

POLICY ARENA

ICT4WHAT?—USING THE CHOICE FRAMEWORK TO OPERATIONALISE THE CAPABILITY APPROACH TO DEVELOPMENT

DOROTHEA KLEINE*

ICT4D Centre, Royal Holloway, University of London, UK

Abstract: Identifying the particular contribution of information and communication technologies (ICTs) to specific development goals has proven to be extremely difficult. This paper argues that instead of trying to make ICTs fit with a linear conceptualisation of impacts and an often economic view of development, the field of information and communication technologies for development (ICT4D) should be used as a prime example of a development process which has to be analysed in a systemic and holistic way. Amartya Sen's capability approach offers a way of thinking about development not as economic growth, but as individual freedom. The Choice Framework is presented as a way of operationalising this approach and visualising the elements of a systemic conceptualisation of the development process. An individual case study, related to telecentres in rural Chile, is used to demonstrate the way the Choice Framework can be applied as a guide to a systemic and holistic analysis. Copyright © 2010 John Wiley & Sons, Ltd.

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1 INTRODUCTION

The paradox is this: ICTs and particularly the Internet are widely regarded as groundbreaking inventions that have changed the way millions of people live their lives, and yet researchers and practitioners in the field of ICT and development often struggle to

*Correspondence to: Dorothea Kleine, ICT4D Centre/UNESCO Chair, Dept of Geography, Royal Holloway, University of London, Egham, TW20 0EX, UK E-mail: dorothea.kleine@rhul.ac.uk

prove specific impacts of the technology to funders. There may be specific reasons why particular projects fail, even some generalisable patterns of failure (Heeks, 2002), but the overall degree to which the information and communication technologies for development (ICT4D) community has to struggle when trying to legitimise its work to funders is astonishing in the context of a general discourse about how much these technologies have changed our lives.

This paper tries to unravel the reasons behind this paradox by arguing two fundamental points: on a theoretical level, while there have been interesting alternative theoretical approaches to development, including Amartya Sen's capability approach, the mainstream discourse's conceptualisation remains heavily focused on economic growth, which is too narrow to capture the impacts of ICT. Secondly, and on a practical level, the common way of measuring impact, defining the intended development outcomes top-down and *a priori* is unsuitable in the context of multi-purpose technologies which could empower individuals to attain development outcomes of their own choice. Such multi-purpose technologies operate in complex and systemic development processes, which we need to conceptualise appropriately before we can understand the contribution of ICTs within such processes. Based on ethnographic work on ICTs in Chile, the paper presents the Choice Framework as a further step on this journey and a 'living tool' (DFID, 1999) to be used and adapted in development research, planning and practice.

The paper is structured in seven parts. In Section 2, I briefly introduce Sen's capability approach before presenting, in Section 3, some important steps towards operationalising it. Building on this body of work, Section 4 develops the Choice Framework as a further way of operationalising Sen's approach. Implications for research and planning in the field of ICT4D are explored in Section 5 before, in Section 6, the Choice Framework is applied in a case study of one particular individual's usage of the Internet in a telecentre in rural Chile. The final section points out limitations of the model, directions for further empirical research and calls for more theoretical work on the nature of the 'development' element in ICT4D. The paper concludes by highlighting some concrete implications this theoretical work may have for practitioners.

2 EVOLVING THEORIES OF DEVELOPMENT

Research positioned in the contested intellectual space that is 'development' needs to be able to answer the fundamental question of what is understood as development. Broadly speaking, debates in development studies range from positions which equate development with economic growth (e.g. Lewis, 1954; Myrdal, 1957; Hirschman, 1958; Rostow, 1960) through to critical perspectives stressing that uneven development, dependency and inequality are inherent in capitalist development (e.g. Frank, 1967; Dos Santos, 1970; Blomström and Hettne, 1984; Kay, 1989) to ideas of alternative, bottom-up development recognising social and ecological as well as economic goals (e.g. Nerfin, 1977; Chambers, 1983), and radical 'post-developmental' critiques that often dismiss the entire 'development project' altogether (e.g. Escobar, 1995; Rahnama and Bawtree, 1997).

Arguably, the most influential challenge to the mainstream growth-focused view of development has come from Amartya Sen's capability (or capabilities) approach in which development is defined as 'a process of expanding the real freedoms that people enjoy' (Sen, 1999: 3) to 'lead the lives they have reason to value' (Sen, 1999: 293). His understanding focuses on development as freedom of choice. While such understandings of

development are a minority position within institutions, such as the World Bank (Harriss, 2001), Sen's approach has influenced the development discourse and it provides a means of building a bridge between those working in international development organisations and researchers in academia.

The approach developed by Amartya Sen (1980, 1984, 1993, 1999) argues that development is about the freedom of choice in the personal, the social, the economic and the political sphere. In Sen's approach, 'functionings' are the various things a person may value doing or being, such as being adequately nourished, being healthy and being able to take part in the life of a community. In Sen's (1999) terminology, a person's 'capability' refers to the alternative combinations of functionings that are feasible for her/him to achieve. The focus of development, thus, becomes increasing a person's capability set, or her/his substantive freedom, to lead the life she/he values. Functionings represent the 'outcome' component, while capabilities are the 'freedom' component in this approach.¹ In Sen's more holistic view of development, economic growth plays an important, but not exclusive, role. Sen suggests ontologically focusing on human wellbeing and methodologically focusing on capabilities.

While welcoming Sen's approach as offering a more holistic view of development, scholars have been struggling to find a balance between its conceptual richness and its potential to be operationalised for development research and practice. Several scholars (e.g. Nussbaum, 2000; Alkire, 2002; Clark, 2002; Robeyns, 2003a) have attempted to operationalise the approach. Within this field, the majority of studies use capabilities as a normative basis for the research while measuring functionings as a proxy (Robeyns, 2003b), owing to the practical difficulty of measuring capabilities. Some authors (e.g. Sugden, 1993; Roemer, 1996) have challenged Sen to draw up a general list of capabilities, but Sen has refused to do so, claiming that specific lists of capabilities ought to be drawn up for a given research or policy context (Sen, 1993) and, crucially, that the process of choosing capabilities should be left to the individuals (Sen, 1997). The dilemma, which emerges, is how to apply the capability approach to specific areas or sectors in a meaningful way while retaining open-ended development outcomes that do not presuppose individuals' choices.

3 OPERATIONALISING SEN'S APPROACH

This paper argues that in order to properly understand the contribution of ICTs to development efforts, it is necessary to firstly, define which development paradigm we are working with and secondly, to refine our understanding of development processes to recognise their systemic nature. Only then can we understand the contribution of ICTs within the system. This paper is committed to a view of development based on Sen's capability approach. Secondly, it recounts an attempt at translating his approach, conceptually and to a degree practically, into a systemic framework which maps the development process. This systemic framework, the Choice Framework, emerged in parallel to and was then applied in ethnographic fieldwork on the effects of ICTs on microentrepreneurs' livelihoods in Chile. Sen intended his approach to be combined with other theoretical approaches (Sen, 1992). The following section explains how, in order to operationalise the approach for ICT4D and other areas of development, elements have been

¹For a more in-depth discussion of the capability approach, see Kleine (2007).

drawn together from the literature on empowerment and on sustainable livelihoods to create a framework for the application of Sen's approach.

3.1 Alsop & Heinsohn's Empowerment Framework

One of the most interesting attempts to operationalise Sen's ideas is offered by Alsop and Heinsohn (2005). Writing for the World Bank, they link choice with their definition of empowerment². They define empowerment as 'enhancing an individual's or group's capacity to make effective choices and translate these choices into desired actions and outcomes' (2005: 5). ICTs could be seen as useful tools in such processes of empowerment.

Alsop and Heinsohn see material and non-material assets, or resources, as the basis of individual agency which, together with the structural conditions, frame empowerment processes. In their attempt to use empowerment as a middle-range theoretical concept to convert the development paradigm of choice into a construct that is of use to practitioners, Alsop and Heinsohn build a crude framework which connects 'individual agency' with an 'opportunity structure' from which follow the degree of empowerment an individual has to achieve development outcomes. The different 'degrees of empowerment' are: existence of choice, use of choice and achievement of choice (2005: 6). Individual agency is measured by an individual's asset endowment, consisting of 'psychological, informational, organisational, material, social, financial or human' assets (2005: 8). These assets are listed, but not defined. An actor's opportunity structure is said to be shaped by the 'presence and operation of the formal and informal institutions' (2005: 9) and measured by the presence and operation of laws, social norms and customs. Alsop and Heinsohn have applied their framework in the evaluation of World Bank projects with women, on rural water supply and sanitation, on school decentralisation and with school drop-outs.

3.2 The Sustainable Livelihood Framework

Another literature which can be linked to the capability approach is the literature on livelihoods. Based on earlier work on livelihoods (e.g. Chambers and Conway, 1992; Bebbington, 1999; Carney, 1999), the Sustainable Livelihood Framework (SLF) used by the UK Department for International Development (DFID; 1999) offers an analytical tool to understand in a systemic way the elements influencing the lives of the poor. Duncombe (2006) has demonstrated how the SLF can be applied to ICT4D research with microenterprises, while retaining the focus on poverty reduction through economic growth. The SLF includes the useful concept of an individual's 'capital portfolio' made up of five 'capitals': human capital, natural capital, financial capital, physical capital and social capital.

In operationalising the SLF, human capital is measured by formal education and health indicators, but there has been a struggle to quantify 'social capital' (DFID, 1999). As a result, critics have argued that 'everything social' gets packed into the social capital

²The concept of empowerment originated in work on gender relations and community participation (e.g. Moser, 1991; Van Eyken, 1991) and has been increasingly discussed in development studies (e.g. Friedmann, 1992; Kabeer, 1999; Oakley, 2001; Moore, 2001; Bebbington et al., 2006). There are several competing definitions of the term.

variable (Munasib, 2004). This set of assets could be usefully expanded. For example, the hybrid asset of human capital, consisting of the diverse elements of education, health and information, could be disaggregated. The spatiality of access patterns could be usefully captured in 'geographical capital'. Culture is often mentioned in connection with access constraints, while DFID point out that 'culture is not an area of direct donor activity' (DFID, 1999: 21). While the connection between the maintenance of cultural heritage and wellbeing is mentioned, DFID do not go as far as recognising knowledge of one's own or other cultures and respect (from self and others) afforded for such 'cultural capital' as a resource. Finally, the DFID SLF misses a key non-material resource, 'psychological capital', something which Alsop and Heinsohn (2005) do recognise. Thus, DFID's asset pentagram is a good basis, but needs to be modified and extended by some important other non-material resources.

Individuals own or have access to this portfolio of capitals, their 'livelihood assets' with which they negotiate 'policies, institutions and processes'. They operate within a 'vulnerability context' and develop livelihood strategies which may then result in livelihood outcomes. The SLF stresses the need to analyse an individual's own priorities and compare those with actual development outcomes. Livelihood outcomes are a hybrid element, 'combining the aims of both DFID and its clients' (DFID, 1999: 2.6). DFID usefully stress that priorities can conflict and that non-tangible outcomes may be very subjective and private. However, at the point of putting placeholders for those priorities into the framework, DFID still resort back to placing 'more income' at the top of the list, even before 'increased wellbeing'. The SLF, thus, offers an impressively broad and systemic view of development processes, but its set of capitals is limited and the view of development goals is still a compromise between the individual's choices and the parameters set by the funder. In this respect, the SLF fails to fully mirror the thinking behind Sen's approach.

3.3 Developing the Framework

The Choice Framework presented in the following section of this paper is based on the capability approach and on Alsop and Heinsohn (2005), while taking elements from the SLF. It draws on the structure–agency dialectic, link to empowerment and nuanced view of choice of Alsop and Heinsohn's work, taking from the SLF mainly the idea of a capital portfolio and elements of its visual representation.

Although the underlying intention behind this framework has been to specifically evaluate ICTs' development contribution, the framework itself can be seen as applicable to development processes more generically. It is informed by but also differs from the work of earlier authors (e.g. Garnham, 2000; Mansell, 2002; Gigler, 2004; Johnstone, 2007; Zheng, 2007; Oosterlaken, 2009) who have sought, from different angles, to show how ICTs or communications can be linked to Sen's capability approach. Here, I first take a step back to question what is meant by development, using and to a degree operationalising Sen's ideas in developing a framework—before considering ICT4D as one possible area where this framework can be applied. In his work, Gigler (2004) has been successfully utilising the SLF to help operationalise Sen for ICT4D. My use of the SLF is limited to elements such as the visualisation of the process and the resources' portfolio. Instead, my approach draws fundamentally on Alsop and Heinsohn's conceptualisation of the relationship between

resources (assets), agency, structure and choice. For a more detailed account of the genesis of the Framework, see Kleine (2007).

4 THE CHOICE FRAMEWORK

While Alsop and Heinsohn (2005) consistently place choice at the centre of their framework and recognise structure and agency elements as interlinked, but do not elaborate the process in detail, the SLF offers a more detailed systemic framework with five defined assets but does not focus on choice to the same degree. Thus, when preparing for fieldwork in Chile (Kleine, 2007), a framework was developed which was inspired by Alsop and Heinsohn’s work on operationalising Sen’s work and took elements from the SLF to make it more nuanced. The resulting framework was further refined during fieldwork and the result is presented here. However, what is shown in this paper is just the current version of a ‘living tool’ and it is anticipated that it will be adapted for different uses and refined further. After presenting it in diagrammatic form (Figure 1), the following sections will in turn explain each of the key components of the framework.

4.1 Outcomes

True to Sen’s statement that choice is both the aim and the principal means of development (Sen, 1999), the primary development outcome is choice itself. Secondary development outcomes depend on the individual’s choice as to what lives they value. These may include, for example, easier communication with personal and professional contacts, increased knowledge, more income or time saved. ICT might prove useful tools in achieving these outcomes. Just like other attempts to operationalise Sen’s work, here capabilities are not measured directly, though participatory research with individuals and groups may reveal them to some degree. Mainly, the outcome component will map or measure the achieved functionings resulting from an individual’s choices as a proxy for the capabilities.³ An analysis based on the Choice Framework would then work backwards, from the outcomes, into the systemic relationships between agency, structure and choice, thus analysing how the outcomes were arrived at.

4.2 Dimensions of Choice

Alsop and Heinsohn’s dimensions of choice, which they call ‘degrees of empowerment’ include, firstly, the existence of choice—whether the different possibilities exist and are, in principle, attainable for the individual if the combination of their resource portfolio and the structural conditions allow it. The second dimension, a sense of choice, not originally included by Alsop and Heinsohn, was added as a result of fieldwork experiences relating to ICT and development. Individuals were aware of some possibilities the new technology

³Two disadvantages of this method are that some of the individual’s capabilities are not captured in the achieved functionings and that it is difficult to trace the choices related to apparently negative outcomes. However, so far, capturing functionings is methodologically easier and more precise—in regards to both quantitative and qualitative methods—than capturing capabilities.

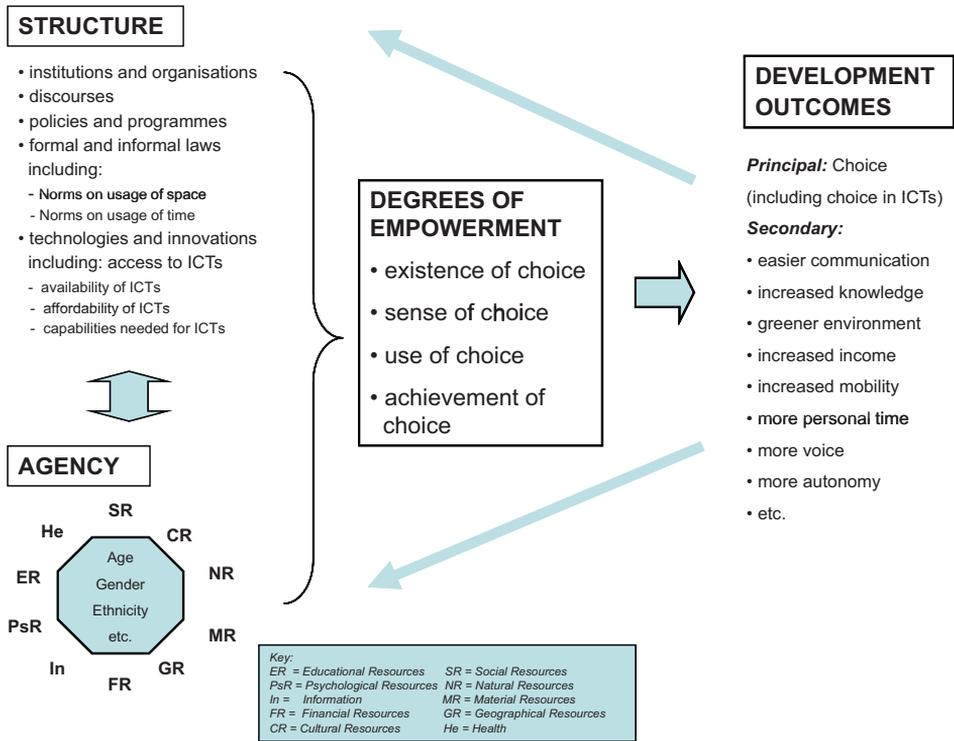


Figure 1. The Choice Framework (Kleine, 2007, based on Alsop and Heinsohn, 2005, and DFID, 1999).

offered them, like email and online chat, but not of others, like voice-over-IP. This was precisely because their educational resources (including computer skills) and the dominant discourse in the Chilean media stressed some usages over others. For any piece of research focused on a technology which is new to the respondents, the dimension of ‘sense of choice’ will play a significant role, since they have to imagine use/non-use. The ‘sense of choice’ dimension will capture a wider set than the next, ‘use of choice’ dimension, which refers to whether or not an individual actually makes the choice, and following on from that, the ‘achievement of choice’ refers to whether the outcome matches the choice expressed.

4.3 Agency

Instead of using a terminology of capitals and asset or capital portfolios, Sen uses the term ‘resources’ within the capability approach (Sen, 1984). Resources can be interpreted as individual agency-based capability inputs which, together with structure-based capability inputs, can be converted into capabilities (Robeyns, 2003b).

In the Choice Framework, age, gender, ethnicity, etc. are conceptualised as personal characteristics of an individual which may in a given social context become related to socially constructed axes of exclusion and influence the scope and scale of the resource portfolio. The resource portfolio forms the basis of the agency component of the

framework, which in turn is part of the process that is being mapped. The resource portfolio consists of:

- *Material resources*: These sum up the material objects owned such as machinery, computer hardware and other equipment. They are also essential as means of production.
- *Financial resources*: These stand for financial capital in all its forms (cash, savings, etc.). The ability to obtain credit is a combination of the structural character of the banking rules and individual collateral.
- *Natural resources*: This includes issues, such as geomorphological and climatic conditions, in a locality and related aspects such as soil quality and the availability of or access to water as well as the attractiveness of the surrounding nature.
- *Geographical resources*: Covers the practical implications of location and relative distances (related to transport and communication infrastructure), and also includes the intangible qualities of a location alluded to by writers from Marshall (1920) (who refers to tacit know-how of specific trades being focused in spatial clusters) to Storper and Venables (2004) (who describe the ‘buzz’ of face to face contact in the urban economy). Helbrecht (2005) has been calling the latter ‘geographical capital’.
- *Human resources*: The term ‘human resources’ has been used for decades in the economics and industrial relations literature. In the Choice Framework, this term needs to be disaggregated into health, and education and skills (educational resources), since for each, the logic of accumulating and maintaining are very different. Within Sen’s paradigm of development, good health is a key factor for a person’s ability to choose the life she/he values. Educational resources represent education and skills acquired through formal and informal means.
- *Psychological resources*: Alsop and Heinsohn (2005) recognise the significance of ‘psychological assets’ and give as an example ‘capacity to envision’. More broadly, psychological assets may include self-confidence, tenacity, optimism, creativity and resilience. Spirituality or religious beliefs stand in complex interrelation with psychological resources—they can strengthen or weaken an individual’s psychological resources.
- *Information*: Alsop and Heinsohn list informational assets as a key resource. Heeks (1999) calls for putting information at the centre for analysis of ICTs and Development and Gigler (2004) adds ‘informational capital’ to the capital portfolio. Access to information is the first step to knowledge acquisition, the process of filtering and transforming information into meaningful knowledge.
- *Cultural resources*: ‘Cultural capital’—which in the Choice Framework is called cultural resources—exists, according to Bourdieu (1986), in three states: an embodied state (the *habitus* a particular person lives in); an objectified state (objects like paintings, instruments and monuments which only the initiated can use or appreciate) and an institutionalised state (prestige attached to, for example, academic titles).
- *Social resources*: ‘Social capital’—or social resources—is included in both the SLF and Alsop and Heinsohn’s work. It has been both immensely influential and highly contested in development discourse. For the Choice Framework, Bourdieu’s definition of social capital is used:

the aggregate of the actual and potential resources which are linked to possession of a durable network of more or less institutionalised relationships of mutual acquaintance and recognition—or in other words, to membership in a group—

which provides each of its members with the backing of the collectivity-owned capital, a “credential” which entitles them to credit, in the various senses of the word (1986: 249).

Membership of these groups can be defined by kinship, friendship, shared ethnicity or class, friendship or informal commonality ties.

Thus, these ten types of resources—material, financial, natural, geographical, health, educational, psychological, information, cultural, and social—represent an attempt to holistically map aspects of the agency element of the systemic framework. However, it is important to recognise that this resource-based agency can only be realised within the confines of and in systemic interaction with a given structure, as analysed next.

4.4 Structure

Both the empowerment framework suggested by Alsop and Heinsohn and the SLF take into account not only individual agency, but also structures which aid or constrain this agency. Alsop and Heinsohn list ‘formal and informal laws, regulations, norms and customs’ (2005: 9) as elements of this structure, while the DFID SLF includes these as laws and ‘culture’—the latter running the risk of being used as a kind of black box into which all locally specific aspects can be subsumed. The SLF includes not only laws, but also policies, institutions and processes. There are also informal norms on the use of time and space, for example those deterring, in some contexts, young women from being in public bars at night and men from going into beauty salons. These are not formal but nevertheless can set clear limits to the choices an individual has. Rules, laws, formal and informal norms and policies are embedded in, and often emanate from discourses, and hegemonic discourses can define the thinkspace in which policies, including ICT policies, can be conceived. For example, subsidised service provision to rural areas would be embedded in a discourse of equal rights of access to information for all citizens. Thus discourses are included as a key part of the structure element of the Choice Framework.

In particular with respect to ICTs, relevant elements of the structure which influence an individual’s agency include dimensions of access, such as availability, affordability and capabilities needed for using different ICTs (Gerster and Zimmermann, 2003). To avoid confusion with Sen’s use of the word, the term ‘skills’ is used instead of capabilities. These dimensions of access are nationally and often locally specific, path dependent and embedded with other elements of the structure.

Structural factors, such as these, stand in a complex relationship with an individual’s resource portfolio. For example, with the help of social resources, an individual might have access to the Internet (at a neighbour’s house) which might lead to frequent email contact with a distant family member, thus increasing occasions of, in Bourdieu’s terms, “legitimate exchange” with both the neighbour and the distant relative, in turn potentially increasing social resources. Similarly, a person with higher educational resources (skills and education) and information might find it easier to use the existing access facilities to enhance their skills and gain information. The interface between the opportunity structure and individual agency, thus, includes a host of reciprocal and cumulative processes (Giddens, 1984). Structural constraints need to be recognised as being at least as important an element as individual agency.

Overall, then, the Choice Framework is an attempt to operationalise the capability approach in a holistic and systemic way, thus maintaining much of its conceptual richness. While it may prove particularly useful in the area of ICT4D, the framework could also be applied in other areas of development work. It has been used in a systemic analysis of the effect of ICT policies on local livelihoods in rural Chile (Kleine, 2007) and could be used in analysis of processes as well as planning and assessment of development activities. However, it is important to distinguish between development processes which can be analysed but are shaped by too many factors to be planned, and targeted development activities within these processes, which can be, to a degree, planned and assessed.

5 IMPLICATIONS FOR RESEARCHING AND PLANNING ICT4D

The basic challenge that the capability approach offers to the orthodox methodologies of development research, and ICT4D in particular, is that, on a fundamental level, it questions the validity of outcomes that are defined *a priori* and without consulting the individual in question. Both the inclusion of a development goal and its position within a set of development priorities, however, relate to the question which kind of life people would choose to live and this, according to Sen, is what development is about. A funding institution or government may set, say, economic prosperity as the top priority. Once basic needs such as food and shelter have been met, however, an individual may value being close to family members more than earning more money, or may value a healthy environment for themselves and their children over economic growth. In the practice of development projects, this means that before undertaking an intervention designed to improve people's lives and later measuring its effectiveness, practitioners and researchers would have to ask individuals about their own development priorities and let these guide the planning, implementation, monitoring and evaluation of development projects and programmes. Work done in this area includes participatory monitoring and evaluation (e.g. Guijt and Gaventa, 1998) and, in a broader context, initiatives around participatory budget planning (e.g. Shah, 2007).

Setting development priorities in a participatory way may make the process of development planning more complicated, but it comes with major benefits: Firstly, morally it is the right thing to do to engage the people themselves in the decisions that will affect their lives. Secondly, if the outcomes have been agreed upon in a participatory way, they are more likely to be locally and culturally appropriate and may reduce the rate of failure (Chambers, 1994). Thirdly, a participatory process will hopefully lead to greater local agreement on joint measures and, therefore, higher future institutional sustainability (Oakley, 1991). Fourthly, such a process harbours the chance that the current overly economic focus of development work can be broadened to include environmental, social and cultural aspects and, thus, better mirror the diversity of the kinds of things people value in their lives. Fifthly, ICT and development practitioners work with multi-purpose technologies which offer far more significant changes to people's lives than the economic impact they might have. Moving away from an *a priori*, top-down and often overly economic set of development, priorities offers the chance to recognise the diversity of the contributions ICTs can make to the social, cultural, environmental and economic aspirations individuals may have for their lives. Further, genuine participatory practice can foster a sense of citizenship (Gaventa, 2004) which is the basis for potential subversive uses

of technology which can sometimes create social change for the disadvantaged in a more effective way than mainstream uses.

The Choice Framework is one way of conceptualising such choices by the individual. There are some specific implications for research design, project planning and evaluation which result from the model: a focus on the individual's own development outcomes means that the research, planning and evaluation needs to start from these wished-for outcomes, measure the degree to which they have been attained and work systemically backwards through structure, agency and choice to understand how these outcomes can/have come about. The extensive list of resources covers six less tangible resources (social, cultural, educational, psychological resources, health and information) which pose particular challenges to measurement but need to be taken into account.

ICTs clearly play a complex role in development processes, and thus, it is unsurprising that they appear in relation to various elements of the framework. On the structure side, access to ICTs can be divided in the dimensions of availability, affordability and skills necessary for different ICTs (Gerster and Zimmermann, 2003). ICTs affect the ways organisations operate and may enable new institutions such as e-petitions and activist email networks. They form the basis of whole new discourses such as those about knowledge societies and online security. National and other policies and programmes may focus on different ICTs and ICTs may change the formal or informal rules on what is acceptable behaviour in a particular space or at a particular time. Cyberspace itself has its own norms of conduct. ICTs are embedded in the wider set-up of institutions, policies, programmes, norms and discourses. As such they need to be analysed as firmly and historically ingrained in the societies they in turn co-shape.

On the agency side, ICTs can affect resources such as information, social resources (e.g. cheaper communication), geographical resources (e.g. proximity to access facilities; online communities), psychological resources (e.g. increased sense of possibilities; increased pressure to be available), cultural resources (e.g. online space for sharing cultural knowledge and exhibition space), material resources (e.g. hardware), health (e.g. better access to treatment) and educational resources (e.g. enhancing informal or formal education opportunities). Age, gender, ethnicity and other factors may influence access to ICTs, but may on occasion become less relevant or invisible in an online context.

Access and use of ICTs may also appear in an individual's chosen development outcomes, but are more likely to be seen as a means to an end such as increased knowledge or easier communication with family, friends and business contacts. It soon becomes clear that the contribution of ICTs to development is characterised as one of multiple possible entry points into complex and systemic development processes. ICT-related development activities could use the Choice Framework as a map, a template on which they could sketch out the specific elements of the processes which they intend to have, or claim to have had, an effect on.

6 APPLYING THE FRAMEWORK: IMPACTS OF TELECENTRES IN RURAL CHILE

The Choice Framework emerged in what can be broadly described as a grounded theory approach (Glaser and Strauss, 1967) from extensive fieldwork in Chile. This fieldwork analysed how state ICT policies affected microentrepreneurs in rural Chile and also provided the opportunity to try out the emerging framework as an analytical tool for a

small-size sample of 29 microentrepreneurs, many of whom were revisited in three fieldwork phases of 6–10 weeks each, spread across one year. The findings are written up in a book-length ethnographic study (Kleine, 2007). Headline findings included the fact that ICT-related changes in the structure, such as new free access to telecentres, the digital literacy campaign and moving state procurement processes online, had contradictory, positive and negative effects on microentrepreneurs’ resources as well as existence and sense of choice. For the purpose of this paper, instead of detailing the entire ICT usage of all microentrepreneurs, I will be focussing particularly on the usage of one telecentre and ICT use by one female microentrepreneur as the example. Tapping into the wealth of findings by looking at just one case will allow me to show a holistic picture in some detail, making a nuanced conceptual point even in the confined space of this paper.

When interviewing microentrepreneurs, and in some cases their partners, who were using a telecentre located in a public library in rural Chile, open-ended questions revealed that apart from business-related usages, such as looking up prices of machinery on the Internet (carpenters), looking up photos of furniture models (carpenters), communicating via email with a supplier (carpenters, spice vendor) or buyer (spice vendor), looking up recipes (cake vendor) and looking up guidelines for government business assistance (carpenters), there were several answers which reflected what in many studies of telecentre usage is described as ‘personal usage’. Respondents’ faces lit up when they described how they now could exchange emails or chat with relatives who were living abroad, children who were studying in a larger town or family members who were working as temporary labour on fruit farms or in the mines in the north of Chile.

One respondent, a woman in her 50s whose household income was around 440 USD per month and who together with her husband ran a carpentry business, described how—while the football World Cup was on in Germany in 2006—she visited the World Cup site to find links and take virtual tours of some of the German cities she was not able to visit in person. As a young woman, she had had a pen friend from Kaiserslautern, in Germany, and while he had come to visit her in Chile, her dream of visiting him had never been possible because, she said, the money she saved had been spent on her children’s education. Eventually, they had lost touch but now, she told me with tears in her eyes, over 25 years later, she was finally able to ‘visit’ Kaiserslautern, right here in the telecentre in her local library.

If one were to apply a typical questionnaire on telecentre usage to this case, this woman’s usage experience might be subsumed in the category ‘personal usage’ or ‘other’. Yet the following section will offer a careful application of the Choice Framework to this case.

6.1 Outcome

The primary outcome was that the respondent had improved choice, in this case, between ‘no visit to Kaiserslautern’ and ‘virtual visit to Kaiserslautern’. The secondary outcome achieved was defined by the individual: ‘to see more of the world’—which in this case, translated into ‘virtual visit to Kaiserslautern’—in Sen’s terms an ‘achieved functioning’. The aspiration was ‘visit to Kaiserslautern’, which since it is feasible, could be seen as a ‘capability’ in Sen’s terms. The achieved functioning ‘virtual visit’ is not equal to the capability ‘visit in person’ but it is an improvement in outcome over no visit at all.

Evaluation of development outcomes, or more commonly of impacts, often operates with a set of impacts or outcomes as defined by the funding body, government,

international organisation or commercial sponsor. Development agencies may use the so-called logical frameworks defining goals and objectives, often in great detail, before funding is granted. For example, a logical framework from a major European development agency asks for a set of 'objectively verifiable indicators of achievement' even before funding is secured and a project starts. This set-up then often acts as an indirect checklist informing the construction of questionnaires and interview guides, possibly with some scope for 'other activities'. Sen's approach, with the individual's choice as the primary outcome, however, would suggest that the analysis needs to start from the ground up, asking people about what lives they value and what outcomes they want to see. For this individual, one of the greatest impacts the telecentre had made was that it had given her the chance to virtually visit Kaiserslautern, something few policymakers or researchers would have predicted. Indeed, some might question whether this is a valid 'development outcome' or 'impact' for a telecentre. In Sen's approach, expressed via the Choice Framework, it is.

6.2 Agency

The individual in question was a Chilean-*mestizo*⁴ woman in her 50s, married with four children who were all grown-up now and had left the home. Her material resources did not include a computer and Internet access at home and her financial resources made it difficult for her to spend money on using a computer in the local cyber cafes. However her social resources (contacts with friends) had helped her gain the information that there was free access to the Internet available at the telecentre in the local library. Her geographical resources (the location of her house) and her state of health were such that she could easily reach the telecentre on foot. She had the cultural resources to not feel intimidated when entering a space like a library and to know the behavioural code there. With the help of her social resources (knowing the librarian who was now also the director of the telecentre), her educational resources (literacy, rudimentary English) and her psychological resources (extrovert, willingness to ask questions), she quickly learnt how to use the computers. The information she gained online, together with her other psychological resources (curiosity, tenacity) allowed her to understand the choices she had and find the site which offered the virtual tour of Kaiserslautern, thus achieving part of her chosen development outcome.

6.3 Structure

The agency of individuals is a shaper of, and is shaped by, the structure in which it operates. In this case, as part of the national ICT policy, the *Agenda Digital*, the state of Chile had signed an agreement with the Bill and Melinda Gates Foundation for them to provide 9.2 million USD worth of hardware to be installed in public telecentres based in libraries around the country, running Microsoft software. The local library was an existing institution which was able to accommodate the hardware, delivered as part of the *Biblioredes* telecentre programme (availability of ICTs). The Chilean digital literacy campaign provided free ICT courses to adults, and public discourse in Chile stressed the importance of becoming 'digitally literate', so the woman had taken the course (necessary

⁴i.e. not considered part of the indigenous minority which had historically been discriminated against.

skills). The formal rules for users of the telecentre stipulated that access was free (affordability of ICTs) but limited to 30 min per person at busy times, and the informal rules were that people were left to use the computers on their own unless they asked for help from the telecentre director. In this case, norms on the usage of space made it easy for the female user to go to a library as a *mestizo* woman with a completed school education who was known in town. However, norms on the usage of time meant that she could only use the telecentre when she was not supposed to be at home preparing meals (gendered norms on time) or when she was expected to attend to customers at the family's carpentry business (business norms on time).

6.4 Dimensions of Choice

In the Choice Framework, an individual's resource-based agency can operate within a given structure to achieve degrees of empowerment such as existence of choice, sense of choice, use of choice and achievement of choice. In this case, both the choice 'travel to Kaiserslautern in person' and 'take a virtual tour of Kaiserslautern' existed, the latter only since the links were offered via the World Cup website in 2006. In a capitalist market system, however, the former choice required an amount of financial resources which the individual felt unable to dedicate to this idea. The choice 'take a virtual tour of Kaiserslautern', however, did not require financial resources, but a good Internet connection, a computer, the knowledge that the tour was available via the website, the skills to find and run it and time. The individual, thanks to among others, her social resources, information, and psychological resources, knew that the telecentre offered a computer and a good connection, and had acquired the skills to navigate the Internet and run an application in the free digital literacy courses offered at the telecentre. She felt that informal, gendered social norms allowed her to go to the telecentre during the morning before having to prepare lunch. Thus, she developed a sense of choice, was able to choose (use of choice) and achieved her desired outcome (achievement of choice).

7 CONCLUSION

Applying the Choice Framework to this particular case allows us to, firstly, theorise the use of ICT in a systemic and procedural way which reflects the systemic and pervasive impact of ICT. The 'impact of ICT' is not conceptualised in a cause-and-effect chain; instead effects are carefully disaggregated and their systemic interrelatedness and co-causality is demonstrated.

Secondly, the Choice Framework offers a way to operationalise Sen's capability approach in the context of ICTs and development. Sen's approach is currently the most well-known heterodox alternative to orthodox, growth-focused and often economic conceptualisations of development. Given the enormous potential of ICTs to give individuals choices, and indeed a greater sense of choice, Sen's approach is of particular interest to those working on ICT and development.

Thirdly, the Choice Framework introduces key new aspects to existing frameworks. It explores the role of cultural resources and geographical resources and stresses the particular role of psychological resources. It recognises the effect of informal social norms on the usage of time and space, which also frame ICT usage. These informal norms are

often related to gender, age and ethnicity. In addition, it makes visible the 'sense of choice' step, which is a key step towards understanding whether and how people use new technology.

Fourthly, the Choice Framework is a 'living tool' which clearly positions ICT usage not as an end in itself, but ICTs as being linked to different elements: embedded in structures, influencing agency, affecting dimensions of choice and as being, potentially, also a part of a complex mix of outcomes an individual may aspire to (in Sen's terms, their capabilities). In such a systemic framework which maps processes of development, ICTs are transversally relevant and widespread (not ubiquitous) but they are neither an end in themselves nor on their own effective levers for creating social change. ICTs are profoundly linked into social, political or economic interests and in this combination obtain power to transform societies. However, as multi-purpose tools, many of them have possibilities for unplanned and subversive uses. In development, they are another, potentially very powerful lever, not a panacea. With this framing of ICTs, the Choice Framework can contribute to discussions about the usefulness and role of ICT4D work in development practice.

There are three obvious limitations to the application of the Choice Framework, and this is where more work on this 'living tool' needs to be done.

Firstly, the Choice Framework aims to be comprehensive in its modelling of the complex relationships between agency, structure, degree of empowerment and outcome, and this automatically entails a trade-off with the depth of theorisation of each element. Behind each of the terms included in the framework lies a wealth of theoretical literatures which may need to be synthesised for different research purposes and key issues brought to the attention of researchers in the development field. While for example, social resources can be theorised by linking to the wider debate on social capital, which has been received in the development studies discourses, work on cultural capital (in Bourdieu's sense) is hardly ever linked to development discourses in the South.

Secondly, the Choice Framework is relatively easily applied in qualitative work on the micro-level of the individual. A further challenge will be how to apply the framework to groups of individuals, communities or even nations. Within this and related to a theoretical tension evident in Sen's original approach, there is a complex relationship between individual and collective choice which will have to be conceptualised carefully.

The example used here to illustrate the potential of the Choice Framework is part of a more extensive ethnographic and longitudinal study of how state ICT policies affected microentrepreneurs in rural Chile (Kleine, 2007). This longer study shows connections between individual and collective choice. For example, the local authority's online public procurement practice was analysed as an expression of collective choice, but related to individual's views as to how their tax money should be used to create the community they wanted to live in. However, further empirical work is necessary to gather experiences in the applicability of the Choice Framework in other cultural and socio-economic settings. The relationship between individual choice and collective choice needs to be conceptualised carefully in these local contexts in order to allow for the empirical application of the Choice Framework at the more aggregate level such as the so-called target groups and communities.

The third limitation is a very practical one: many funders prefer predefined and clearly measurable impacts. The Choice Framework, however, suggests that impacts of ICTs occur in a systemic, pervasive and transversal way, and that outcomes should be defined, in line with Sen's approach, by the individual, based on their choices as to what kind of life they value. There are, though, some funders who are open to methods such as participatory

project formulation, evaluation and monitoring, and this means there might be hope for genuinely people-centred development work—and development theory.

7.1 Implications for Practitioners

There are some key implications emerging from this work for practitioners of ICT and development. Firstly, while no technology is ever completely politically neutral (Lessig, 2000), ICT4D projects can be placed on a continuum of ‘directional control’. At one end, there are projects and programmes which focus on providing people with access to a technology which is recognised as multi-purpose, like some telecentre projects. On the other end of the continuum are projects and programmes which carry a much more narrow set of intentions, for example teaching microentrepreneurs to use a specific e-procurement system in order to ‘train them’ to operate in a more competitive market environment under a specific set of rules (Kleine, 2009). The further down the directional control continuum a particular project and programme is located, the more risk there is that the intended outcomes of an ICT4D project diverge from the capabilities, or desired outcomes individuals in the so-called target group would choose. Thus, the more directional control is involved in the project or programme, the more participation of the set of individuals who are the intended group will be needed to reduce this gap. This would include conceptualising the development process as open-ended and the so-called target group as individuals empowered to choose the lives they themselves value. Participatory project design and participatory monitoring and evaluation techniques would be most appropriate. Important decisions will have to be made in each case whether it should be individuals’ or groups’ views, or both, leading the evaluation.

Secondly, there are some macro-methodologies which reflect the ethos of giving people the power to choose. Well-designed voucher schemes can be a good pragmatic way to monitor, in a heavily supply-driven development field such as ICT4D, what products (hardware, software, etc), services (training, computer repair, communication, etc) and content (economic, social, political, cultural, etc) people would, after considering their options, actually choose. From the field of participatory urban planning come methodologies for participatory budget design, where communities get to debate and decide which of their desired outcomes to prioritise and pursue. This is a practical and democratic way to aggregate individual capabilities in order to enable collective decision-making, and could also be used for ICT4D.

Thirdly, practitioners may deduce that if the ideal is for development projects’ intended outcomes to reflect the individual’s choices, then the more individuals are aggregated to a group, the less probable it is that they can agree on a similar set of capabilities. From this follows that the further down the directional control continuum an ICT4D project is, the more sensitive/locally customised it has to be to the choices of a smaller number of people. Big, uni-directional development programmes with specific, *a priori* defined desired outcomes designed for a large number of people are most likely to be in contradiction to a people-centred holistic development process as proposed by Sen and expressed in the Choice Framework.

Ultimately, those working on development projects with ICT components, including particularly the Internet, need to consider the question: should we try and fit a groundbreaking, multi-purpose and potentially liberating technology into orthodox notions of development—such as more ICT for higher GDP, more ICT for better school results,

etc.—impacts which we may struggle to prove? Or can the field of ICT and Development serve as a test case and breeding ground for thinking about development in a more holistic way, putting the individual and their own choices at the centre of development? If the latter is the case, then we have plenty of work to do, but frameworks such as the Choice Framework may be key parts of the big puzzle we have to begin putting together.

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