

# Accessing a New Land

## Designing for a Social Conceptualisation of Access

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### ABSTRACT

This paper presents a study of mobile phone use by people settling in a new land to access state provided digital services. It shows that digital literacy and access to technology are not the only resources and capabilities needed to successfully access digital services and do not guarantee a straightforward resettlement process. Using creative engagement methods, the research involved 132 "newcomers" seeking to settle in Sweden. Ribot and Peluso's [47] theory of access was employed to examine the complex web of access experienced by our participants. We uncover that when communities are dealing with high levels of precarity, their primary concerns are related to accessing the benefits of a service, rather than controlling access. Broadening the HCI framework, the paper concludes that a sociotechnical model of access needs to connect access control and access benefit to facilitate the design of an effective digital service.

### CCS CONCEPTS

• **Security and privacy** → *Social aspects of security and privacy*; • **Human-centered computing** → *User studies*.

### KEYWORDS

Refugees, Access Theory, Mobile Phone, Digital Services

### ACM Reference Format:

Lizzie Coles-Kemp and Rikke Bjerg Jensen. 2019. Accessing a New Land: Designing for a Social Conceptualisation of Access. In *CHI Conference on Human Factors in Computing Systems Proceedings (CHI 2019)*, May 4–9, 2019, Glasgow, Scotland Uk. ACM, New York, NY, USA, 12 pages. <https://doi.org/10.1145/3290605.3300411>

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CHI 2019, May 4–9, 2019, Glasgow, Scotland Uk

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ACM ISBN 978-1-4503-5970-2/19/05.

<https://doi.org/10.1145/3290605.3300411>

### 1 INTRODUCTION

Over the last decade, governments have increasingly started to deploy web-enabled online and app-based digital services to serve their citizens [42]. The push towards digitally mediated interactions between citizens and the state grows ever more present [35], as economic and social pressures on public spending increase. When access to such digital services is discussed at policy and digital service design levels, it is typically conceptualised in terms of procuring the technical device needed for access and interacting with data on the device. However, our research demonstrates that having the means to access the service and demonstrating that you are a legitimate service and data user is only one aspect of access.

In this paper, we explore access to digital services in the context of people settling in a new land. For this study, we engaged 132 "newcomers"; a term used by the institutions we worked with to describe groups of refugees and migrants with mixed residence status or those awaiting residence decisions. These are people who have largely *no choice* but to enter into digital communications and interactions to access state-provided services for housing, education, employment, welfare, health and criminal justice. Our participants identified the constraints that affect their ability to access state-provided services for resettlement, and how they overcome such constraints using multiple types of supporting and supplementary access mechanisms. To this end, the ability to access is a form of power, meaning that cultural, material, political and economic aspects form a *web of power* that shapes individual access. Moreover, in common with many narratives of migration [3, 45, 55, 58], precarity emerged as a defining characteristic for this newcomer community that helps to shape this web of power.

Our study focused on "the everyday" - the mundane and routinised - experiences of newcomers to explore the notion of digital service access in this context. To do so we used Ribot and Peluso's theory of access [47] to understand access as the ability to realise benefit from something rather than the *right* to benefit from something. Ribot and Peluso conceptualise access to include the ability to benefit from people, communities and social, political and economic relationships as well as institutions and cultural symbols. In this conceptualisation people are benefiting from bundles of

access powers rather than bundles of rights [47]. Considering access from this perspective, as both control and benefit realisation, enables a broader sociotechnical frame for access design. Theorists in favour of widening the definitions of security have argued that security can encompass enablement (benefits) as well as control and protection [48] and sociotechnical model of digital access fits within this broader framing of security.

This work specifically contributes to the literatures on migrancy, technology access and security design as well as to the digital civics agenda within HCI. It does so by re-examining the meanings of access in relation to an increasingly digitally mediated resettlement process, and by asking who does and who does not get to use what, in what ways and when. In particular, it asks what designing access interactions entails for newcomer communities who often have limited social relations in, and with, their new land.

Using this theory of access [47] and the accompanying framework to analyse the data, we conclude that a sociotechnical model of access needs to acknowledge:

- *Varying Access Capability Needs*: Digital literacy and access to technology are not the only resources and capabilities needed to successfully access digital services. The capabilities needed vary from community to community.
- *Foregrounding Access Benefits*: When communities are dealing with high levels of precarity, their primary concerns relate to accessing the benefits of a service and not potential vulnerabilities or protection from threats to that service.
- *Networks of Access Power*: The service provider conceptualizes access as an interaction taking place with individuals but, in fact, the provider is interacting with networks of people linked by different types of access.

This work contributes to the literature on the centrality of mobile phone connections which has been identified in HCI4D, ICT4D and migration scholarship as key to responding to precarity, on the one hand, and improving opportunities for resettlement, on the other [25, 59, 66]. Moreover, it contributes to sociotechnical security scholarship by providing a broader model of access.

## 2 RELATED LITERATURE

A growing body of HCI4D and ICT4D literature on the topic of technology design in the context of migrants has emerged in recent years [2, 18–20, 27]. In parallel, wider scholarship has given considerable focus to the benefits of mobile phone use as part of the refugee journey or in refugee camps [12, 22, 36, 37, 49, 59, 62] and as enabling mobility amongst transnational populations such as migrants and refugees [28, 61]. However, this canon of literature focuses almost

exclusively on journeying to a new land rather than on resettlement and how technology can keep mobile populations connected to each other and to their new as well as old lands. The research that does exist in this area [44, 64] focuses on the benefits of mobile technology and digital services as part of the act of resettlement. Whilst Johnson [30] noted that mobile phones can help migrants navigate their new urban homes and produce new social networks, much HCI4D work in this context is largely divorced from resettlement processes and the everyday uncertainties and insecurities experienced through such processes.

Importantly, however, notions of precarity, limitations and social isolation have surfaced in a number of critical studies. For example, Refugee and Migration Studies and HCI4D communities have written about the precarity of information access and the limitations of technology use [25, 66]. Panagakos and Horst [44] highlight the technological challenges facing newcomers arriving in a foreign land, stressing how they might struggle to pay for the maintenance of devices and navigate local and national systems. Moreover, Archambault's study [61] on the use of mobile phones in Mozambique shows how this usage may disrupt long-distance relational ties through surveillance practices, whilst Wyche et al.'s work [68] with women in rural Kenya illustrates how mobile phones can amplify social inequalities.

Access to a mobile phone, its connections and the interactions it can facilitate, is increasingly seen as critical for newcomer communities [11] to establish a sense of safety and security in their new country. We bring the literature regarding the access needs of this community into conversation with the more traditional literature on access control to provide a basis for our data analysis.

## Conceptualisations of Access

Traditionally, when we consider access in the context of digital interaction, we approach it from the perspective of controlling access to technology and data [23, 46]. For example, Bell LaPadula's access control model [6] is designed to restrict access to data by making access rights to data dependent on the assigned security level of the user. The Role-Based Access Control (RBAC) model expands on the Bell LaPadula model by introducing the notion that a user may interact with systems in different ways and, in so doing, assume different user roles [51]. These access control models have informed access control design in software. The RBAC model, for example, has been central to the design of electronic health record systems [15–17, 60] by linking access to medical records to the role a healthcare professional undertakes.

Considering access solely in terms of control has, however, been shown to have limitations in the implementation of

systems. For example, the lack of flexibility and its complexity has meant that RBAC is unable to respond to the needs of those who use the system [10]. This only exemplifies the importance of recognising that control of access exists both at a technological and human level. As Vines et al. [65] exemplify, technology is used by a spectrum of people for multiple purposes. Therefore, access also needs to be understood in a wider social capacity and not only in a strict security sense. Whilst the usable security community has placed an emphasis on designing access control mechanisms that reduce the cognitive load [54] and that are fit for use [29], the broader conceptualisation of designing for access to achieve the realisation of benefit has not been comprehensively addressed. This push towards a broader conceptualisation, brings traditional access control theories, such as the ones cited above, into conversation with the broader conceptual framing of security that considers security both in terms of enablement as well as protection [48]. Security theorist McSweeney [38, p. 94] notes that "[s]ituations of security breakdown cannot be considered the only litmus-test of our conception of security". By creating a sociotechnical security model that conceptualises access as benefit as well as protection, it becomes possible to better engage with the agency of stakeholders and how their internal "ontological security" is established [21]. This is central to an individual's senses of trust and confidence that enables and sustains effective access.

Provision of a digital service does not by itself necessarily enable access or ensure the benefits of access. This is, for example, illustrated in ICT4D by Kleine [32] and Oosterlaken [43] who highlight that technological access requires additional relational, informational and technological capabilities. Here, Sen's [56] theories on capabilities and choice have been applied to the context of ICT in developing countries [32]. Whilst capabilities can be seen as particular kinds of freedoms [57] - what a person is able to do, be or become - in technological terms, they can also be used to differentiate between the freedoms of individuals to take advantage of opportunities, including those that are technologically facilitated.

Ribot and Peluso's [47] theory of access offers a framework through which the different aspects of access can be brought together more broadly, and an examination of the extent to which gaps in access capability can be mitigated or reduced. The theory conceptualises access as the ability to gain benefit from something and as "bundles and webs of powers that enable actors to gain, control and maintain access" [47, pp. 154-155]. These "bundles and webs" are broken down into strands of mechanisms that are used to gain, control and maintain access. These mechanisms are rights-based as well as structural and relational. The relational mechanisms serve to highlight the importance of informal information access and exchange between people as a means of supporting the

structural technological access to a service or technology and enabling the legal right of access for an individual.

Ribot and Peluso's [47] theory of access has primarily been cited in development studies [7, 31, 39, 52], where the importance of social networks to support the establishment and maintenance of access is highlighted. However, this theory has also had limited use in technology studies, particularly in the context of disability studies, community ICT and civic services. For example, using this broader access conceptualisation, Barniskis [4] writes about community access to maker spaces in libraries and highlights the importance of social networks and interactions to enable and maintain access to such spaces. Medhi and Kuriyan [39] have used the broader framework to focus on constraints to access which they categorise as physical, capital and social identity constraints. Moreover, Sareen [52] examines how Ribot and Peluso's theory of access can be used to explore issues of benefit in the delivery of civic services in India. Disability studies also uses Ribot and Peluso's theory of access to explore issues of accessibility to disability support services and technology [41]. As this literature shows, communities differ in the access challenges they face and the capabilities needed to support access. It also shows how Ribot and Peluso's theory of access enables a broader conceptualisation of access which takes such challenges into account. We explore these challenges for newcomer communities in the next section.

### **Precarities that Shape Everyday Access**

When considering the complexities of achieving access to the benefits of the resettlement process, it is necessary to understand this access in the wider context of the digital divide [26, 53, 63]. The digital divide has often been discussed in relation to refugees and migrants more specifically [1, 33, 44, 67]. Whilst Sarkar et al. [53] demonstrate how the digital divide in internet patient portal use in diabetes is not limited to concerns over access, Alam and Imran [1] note that access to digital technology for refugees and migrants in Australia, aids social inclusion. The notion of the digital divide, thus, illustrates that not everyone has the same freedoms to take advantage of technologies.

The limited access to social and economic support networks experienced by newcomers creates a series of uncertainties - often referred to as precarities - that make their access needs distinctive. Precarity is generally understood as a situation of continuous insecurity, uncertainty and unpredictability experienced by displaced persons [3, 9, 14, 45]. It is an embodied experience, which creates certain dependencies for those in precarious situations. The term is often used to describe the economic state of people, but it can also apply to wider political and social conditions [9]. Indeed, Butler [9, p. 25] describes precarity as a "politically induced condition in which certain populations suffer from failing

social and economic networks of support". In a similar vein, Ettlinger [14] argues that precarity can be seen to further state control as state sponsored attempts to "protect" precarious populations may open up norms for other populations or citizens to follow.

Banki [3] expands this to include state as well as social and cultural processes. She describes precarity as consisting of "forms of vulnerability and impediments to security and stability that stem from both formal (legal, political) and informal (social, cultural) processes" [3, p. 8]. The dominant line of argument in current migration research stresses the vulnerability connected with "illegality" and "deportability", which relates to the state's power to monitor, detain and remove migrants [40], which is also illustrated by the feelings of insecurity felt by most of our participants. This precarious legal status is understood to go together with precarious employment and livelihood [45], which was evident throughout our study. As such, the notion of precarity provides a useful point of analytical departure for our study. Using the lens of precarity, we explore access to identify how precarities, in connection with the unsettled existence of newcomers, shape access to resettlement services.

### 3 RESEARCH AND METHODS

The study was undertaken in Sweden because of the Swedish immigration policy of permitting migrants to live and attend school in Sweden whilst going through the process of applying for residence [5, 8]. This enabled us to work in an educational setting where we could recruit participants who were at different stages of their (re)settlement journey; those who were still waiting to be granted asylum, those who had been granted temporary right to remain, and those who had been granted residence. This also enabled us to work with participants experiencing the Swedish asylum-seeking and resettlement processes which are largely digitally mediated. We adopted the term "newcomer" as it is the term used by the teachers we encountered who are working with this mixed community. The study was designed over a period of 10 months during which time the researchers engaged with individuals both delivering and receiving the resettlement programme in Sweden, using observations, creative methods and interviews. During these engagements, it became clear that access to the mobile phone was an essential part of the settling in a new land and it played a critical role in our participants' ability to gain and maintain access to required services. A study was therefore designed to explore the different roles of the mobile phone and its significance for effective and successful resettlement.

#### Study Design

The study was undertaken in two Further Education Colleges in Sweden; one cohort in Trelleborg (RgT) and one

in Kvarnby (RgK) - between May 2017 and March 2018. In total, the study included 132 participants aged 25-76. Participants were recruited with the assistance of teaching staff in both colleges and were made up of people with different backgrounds and reasons for leaving their old lands. All participation was voluntary. The study was conducted in accordance with the ethical policies and practices of the researchers' academic institution and under ethical approval granted from that institution. Whilst a wide range of newcomers was recruited, the groups comprised mostly Syrian refugees, who had been in Sweden between six months and three years.

The study was conducted in Swedish as this was the only language shared by all participants (predominantly native Arabic speakers), the teachers (native Swedish speakers), and the two researchers (one native English speaker and one native Faroese speaker). Moreover, all participants were in the top two categories of the Swedish as a Foreign Language programme and had previous experience of higher education or language learning. All participants were thus able to construct complete sentences in Swedish, which enabled them to participate in conversations about their everyday. This also meant that no interpreter or translator was used, however, participants could also choose to use Google Translate and/or helped each other to construct more complex sentences. This was made possible because of the flexibility offered by the research methods. However, this also highlights the limitations of the study, as some participants had to rely on other participants or technology to express their views. Other related studies (e.g. [19]) enable participants to express their views in their native language through the use of translators and the use of native-speaking facilitators. However, this approach was not deemed appropriate given the mixed demographics and the Swedish educational setting.

Group demographics, whilst mixed, were largely made up of participants from the professional classes in their country of origin. Collaborative collage was used as the method for engaging with participants and gathering data. The flexibility of this method enabled us to accommodate a range of language abilities, facilitate the use of translation apps and be as inclusive as possible. Collaborative collage is one of the engagement tools termed "creative security methods" [13] and it uses collaging techniques to enable small groups to discuss broad research questions and provocations introduced by the researchers. Contributions can be made in and through a variety of media and in directly-written, spoken and scribed, and/or illustrated form.

Table 1 sets out the research provocations. The first provocation was used to establish an in-depth understanding of the use of mobile phones by newcomers; how it helps and/or hinders their access to their new land, and how it facilitates

**Table 1: Research Provocations**

<b>Provocation 1</b>	<b>Provocation 2</b>
Your mobile phone: what you do with it and what it means to you	The ways in which stress and pressures shape your access
<b>Stimulus material:</b>	<b>Storytelling:</b>
images, probes, pictures.	drawings, conversations written text.

connections with wider kin and friendship networks which are seen to be critical to informal access mechanisms. One of the central aspects of this initial phase of the study was to better understand mobile phone access and how it shaped the resettlement experience from the perspective of our participants. Provocation 2 was used to engage with the cohorts in a second wave of engagements and was structured around the findings from Provocation 1. These provocations were deliberately designed to work at both an instrumental and a reflective level so that participants could opt to answer in a manner that (1) described their mobile phone use without reflecting on the meanings of that use, and (2) described the pressures and stresses related to everyday mobile phone access. Stimulus material, such as images and pictures, as well as storytelling approaches were used to stimulate participation. Those who wanted to reflect further thus had the space to do so if they wished. In this way, the pressure of participation was further reduced by welcoming different levels of engagement.

### Session Structure and Data Gathering

At the beginning of each session, the methods were presented to participants. The consent form, written in Swedish, was then discussed with the groups and both the researchers and the teacher made sure that the participants understood the form and were comfortable with the principle that participation was voluntary. In Kvarnby, two members of the class declined to take part because of a reticence to engaging in group activities. In Trelleborg, two participants initially took part and then declined to continue, because culturally, they were not used to reflecting on their own practices in this way. Each group was given stimulus materials with which to create their collage(s), as outlined in Table 1. Due to the differences in group and lesson structure, language abilities as well as classroom constraints, individual and group collages were produced in slightly different ways at each of the sites (see Table 2). Initial group sessions across both groups worked on large wall collages produced collectively. In the second wave of engagements, RgK worked individually, in

pairs or in groups to develop collages on A3 size sheets of paper, whilst RgT worked in groups of two or three to respond to the provocation and add responses to one large piece of paper attached to the classroom wall. The provocations were provided in both Swedish and English to be as inclusive as possible.

**Table 2: Research Design and Structure**

	<b>RgT</b>	<b>RgK</b>
<b>Location</b>	Trelleborg, SE	Kvarnby, SE
<b>Number of sessions</b>	3	2
<b>Participants</b>	60	72
<b>Gender</b>	Mixed	Mixed
<b>Age</b>	25-76	25-76
<b>Languages used</b>	Swedish	Swedish, English
<b>Duration</b>	90 minutes	60 minutes

A quarter of each session was set aside for group discussion and reflection of what had been produced during the collage sessions. Due to the sensitivities of the groups, the participants declined to be audio-recorded. Instead, one of the teachers was nominated as a scribe and captured the reflections of the group. The participants commented on the reflections and, at the end of each session, a consensus on key findings was reached. Three forms of data were therefore captured during this process: (1) written and image content on the wall collage or on smaller group collages; (2) researcher observations captured in note form; and (3) conclusions and feedback from the summary discussions. Participants themselves were therefore an integral part of the data analysis process, as noted below.

### Data Analysis

The analysis used Gillian Rose's analytical approach to understanding visual data [50]. This allowed us to reflect on how images had been used to augment and amplify the narratives [34] through stimulus material, as outlined in Table 1. Moreover, participants themselves undertook some of the analysis as this was done within the group themselves and recorded through note-taking by teacher and then integrated into the analysis. Image records were kept of all the generated data, which made it possible to systematically categorise and interpret the visual data. To ensure consistency, the narratives were aggregated, themes were developed, and relationships between the individual themes were explored and validated. A similar approach to analysing visual and co-produced data is used by Fisher and Yafi [19] and in Fisher [18].

Using the themes developed from the image and narrative analysis, access analysis was then carried out using the

analysis framework developed by Ribot and Peluso. The elements in Ribot and Peluso's theory of access [47] are set out in Table 3 below. The images included in the following section function as illustrative examples of the wide range of narratives that emerged during group sessions.

**Table 3: Ribot and Peluso's theory of access: Analytical components**

<b>Flows of benefit</b>	Enables the mapping of flows of benefit.
<b>Access mechanisms</b>	Identifies the mechanisms by which access is obtained, controlled and maintained.
<b>Access interactions</b>	Enables an analysis of the power relations underlying the access mechanisms.

#### 4 RESEARCH FINDINGS

Our analysis uses Ribot and Peluso's access framework to examine what digital access means to newcomer communities and how this access is achieved. We first map digital access for this particular community, not only in terms of the individual technologies that they access but also in terms of how this access is interconnected. Next we examine how access is clustered and the range of mechanisms used to gain, maintain and control access. Finally, we look at what characteristics of the newcomer community shape those clusters and the access mechanisms used.

##### Mapping Digital Access

Thematic data analysis showed that newcomers used their mobile phones in the following ways: accessing formal state-provided services; maintaining contact with kin and friendship networks; and using supporting apps, including translation, entertainment, navigation and scheduling apps. The thematic analysis also revealed that much of this access is interconnected in the sense that the accessing of state-provided services was made successful through the support derived from the other forms of access. The analysis revealed a web of access made up of interactions with kin and friendship networks, which helped participants to work out how to navigate the requirements of access to formal state-provided services. At the same time, the kin and friendship networks and entertainment apps helped to relieve the stresses caused by the interactions with these formal services. Finally, translation, scheduling and navigation apps helped newcomers to meet the requirements of settling in their new land. From

an access analysis perspective, it was important both to map the different types of access but also how the different types of access were connected and the processes used to connect them, in order to form a more complete picture of the web of access. The use of collaging helped participants not only to identify the individual access points but also the individual access processes.

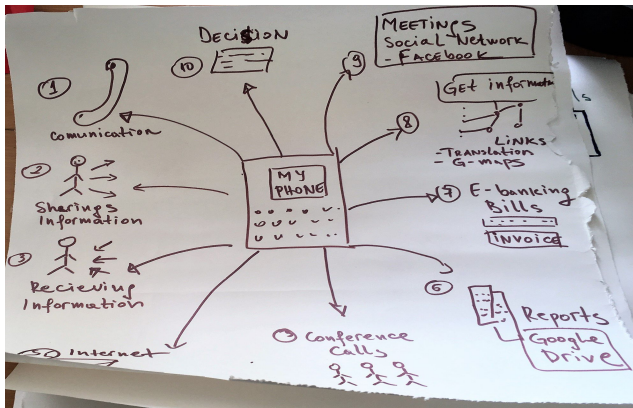
The web of access is composed of a series of connections between clusters of access that give rise to a particular benefit. For example, our participant narratives show that access to translation apps cluster together with access to social networks in order to understand the language of the resettlement services. This is because complexity of access is not solely about interacting in a foreign language but also about understanding the meaning behind the language. This deeper linguistic understanding is needed to understand why emphasis is placed on particular types of information and how information should be presented to that service. As one group of RgT participants highlighted, the service is "[p]sychological - another mentality". It is the translation app that helps individuals to decode the language and it is the social network that includes family, friends and teachers that help the individual to better understand the meaning of the language used.

##### Benefit Flows

Ribot and Peluso's definition of access is built on the notion of realising benefit, as outlined in Table 3. In the case of our participants, the key benefit was to successfully settle in a new land; to establish a new home and a new life. As is evident from several of the collages and illustrations created in response to Provocation 1 (e.g. figures 1-3), multiple flows of benefit come together to realise this key benefit. Yet the ability to realise this benefit depends upon the newcomer's ability to build an effective access network that can leverage the powers necessary for successful access.

At one level, flows of benefit can be grouped into three main categories: 1) realising state support; 2) accessing apps and social networks that increase access capabilities; and 3) accessing apps and networks to maintain and control access. As clearly expressed in Figure 1 below, the mobile phone enables access to realise state support, such as housing, education, health, money management and welfare more generally. The mobile phone also provides access to technologies and networks that enable an individual to compensate for capability deficits such as service knowledge, language ability and time management. Networks that combine access to digital technologies and to social networks are needed for newcomers to successfully establish, maintain and control access to resettlement services.

The individual categories of access are on the one hand fragmented into a range of apps but are brought together



**Figure 1: The myriad of access available through the mobile phone as envisioned by RgK participants.**

through the individual's technology use. The dependency on a web of digital access is so deep that it becomes embedded into the identity of the newcomer. For example, for some, the dependency on the mobile phone and the access it enables means that the mobile phone is experienced as a functioning part of the human body, as an extended limb and as a "friend" in challenging situations (Figure 3). This reforming of identity to include an intimate and embodied experience of digital interactions, reflects how the access network enmeshes people, technologies, services and information flows in such a way that it becomes difficult to isolate the elements.



**Figure 2: Drawing from RgT, which shows how the mobile phone is essential to benefit from access to wider networks.**

**Figure 3: Drawing from RgT, which highlights the many roles that the mobile phone plays in a newcomer's life.**

In order for access networks to be successfully built and used, the individual has to have a sense of safety and security when using and maintaining the network. Our data show that this is, to a great extent, achieved by a securing of biographical identity. This securing is realised through access to social networking and social relationship-building across extensive geographical distances as exemplified in Figure 3. Here, access to digital technology enables the connection

and weaving together of distinct and distant worlds. This particular form of access to new and old ties, especially through social media platforms as Figure 2 shows, is articulated in different and nuanced ways in the collages from all groups. One participant explained how they would "have a coffee with my mum every morning on WhatsApp", whilst another participant felt guilty of having left their family behind in Syria and therefore did "not want to put anything on social media about my life in Sweden". The significance of this interaction does not lie in the engagement with an app but with the leveraging of a bundle of powers related to confidence, trust and individual security. This increases an individual's sense of agency that supports their interactions with the state.

### Access Mechanisms

The framework generated from Ribot and Peluso's theory of access contains an element termed access mechanism. In traditional access models, access mechanisms are regarded as mechanisms through which access is controlled. In Ribot and Peluso's theory, access mechanisms are used to build, maintain and control access. Access mechanisms might be rights-based or they might be structural and relational. Rights-based access mechanisms grant access and can be both technological and social, as illustrated in our findings. Relational access shapes how access is gained and maintained. These access mechanisms thus include knowledge, social relations, identity, authority and technological capital.

Our data consistently show that mobile phone apps constitute a rights-based access mechanism recognised by law, custom and convention. However, rights-based access on its own is insufficient for gaining, maintaining and controlling access. As noted by one participant in RgK: "Installing all the right apps can be really stressful as we're only just getting familiar with the system." Managing rights-based access mechanisms puts pressure on the participants to use structural access mechanisms, in the form of technological know-how, to keep up-to-date with technology developments.

The teacher-student relationship is an important relational access mechanism without which access to resettlement services cannot be gained or maintained. Maintaining access using this relational access mechanism takes place in two ways; where the student is able to ask questions and where the teacher is able to share aspects of access that the student needs to consider. Moreover, the teacher nurtures another important structural access mechanism, namely language learning. This process of maintaining access through the student-teacher relationship underscores the power relationship between teacher and student, where the student is dependent on the teacher for knowledge and guidance.

However, newcomers are not powerless and the use of digital technology helps newcomers to retain and build access powers. The data also show that the newcomers themselves



are access mechanisms; granting and controlling access to information of value to others. This, interestingly, makes individuals not only a relational and structural access mechanism but also a rights-based access mechanism that regulates access on cultural terms. For example, participants in RgT showed very clearly how they curate their own information and how they control access to the information about their lived experiences and life-worlds in a new land. This was done through self-censoring their own social media pages, for example, in order not to *"upset people back home"* in the old country. From a different perspective, one participant in RgK explained how she had used her mobile phone to enable access for her parents and husband to resettlement processes originating in the old land while sitting on a bus in Malmö: *"My husband and my parents were on their way to the Swedish visa application centre in Beirut from Syria, when they needed my right to remain in Sweden in order to be able to enter Lebanon."* By sharing the information quickly, she enabled her family to gain access to the next step of their resettlement journey. Participants also noted that it was important to control access to certain types of digital interactions. Access control mechanisms included: setting boundaries with family and with your boss; giving yourself time; switching off the mobile phone; and setting priorities.

## Characterising Newcomer Access Networks

Using Ribot and Peluso's broader conceptualisation of access to first map different elements of access used by newcomers and the processes that link individual technological access and then identify the access clusters and the mechanisms at work within those clusters, it becomes possible to characterise the access requirements for this particular community.

Newcomer access is set against a background of waiting and uncertainty and this amplifies conflicts between access mechanisms, where access mechanisms can both benefit and dis-benefit an individual. For example, successful and confident access to resettlement services in Sweden requires knowing that family and friends are safe in the old land or in another new land. However, being connected to the old land can also increase stress as it enables newcomers to witness "*bad things*" happening in the old land. This was particularly stressful for participants who felt that they could not switch off. For many, the mobile phone was seen to provide access to an array of social media platforms making it impossible to switch off: "*In order to let go of stress, you should not look.*" However, accessing digital technology to overcome some of these barriers comes at a cost. In particular, the need to always be connected was explained as increasing stress and disrupting the rhythm of the everyday. Participants noted that the expectation from others that you will always respond increases pressure. Collage outputs illustrate how this pressure builds when you are expected to respond

to employers who contact you after hours. As noted by one participant, this is particularly stressful "*when you are a temporary worker.*" Because of the precarity of their situation the need to respond to employers at "*all hours of the day*" and to keep up-to-date with what happens in their old land, adds multiple layers of pressure which are, in part, reinforced by the presence of digital technology.



**Figure 4: This RgK drawing shows how one participant feels their life would be over without access to the mobile phone.**

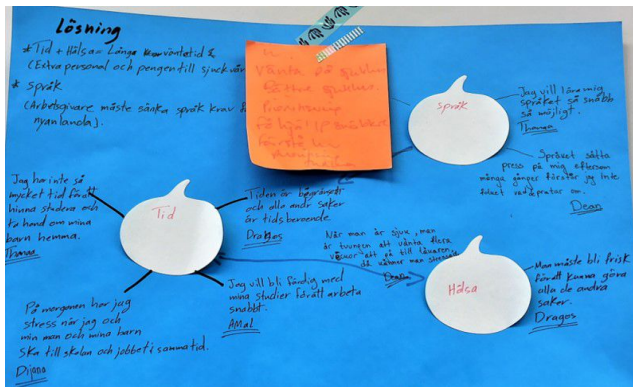
This centrality of digital technology is, for example, illustrated in Figure 4 above, where the participant has drawn a coffin as an illustration of *"life without a mobile phone"*. As is evident from the responses from RgK, for the participants, it is not possible to *"live"* without access to the mobile phone. This is evident from the summary notes captured by one of the teachers, where participants felt that *"society forces us"* and that there is *"no alternative - not possible to opt out"*.

The analysis mapped access and identified clusters of access that respond to the core challenges for this community. The challenges identified include: lack of time and a sense of urgency; the Swedish weather; age; illness; conflicts in the old land; lack of money; and pressure to learn a language as fast as possible. Figure 5 below, for example, is laid out as a network map and grouped into pressures related to "time", "health", and "language". In relation to time pressures, this collage articulates that finding the time to both study and maintain the everyday rhythm at home is difficult: *"I don't have much time to study and take care of my children at home."* This pressure is also reflected in concerns about finding a job: *"I want to finish my studies quickly so I can work."* Time pressure emerged as a dominant narrative and was, in part, created by resettlement.

In addition to time, health fears were expressed as another stress-related factor in the everyday that affected access. As noted in RgK: "*Health problems can make pressure double*". One participant in RgT expressed that it was important to recover quickly from illness "*in order to do all of the other*



things" needed to be done (Figure 5). This was related by another participant to worries about not being able to take care of their children: "If I die who can take care of my children?". For the older participants in all groups, it was felt that age slows you down and causes stress as it is harder to adapt or learn things as quickly as you used to be able to. Learning Swedish was therefore seen as particularly stressful in this context. "I want to learn the language as quickly as possible" (Figure 5) was a recurring narrative amongst participants in both groups and was seen as constraining access.



**Figure 5:** Taking the form of a network map, layered with post-it notes, this illustration from RgT articulates a series of everyday pressures related to time, language and health.

Mapping the challenges and then overlaying access in this way illustrates how access is clustered around responses to challenges for a particular community. The access map also reflects how social network use and the use of social and entertainment apps are an important means of living with the disbenefits of access. Such a map helps to contextualise the meaning of different types of access showing superficially distinct types of technological access are connected.

## 5 DISCUSSION

The findings reflect that a sociotechnical access model should encompass:

- foregrounding access benefits as the overarching goal of sociotechnical security design;
- identification of access capability needs to overcome the barriers and threats to access benefit; and
- identification of the networks that support an individual's access and that enable an individual to leverage access powers.

Such a model promotes an understanding of how a community gains, maintains and controls access. As part of that

understanding, it is important to identify the access constraints faced by that community. In the following discussion, we outline where HCI can contribute to this approach to access.

## Varying Access Capabilities Needs

As access to essential services becomes increasingly dependent on human-computer interaction [35, 42], the opportunities for direct interaction with service providers and support groups are reduced. This development makes HCI critical in facilitating successful access. Our findings show that when designing digital services, we have to conceptualise access as more than rights to a service or a technology. Instead, we need to take into account the full set of means, processes and relations that are needed for an individual to successfully realise the benefits of accessing a service. Our data show that whilst our participants were all digitally literate and used to accessing digital services, they still had a capability deficit that challenged successful digital service access. For example, the newcomers in our study present a depiction of everyday life that demands the use of scheduling apps, transaction apps and mapping apps to make sure that they can manage and keep up with the requirements of their own resettlement, as well as assisting others.

However, these deficits in capability are more than simply knowledge gaps. The inability to understand the *mindset* or philosophy of the service itself emerged as a clear capability deficit and as a prerequisite for newcomers to determine what information to share with the local authority and its third parties, and how to frame that information. Our data also show the importance of trust and confidence as a type of capability that is needed to augment an individual's sense of agency and ability to successfully access resettlements services. Much of the confidence comes from access to kin and friendship networks, the development of trust relations and the cultural embedding into an environment. This is also evident within the framework created based on Ribot and Peluso's theory (Table 3), where the notion of access through the navigation and negotiation of social relations, such as friendship, trust, reciprocity, dependence and obligation are essential to the wider web of access.

Traditional access models are built on the notion of access requirements based on the granting of access based on rights. Our participants, however, presented an expanded vision of access requirements; one that takes into account capabilities needed for access. Sociotechnical approaches to mapping access should thus include this expanded vision.

## Foregrounding Access Benefits

The design of access control frameworks traditionally used in software and technology design assume a specific range of threat actors and associated threats. However, our data

show a different start point: that of foregrounding the realisation of benefit rather than the protection of assets. By foregrounding access benefit, illicit access (the traditional concern of access control models) is positioned as a possible rights-based access mechanism that can subvert and re-direct the access benefit. In our study this broader conceptualisation of illicit access was revealed. Our data show that illicit access was primarily conceptualised as digital technology having unfettered access to the individual themselves and this was seen as necessary if the resettlement benefits were to be realised. Participants drew cyborg-like images that show no clear boundary of where their human form stops and the digital starts; thus, resembling Haraway's [24] conceptualisation of the cyborg as "a hybrid machine and organism, a creature of social reality as well as a creature of fiction." Their unsettled existence was seen to drive this need to be constantly "switched on", constantly "connected", to realise and facilitate the flows of benefit at the cost of partial colonisation by digital technology.

As the related literature explains, traditionally access models used in digital design have system and data protection as their goal [23, 46] rather than the realisation of benefits. These two goals are not necessarily in conflict with each other and sociotechnical access models could be expanded to design for both [10]. Such models could enable the identification of conflict between these two goals, enabling responses either in the design of the technology or in the service. If such modeling is not developed, conflict and the eventual breaking of the protective security model is more likely to occur.

### A Network of Access Powers

HCI has an important role to play in the development of access models that reflect and respond to the security goals of both service user and service provider. Connecting the need to engage and consult with friends and family with the attainment of access to essential, digitally mediated, services can potentially challenge the user-based access models that are prevalent in technology and digital service use. In particular, the access mechanism secured through kin and friendship networks challenges the principle of individual access to user accounts upon which much of end-user security is based. For example, the individual might need help to access the service and may, at times, informally delegate service or technology access to other members of the friends and family network for help with service navigation and understanding.

As our literature review shows, traditional access models do not consider networks of user as part of the access model [6] and roles are considered in terms of direct data access [51]. This is because in traditional access models, access is conceptualised in terms of access to and protection of data

and technology. In the broader conceptualisation of access articulated by our participants, access is primarily regarded in terms of realising benefits and this requires a sociotechnical modeling of not only access to data and technology but also access to technological know-how, emotional support and guidance and understanding of the service and its requirements. These social networks are a means by which individuals can leverage access powers and our data show that such networks are important access mechanisms.

## 6 CONCLUSIONS

By employing Ribot and Peluso's access theory, we have critically analysed webs of access that facilitates a newcomer's resettlement journey. We have shown that communities that experience high levels of everyday uncertainty and insecurity are primarily concerned with accessing the benefits of a service and not the protection from threats to that service. We have identified the pressure landscape - dominated by health, time and language concerns - to be the principal contributing factor to the access capability deficits suffered by this community. To this end, it is important to recognise that digital literacy and access to technology are not the only resources and capabilities needed to successfully access digital services. Similarly, they do not guarantee a straightforward resettlement process.

## ACKNOWLEDGMENTS

We would like to thank our participants and the hosting institutions for taking part. Without their efforts, enthusiasm and energy this work would not have been possible.

We would like to thank the anonymous reviewers for their valuable insights and suggestions, and Martin R. Albrecht for his very helpful discussion on an earlier draft of this work.

Coles-Kemp's contribution is funded by the "Everyday safety-security for everyday services" fellowship programme funded by EPSRC award EP/N02561X/1.

The underlying research data are openly available from Figshare at <https://doi.org/10.17637/rh.7539800>

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