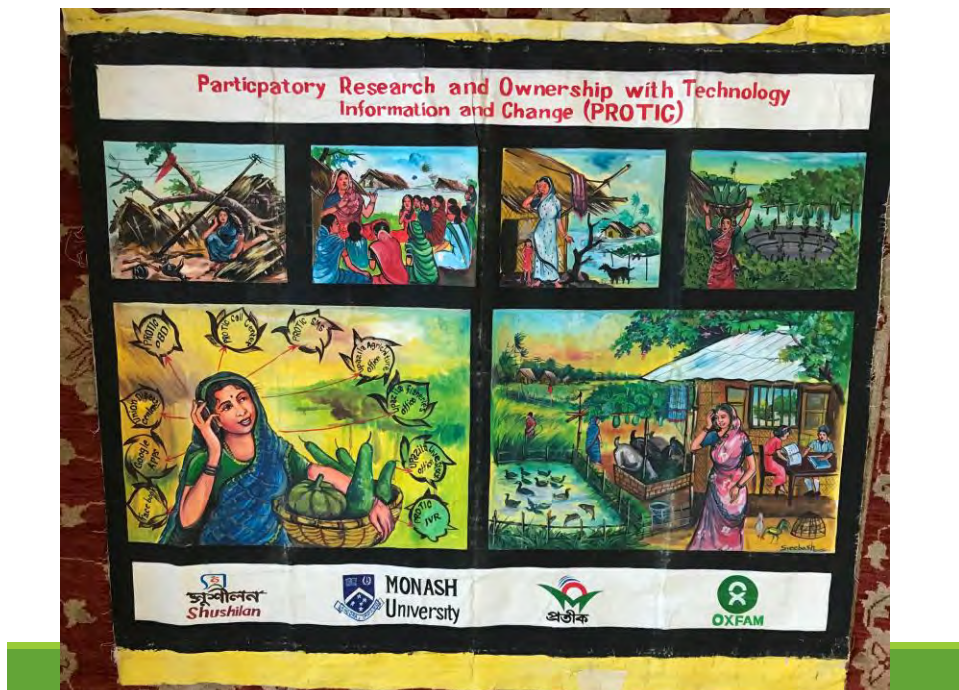
# Facebook, Community Learning and Authority in a Bangladesh Village

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17H CIRN CONFERENCE, 2019  
MONASH UNIVERSITY - PRATO, ITALY

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# Bangladesh at a glance



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## Usage of Social Media and Mobile Phones



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# Introducing Borokupot Village

- Effort on investing on young women and technological advancement to address the poverty and inequality issues and to bridge the **digital divide**.
- Growth of **women's engagement in economic and political sphere**, but their role still under valued and unrecognized.



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# Introducing Borokupot Village

- **Population:** Total number of population is approximately 359
- **Family size:** Average family size 4 to 5
- **Education:** Out of 351 respondents, 43 are illiterate and 92 are able to sign their names only
- **Asset and land ownership:** About 123 people have access to khas (common) land and 183 people have access to khas pond
- **Food security issue:** **About 182 people faced food crisis**
- **Access to information:** Simultaneously dependent on local government authority and local NGOs. People mainly seek information and advice about **seed, cultivation process, fertilizer, weather forecast** and **market price of their agricultural products**
- **Occupation, income:** Major occupation is farming for men. Women identified themselves as 'housewives'. Mainly from the middle class, less savings habit, expense for basic needs are higher.

Note: 1 Euro = Approximately BDT 97

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## Ethical Issues

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We have ethical responsibilities to our university, to Oxfam, and to the government of Bangladesh to behave in an ethical way.

Women and children are very vulnerable.

We must be authorized to conduct our research.

There is a history of exploitation and abuse of people in the developing world. It is a highly sensitive issue.



# Building resilience and skills via mobile technologies in Bangladesh



Rural women are highly disadvantaged in a traditional society, often unable to leave the village due to family, farming, and other responsibilities

Good information is vital for building resilience against natural disasters, climate change, or growing more diverse and better crops

The technology part is easy, but the social and institutional, and educational relationships are complex in getting all this to happen.

Bangladesh is a traditional, conservative, gendered, hierarchical society. Interaction is socially regulated

They are lovely people



## Aims of the Research

- a) Critically understand how the adoption of mobile technologies can be used to reduce social and cultural barriers for women entrepreneurs in rural Bangladesh and contribute to greater economic development in rural economy;
- b) Discuss how social media (i.e.: Facebook) appropriation is contributing to women empowerment;
- c) Investigate whether and in which, different digital engagement affects established power relations and promote social change.
- d) Part of the emerging agenda of activity on data cultures, information genres, collective and/or individual approaches to ICTs in the PROTIC research group and colleagues in BD, Italy, elsewhere

[It's a painful experience to try to convince colleagues who think the of the 'user' as male (white or brown), middle class, of the social and research value of such research even though the average person in the world is a poor women in a rural location with children and animal/agriculture responsibilities]

# Theoretical framework

PROTIC project (Participatory Research and Ownership with Technology, Information and Change in Bangladesh). P.I.: Dr. Larry Stillman, Monash University → **Action research**

## *Grounded theory approach*

A body of research already has shown that online environments exhibit additional possibilities for discussion and participation (e.g. Gil de Zúñiga et al., 2012; Kim & Chen, 2016; Wells & Thorson, 2017).

Citizens use such spaces in many different and personalized ways, both according to their own expertise, creativity and experience and according to various moments of public life (Loader & Mercea, 2011; Valenzuela et al., 2012; Edgerly et al., 2016).

In online sites, civic engagement has been characterized by a wider range of new media practices, ranging from the merely “likers” to content creators (Shirky, 2009).

Much of this activity leaves digital traces, which are of considerable variety (e.g. text, images, video and meta-data) and undoubtedly represent new data sources whose analysis could play a key role in understanding certain phenomena.

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# Methodology of the Research

## Multi-methods qualitative approach

- **Content analysis of the official PROTIC project documents** produced until now (i.e.: project reports, baseline survey report, project website, videos and so on) to understand the context and have some more information (conducted by insider and outsider researchers, one from national perspective and the others from different cultural perspectives-Australian and Italian);
- **10 months of online participant observation** (Hine, 2000) of the Facebook profile dedicated to the Protic project in Borokupot village, a space where people involved in the, project (not only residents of the village, but also local authorities, project animators from local NGO Shushilon and International NGO Oxfam) interact;
- **Content analysis of the “Online Social Data” (OSD)**. We manually extracted all posts shared on the wall of the Protic Facebook profile from January 2018 to September 2018 and conducted a primary analysis of the entire corpus to capture the substance of the interactions and to verify the local engagement

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## Primary observations on contents

- The Facebook profile named PROTIC Coast has 188 friends
- Less consistent pattern of posting. In January 2018, 13 posts and in September only three posts were published on the Facebook profile
- Less engagement of audience in case of posts by community members than local NGO (Shusilon) and INGO (Oxfam) reflects the existing power relationships and structures in BD society
- Few comments, many tags, many likes. Why?
- Few champions who are active on Facebook are also active to lead change in the community activities
- participation inequality (Nielsen): different level of participation within the community (most users don't contribute very much. Often they simply lurk in the background)

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## Online-offline Life



Training organized by NGO on agriculture related sms use. Women community member participants above and NGO worker in below.

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# Agricultural Activities by Community People



**‘My vegetable garden’ – This villager** is from Borokupot village. She was happy when she shared photos of her homestead garden with vegetable production.

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## Professional publicity!

On what was intended on a community page!

All inadvertent, but reflective...



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# Fruit Production

Information sharing about harvesting and diseases.

'This is the time when jackfruits may get infected. If you can, then add Indofil M45 or Ridomil MZ 75 in water (1 liter:2.5 gram) and spray it for 10 days.'

[Repeating SMS information kept in a notebook. Stable technology transferred to another technology]



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# Generic Social Communication



'Good night'

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# Local innovation



We were too optimistic about what the women will do with their Smartphones

Many some do talk outside family restrictions, but they tend to be monitored. Self-regulation

Phones are not individual; communication by people who are part of a group.

Women's independence to do things 'electronic' is not considered important as compared to men, including boys. Women internalize that value.

The use of public social media like Facebook is restricted by culture: women feel bound by family honour not engage in activity that might bring dishonour

Yet, some do break free of this and do post information online.

The role of local NGOs in training and support remains dominant. It takes time to develop skills, and that includes NGO skills.

Despite this lack of 'radical action' people do grow more food, take pride in it, and have healthier animals and fish or shrimp.

## Impact : Small business

- ▶ Homebound, with a very sick husband, this woman independently researched how to make boxes for traditional sweets by going to the market and then 'cold calling'. This was seen as a very radical act in a traditional environment.
- ▶ She was also not satisfied at being a day labourer in the fields.
- ▶ She also searched for more information with Google.
- ▶ She now also markets her boxes on Facebook and has orders for thousands of boxes. She has a thriving small business mostly done by phone.
- ▶ She even employs other women during the holiday season.
- ▶ She is even paying for her husband to go to India for medical treatment.



Photo Larry Stillman





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## Pros of the method

-“Online Social Data” (OSD) are data spontaneously produced within social platforms. [Was it in this case?]

-Researchers can access unobtrusively citizens’ opinions, feelings, needs and concerns (Golder & Macy, 2014) to better understand social, political and economic behaviour (Ackland, 2013).

This type of data does not lend itself as readily to scientific research as does that gathered explicitly with a targeted research question in mind. It is produced spontaneously for reasons other than social scientific research (Kitchin, 2014).

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## Cons of the method

- **Role (online) identification**: Not possible to identify who is behind the Facebook profiles and their role within the community (resident of the village? People from NGO? Local authority?) → pivotal to understand power relations, the empowerment dimension and the connection between online and offline actions

- **Ethical constraints**: Using the digital traces of online activity left behind by individuals raises new ethical concerns (e.g.: anonymity, data storage, lack of explicit user consent (AoIR, 2012).

- **Digital literacy**: Facebook profile instead of Facebook group or Facebook page (Is it a problem of digital literacy?)

- **Content quality**: Digital trace data often fail to contain material deep enough to answer any one particular question (Lukyanenko et al., 2014). This limitation highlights the **need to adopt mixed methods** (Goodspeed, 2017).

- **Silences and absences**. The story behind the story subject to other research

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## What we will do next?

1. Conduct interviews of key actors or stakeholders to understand the linkage between online and offline dimensions and activities
2. Conduct interviews of community users about their motivations and emotions how social media influence their relationship within the community
3. Conduct Facebook content analysis about the use of social media platform for peer learning and sharing mechanism on agricultural production, livelihood related skill information sharing, problem solving and suggestion
4. Theorization & the broader PROTIC research agenda 2020-24

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# ½ formed reflections

Is social media like FB mediated via an NGO in such a society 'appropriate'?

People higher up in NGOs, academia, get too excited: its very marketable "pictures and text and videos"

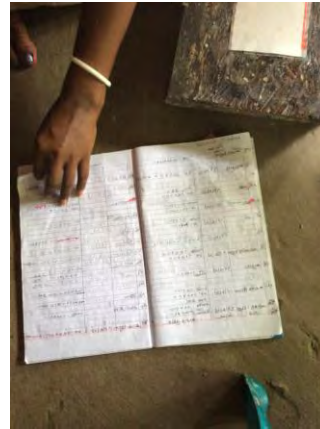
Yet we can't get past the local NGOs in a regulated society

Work with traditional, accepted, surveillable means and let the women develop means within their own culture.

There are different forms of community literacies that are not recognized as valuable in a gendered, regulated environment (discovered by accident). This is critical for social development programs

The old story. You can't put the technology ahead of the people.

It may not result in startling techno innovation. So? When for billions of people, food is more important.



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# Conference Program

## Session Overview

Date: Wednesday, 06/Nov/2019

8:45am - 9:15am	<p><b>Registration</b> Location: <b>Sala Caminetto</b></p>
9:00am - 5:00pm	<p><b>Installation</b> Location: <b>Breakout Room</b></p> <p><b>Art Work including Installations etc.</b> <b>the myth of agency</b> <b>Sarah Newman</b> metaLAB at Harvard University, United States of America</p> <hr/> <p><b>Art Work including Installations etc.</b> <b>Raspberry Pi wireless "mazizone"- local network broadcast @ conference</b> <b>Mark Gaved<sup>1</sup>, Calderón Lüning Elizabeth<sup>2</sup></b> 1: The Open University, United Kingdom; 2: Weizenbaum Institute, Germany</p>
9:15am - 10:30am	<p><b>Welcome/Housekeeping &amp; First Keynote</b> Location: <b>Sala Grollo</b></p> <p><b>Keynote</b> <b>All Watched Over by Machines of Loving Grace - the fight to build a social contract for the digital age.</b> <b>Brandi Collins-Dexter</b> Color Of Change</p>
10:30am - 11:00am	<p><b>Coffee Break</b> Location: <b>Coffee Bar/Sala Billiardo</b></p>
11:00am - 12:30pm	<p><b>Community Design A</b> Location: <b>Sala Grollo</b></p> <p><i>Grad stream</i> <b>Graduate Paper</b> <b>Smart Cities and Participatory Planning: A Cautionary Comparison</b> <b>Alessandra E. Seiter</b> Simmons University, United States of America</p> <hr/> <p><b>Refereed Papers</b> <b>Reducing the capability gap of small businesswomen with a disability with mobile devices and social mediawith disabilities</b> <b>Graeme Johanson, Misita Anwar</b> Monash, Australia</p> <hr/> <p><b>Refereed Papers</b> <b>The real housewives of Makassar: Women micro-entrepreneurs social media strategy</b> <b>Misita Anwar<sup>1,2</sup></b> 1: Monash University, Australia; 2: State University of Makassar</p>
12:30pm - 1:15pm	<p><b>Lunch</b> Location: <b>Coffee Bar/Sala Billiardo</b></p>
1:15pm - 2:45pm	<p><b>Community Design B</b> Location: <b>Sala Grollo</b></p> <p><b>Refereed Papers</b> <b>Co-Designing an Open-Source Broadband Measurement System with Public Libraries</b> <b>Colin Rhinesmith<sup>1</sup>, Jo Dutilloy<sup>1</sup>, Susan Kennedy<sup>1</sup>, Laurenellen McCann<sup>2</sup>, Chris Ritzo<sup>3</sup>, Georgia Bullen<sup>3</sup>, Stephanie Stenberg<sup>4</sup></b> 1: Simmons University School of Library and Information Science; 2: Build With; 3: Measurement Lab; 4: Internet2</p> <hr/> <p><b>Refereed Papers</b> <b>Community Place-Making using Unique Mobile Applications: A Multiple Case Study</b> <b>Dalit Levy<sup>1</sup>, Yuval Shafir<sup>2</sup>, Yael Alef<sup>3</sup></b> 1: Zefat Academic College, Israel; 2: Tel Aviv University, Israel; 3: Bar Ilan University, Israel</p> <hr/> <p><b>Refereed Papers</b> <b>Civic Design Through the Lense of Social Living Labs</b> <b>Bianca Herlo<sup>1</sup>, Paola Pierri<sup>2</sup>, Jennifer Schubert<sup>3</sup></b> 1: Berlin University of the Arts, Weizenbaum Institute, Germany; 2: University of the Arts London, England and Weizenbaum Institute, Germany; 3: Free University of Bolzano, Design and Art, Italy</p>
2:45pm - 3:05pm	<p><b>Coffee Break</b> Location: <b>Coffee Bar/Sala Billiardo</b></p>
3:05pm - 4:05pm	<p><b>Session C Machines, Individuals, Collectivities</b> Location: <b>Sala Grollo</b></p>

**Refereed Papers**

**A Digital Anti-Politics Machine? Expectations for Artificial Intelligence and Data to Solve Complex Sustainability Challenges**

**Karin Skill, Marie Francisco**

Linköping University, Sweden

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*Grad stream*

**Graduate Paper**

**Double Dabble: Speculations about Re-Designing Conferences to Embrace Diverse Agendas of Action and Research**

**Janis Lena Meissner<sup>1,2</sup>, Angelika Strohmayer<sup>2,3</sup>**

1: Open Lab, Newcastle University, United Kingdom; 2: fempower.tech; 3: School of Design, Northumbria University, United Kingdom

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**Works in progress and more speculative pieces**

**Self As A Collective Concept: Implications for Information Systems and Services**

**Gillian Oliver**

Monash University, Australia

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**5:00pm**

**Prato Tour**

**6:30pm**

There will be a sign-up list. The cost is split between those taking part, about 5eu per person. This is always great fun if you want to find out about Prato, its sights, people, culture. It leaves from outside the Prato Centre.

Date: Thursday, 07/Nov/2019

9:00am - 5:00pm	<b>Installation</b> Location: <b>Breakout Room</b>
9:30am - 9:45am	<b>the myth of agency- installation overview</b> Location: <b>Sala Grollo</b> Sarah Newman will introduce <i>the myth of agency</i> . It is a new project, which aligns with several of the conference topic areas, but most acutely with "information sovereignty in a world of proprietary surveillance and datafication".
9:45am - 10:45am	<b>Keynote</b> Location: <b>Sala Grollo</b>  <b>Keynote</b> <b>Confronting power in digital health: Participatory research and culturally and linguistically diverse communities.</b> <b>Ruth de Souza</b> <a href="http://www.ruthdesouza.com/">http://www.ruthdesouza.com/</a>
10:45am - 11:05am	<b>Coffee Break</b> Location: <b>Coffee Bar/Sala Billiardo</b>
11:05am - 12:45pm	<b>Participation and Innovation</b> Location: <b>Sala Grollo</b>  <b>Non-refereed paper/practitioner report/talk</b> <b>Measuring Digital Exclusion in Disadvantaged Communities in New Zealand</b> <b>Barbara Craig</b> Victoria University of Wellington, New Zealand, Digital Inclusion Alliance Aotearoa  <b>Works in progress and more speculative pieces</b> <b>Facebook, Community Learning and Authority</b> <b>Larry Stillman<sup>1</sup>, Manuela Farinosi<sup>2</sup>, Monisha Biswas<sup>1</sup>, Nova Ahmed<sup>3</sup></b> 1: Monash University, Australia; 2: University of Udine, Italy; 3: North South University, Bangladesh  <i>Grad stream</i> <b>Graduate Paper</b> <b>'Institutioning' Participatory Design within International Development Agencies</b> <b>Sarah Armouch</b> Open Lab, Newcastle University, United Kingdom
12:45pm - 1:30pm	<b>Lunch</b> Location: <b>Coffee Bar/Sala Billiardo</b>
1:15pm - 3:15pm	<b>Ethics and Design</b> Location: <b>Sala Grollo</b>  <b>Refereed Papers</b> <b>Power, roles and adding value: reflecting on the challenges of bridging across research and action on an international community networking project</b> <b>Mark Gaved<sup>1</sup>, Elizabeth Calderón Lúning<sup>2</sup>, Andreas Unteidig<sup>2</sup>, Gareth Davies<sup>1</sup>, James Stevens<sup>3</sup></b> 1: The Open University, United Kingdom; 2: Weizenbaum Institute, University of the Arts Berlin, Germany; 3: SPC.org, United Kingdom  <i>Grad stream</i> <b>Graduate Paper</b> <b>Can Community Archives Archive in Israel and Palestine?</b> <b>Yair Agmon</b> UCLA, United States of America  <b>Works in progress and more speculative pieces</b> <b>Capacities for Peace: Video Replay Technology Research and Empowerment</b> <b>Philipp Grunewald<sup>1</sup>, Anna De Liddo<sup>2</sup>, Mark Hedges<sup>1</sup></b> 1: King's College London, United Kingdom; 2: The Open University, United Kingdom
3:15pm - 3:30pm	<b>Coffee Afternoon 2</b>
3:30pm - 5:00pm	<b>Session X</b> Location: <b>Sala Grollo</b>  <b>Works in progress and more speculative pieces</b> <b>Citizen sensing communities: from individual empowerment to collective impact</b> <b>Aldo de Moor</b> CommunitySense, Netherlands, The  <b>Refereed Papers</b> <b>Networked Information Systems as Generative Words: A Freirean critical pedagogy template</b> <b>Martin Wolske</b> School of Library and Information Science, University of Illinois, United States of America
7:30pm - 10:00pm	<b>Conference Dinner- II Baghino</b>

Date: Friday, 08/Nov/2019

9:00am - 5:00pm	<b>Installation</b> Location: <b>Breakout Room</b>
9:30am - 11:00am	<b>Panel: Politics, Power, Community, Technology. Is it all over?</b> Location: <b>Sala Grollo</b> Chair: <b>Vanessa Rhinesmith</b>  <b>Workshop /Plenary proposals</b> <b>Panel: Politics, Power, Community, Technology. Is it all over?</b> <b>Larry Stillman<sup>1</sup>, Caitlin Doogan<sup>1</sup>, Eduardo Villaneuva<sup>2</sup>, Wright Steve<sup>1</sup>, Mark Howard<sup>1</sup></b> 1: Monash University, Australia; 2: Pontifical Catholic University, Lima, Peru
11:00am - 11:15am	<b>Coffee Break</b> Location: <b>Coffee Bar/Sala Billiardo</b>
11:15am - 12:45pm	<b>Ethics &amp; Design</b> Location: <b>Sala Grollo</b>  <b>Workshop /Plenary proposals</b> <b>Social Failure Mode Analysis: Folding the Ethical into the Technical to Promote Ethical Considerations in Design</b> <b>Jason Lee Millar</b> University of Ottawa, Canada
12:45pm - 1:30pm	<b>Lunch</b> Location: <b>Coffee Bar/Sala Billiardo</b>
1:30pm - 3:00pm	<b>Panel: Listening to Communities</b> Location: <b>Sala Grollo</b>  <b>Workshop /Plenary proposals</b> <b>Listening to Communities</b> <b>Heather MacNeil<sup>1</sup>, Fiorella Foscarini<sup>1</sup>, Jennifer Douglas<sup>2</sup></b> 1: University of Toronto, Canada; 2: University of British Columbia, Canada
3:00pm - 3:10pm	<b>Coffee Fri PM</b> Location: <b>Coffee Bar/Sala Billiardo</b>
3:10pm - 4:00pm	<b>Education</b> Location: <b>Sala Grollo</b>  <b>Refereed Papers</b> <b>Who sets the agenda? Supporting refugees' pathways to higher education</b> <b>Halkic Belma, Patricia Arnold</b> University of Applied Sciences Munich, Germany  <i>Grad stream</i> <b>Graduate Paper</b> <b>You wouldn't know half the world was female: skirting the institutional field to achieve gender equity in science</b> <b>Megan E Power</b> Monash University
4:05pm - 4:35pm	<b>Quick Wrap up, move to drinks!</b> Location: <b>Sala Grollo</b> Wrap up, planning ahead...what's next...
7:30pm - 9:50pm	<b>Post conference informal dinner/need to book.</b>