



Inequality of what? Social exclusion in the e-society as capability deprivation

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Abstract

Purpose – The purpose of this paper is to engage with the debate on social exclusion in the e-society from the human development perspective, which goes beyond inequality in distribution of technological goods and services to emphasise the options, choice and opportunities related to accessing and using information.

Design/methodology/approach – This is an interpretivist study. It draws on Sen's capability approach (CA) to conceptualise social exclusion in the e-society as capability deprivation, both in well-being and agency freedom. A framework of the core aspects of the CA is used to analyse two empirical studies in South Africa and China which serve to illustrate social exclusion manifested as capability deprivation in different "spaces".

Findings – The paper demonstrates the relational features of social exclusion and different types of capability deprivation in e-society; highlights "unfavourable inclusion" which can be masked by technological diffusion.

Research limitations/implications – This paper is an early attempt to apply the capability approach to social studies of information communication technologies in developing countries.

Practical implications – The paper provides implications for government policies to go beyond technological provision and pay attention to socio-political, cultural and institutional aspects in ensuring effective utilisation of information and channels of communication, which should serve to enhance people's opportunity to better participate in economic, social and political activities.

Originality/value – The paper is a novel attempt to apply concepts of the CA in information systems, which provides a conceptual lens to address the complexity and multiplicity of social exclusion in the e-society.

Keywords Social inclusion, Internet, Personal health, Information systems, South Africa, China

Paper type Research paper

Introduction

The concern with social exclusion in the e-society can be related to debates about globalisation (e.g. Beck, 1992; Giddens, 1990), and was highlighted by Castells (1999), who warned of the global negative effects of "informational capitalism". The concerns regarding social exclusion in an information-based world were at first most commonly framed as the "digital divide", and expressed in terms of the access to technological resources (Warschauer, 2002). However, later work has challenged this somewhat simplistic approach. The focus on the provision and distribution of technological resources has expanded to the integration of a wider range of social resources in the process of social exclusion and inclusion (Warschauer, 2003; Cornford and Klecun,



2003; Molina, 2003; Cushman and Klecun, 2006). For example, Warschauer (2003) proposed that “access for ICT can not rest on providing devices or conduits alone”. Rather, the promotion of social inclusion must involve a range of factors, such as physical, digital, human, and social resources.

This awareness of multiple social resources required for social inclusion has been further expanded to broader inequalities and deprivation endemic in societies (Van Dijk and Hacker, 2003; Trauth and Howcroft, 2006). It is recognised that social exclusion is not only related to inequalities in social-economic status (Norris, 2001; Standing *et al.*, 2003), but also deep-seated issues of political and institutional arrangements, as well as discrepancies between traditional norms of social life across cultures (Trauth *et al.*, 2006). This echoes the debates on social exclusion in political science, where the concept is regarded as contentious and difficult to define (Peace, 2001). The term was originally related to deprivation caused by poverty and unemployment. It has evolved to refer to a wide range of phenomena and processes which “work to deprive people of access to opportunities and means, material or otherwise, to achieve well-being and security in the terms that are important to them” (Peace, 2001).

What is the role of information communication technologies (ICTs) in these wider processes of social deprivation? A common discourse is one which simplistically aligns technological diffusion with economic development and social progress (Lyon, 1988; Avgerou, 2002). The idea that ICTs are intrinsically desirable and beneficial to the society is still prevalent. A wider debate on social exclusion in an e-society recognises the differing roles that ICT can play in society. ICTs can contribute to the exacerbation of social exclusion, or can be tools to bridge gaps (Trauth and Howcroft, 2006). Research on this subject in the information systems field has encouragingly moved beyond the boundary of an organisational level of analysis to explore much wider societal issues (as exemplified in Trauth *et al.*, 2006) within which ICTs are embedded.

Building on this line of research, our paper suggests a particular theoretical lens to help conceptualise the complexity and multiplicity of social exclusion in e-society. In particular, we draw on the capability approach developed by the economist Amartya Sen, who challenged mainstream economic theories and egalitarian approaches focussed solely on material inequality, arguing that inequalities were much wider than that, and related to broader issues of lack of opportunities, freedoms and choices. He summarised this perspective by asking: “equality of what?” (Sen, 1992). Similarly, we ask: social exclusion in an e-society is inequality and deprivation, but of what?

Using the capability approach as a conceptual basis, we analyze two empirical studies where the effects of social exclusion are manifested in rather different ways. The reason for using two case studies rather than one, despite the space limitations of a short paper, is in order to demonstrate the heterogeneity of dimensions of social exclusion in e-society, and to show how Sen’s capability approach is adaptable to these different conditions. The empirical studies were conducted by the first author as part of her doctoral research, but here re-analysed from a social exclusion perspective using concepts from the capability approach. The rest of the paper is organised as the following. The next section gives an introduction to the capability approach and the selected key concepts that we will draw on to analyse the empirical cases. The case studies from South Africa and China are then presented. The concluding section undertakes further cross-case analysis and discusses the contribution of the paper.

Conceptualising social exclusion in an e-society

This section presents Sen's capability approach and his writing on social exclusion as "capability deprivation", from which we derive a conceptual lens to examine social exclusion in the e-society. This lens is applied to analyse the empirical studies in the later sections of the paper.

Introduction to the capability approach

Sen's capability approach (CA) was developed and refined over three decades, after the Tanner lecture in 1979, in a number of books and journal articles across disciplines (e.g. Sen, 1980, 1982, 1993, 1999). His writings on the topic have been synthesised by various authors, including Alkire (2002) and Robeyns (2002). Unlike many philosophical approaches that focus on people's happiness or desire-fulfilment, or on theoretical and practical approaches that concentrate on income, expenditures, consumption or basic needs fulfilment, the capability approach is concerned with people's capabilities, that is, what people are effectively able to do and to be.

In his well-known book, *Development as Freedom*, Sen (1999) uses the concept of "freedom" in a very broad sense to refer to effective opportunities we have to lead the kind of lives we have reasons to value. This is what the capability approach is essentially concerned with. Thus we should look at poverty not solely as lowness of income, but "impoverished lives", namely the deprivation of the freedom to undertake important activities that a person might wish to choose[1]. Critical to the capability approach is the recognition of human diversity which gives rise to an explicit differentiation between "spaces of equality". Equality in one space to lead a valuable life, e.g. income, does not necessarily mean equality in life opportunities to achieve it, e.g. access to quality healthcare. Therefore, individual variations, as well as structural differences in society, must be brought in to considerations of individual opportunities to take a full part in society.

To illustrate, let us compare gender inequality seen from growth-oriented perspectives and from the capability approach. Fukuda-Parr (2003) suggests that growth-oriented approaches measure women's deprivation in terms of income gaps between female-headed and male-headed households, and perceives promoting the welfare of women as instrumental to the well-being of others and economic growth. The capability approach focuses not on the level of income but deprivation of capabilities, e.g. access to healthcare, education, participating in economic life and the autonomy in decision making. In other words, it "measures gender equity in women's agency" (Fukuda-Parr, 2003).

The capability approach is philosophically profound, but methodologically somewhat vague. Sen (1993) intended it to be used for a wide range of purposes. In academia, the approach has been discussed in rather abstract and philosophical terms, as well as applied in empirical studies. A key application in the field of economics has been on the evaluation of development. A prominent example is the Human Development Index developed by the United Nations Development Program (UNDP, 1990-2005). In social studies of ICT, the capability approach has also been introduced and applied as an evaluative framework (Madon, 2004).

The CA has been subject to a number of criticisms, for example, for being too individualistic, not paying enough attention to groups or social structures (e.g. Navarro, 2000; Devereux, 2001; Corbridge, 2002). It is beyond the scope of this paper to

expand on such issues, except to point out that Sen explicitly takes into account environmental conditions, social pressures, and conventions. While Sen's capability approach is deliberately "incomplete"[2], it provides a non-utilitarian perspective for the exploration of development issues and an invaluable analytical and philosophical foundation to be built on (Evans, 2002), as exemplified by the human development approach adopted by the UN.

It should be pointed out that in this paper we are only using the most basic concepts of the CA as a sensitising device, as distinct from some of the more complex and technical applications of the CA in economics or other disciplines. We believe our application is appropriate as an initial attempt to "operationalise" the CA in social studies of ICT in developing countries. The rest of this section presents the key concepts of the capability approach.

Functionings and capabilities. The major constituents of the CA are functionings and capabilities. Functionings are the "beings and doings" of a person, whereas a person's capability is "the various combinations of functionings that a person can achieve. Capability is thus a set of vectors of functionings, reflecting the person's freedom to lead one type of life or another" (Sen, 1992, p. 40). The two concepts are interrelated but have distinct meanings:

A functioning is an achievement, whereas a capability is the ability to achieve. Functionings are, in a sense, more directly related to living conditions, since they are different aspects of living conditions. Capabilities, in contrast, are notions of freedom, in the positive sense: what real opportunities you have regarding the life you may lead (Sen, 1987, p. 36).

In other words, functionings refer to realised achievements and fulfilled expectations, whereas capabilities refer to effective possibilities of realising achievements and fulfilling expectations. What these capabilities and functionings are, Sen intentionally keeps imprecise, since he argues that different capabilities and functionings may be relevant in different contexts. It should be noted that in order to create conditions to develop capabilities, some capabilities will mainly require financial resources and economic production, but for others it will also involve institutional settings and political arrangements, social or cultural practices, social structures and norms.

Well-being and agency. Sen (1985) sees people's capabilities from two different perspectives, the "well-being aspect" and the "agency aspect". He defines agency as the freedom to set and pursue one's own goals and interests. The pursuit of one's own well-being may be one of the goals and interests. However, other ends may include furthering the well-being of others, respecting social and moral norms, or acting on personal commitments and the pursuit of a variety of values. A person is thus viewed as an "agent", as opposed to a "patient" whose well-being or the absence of well-being is the only concern (Robeyns, 2005). Therefore, the core of the capability approach is not a sole concern with the possession of material resources, although these may be important means to an end, but rather an individual's real opportunities in achieving his or her well-being freedom and agency freedom. The two are closely related. The deprivation of one type of freedom often has a causal impact on the other.

For example, let us suppose Jenny and Peter are both successful medical doctors in a London hospital enjoying a high income and good career prospects. Jenny now volunteers to work in a malaria area in Africa for six months as part of a humanitarian aid project, where she will have to endure difficult living and working conditions and even face life threatening situations due to local political instability. She thus makes

the choice of trading off aspects of her well-being to exercise her agency freedom. Tom shares the concern with health problems in Africa, but chooses not to sacrifice his achieved well-being for these agency goals.

It is also important to note the situatedness of agency, or “restricted agency” (Peter, 2003). What a person prefers or considers as valuable is normally highly contingent on the social conditions to which the person is subject. This implies a caution against unconditional acceptance of whatever a person happens to perceive as valuable, or an acceptance with as much intensity as valued by the person. As Sen (1984) comments:

the most blatant forms of inequalities and exploitations survive in the world through making allies out of the deprived and the exploited. . . As people learn to adjust to the existing horrors by the sheer necessity of uneventful survival, the horrors look less terrible in the metric of utilities.

Commodities, freedom, and capabilities. Of particular interest to the study of the e-society is the relationship between commodities (goods and services), functionings, and capabilities. Figure 1, simplified and adapted from Robeyns (2005), provides an illustration of this relationship using the key concepts of the capability approach. Sen argues that goods and services are important mainly in the sense that their characteristics enable people to do and to be, in other words the capabilities that one can generate from these goods and services.

The extent to which people can generate capabilities from goods and services are influenced by three sets of conversion factors – personal, social, and environmental (Sen, 1992). Personal characteristics, such as mental and physical condition, literacy, and gender, influence the types and degrees of capabilities a person can generate from resources. Social factors are a number of characteristics of social settings, such as social norms (e.g. role of women, rules of behaviour, materialism, religion, etc.), social institutions (e.g. rule of law, political rights, public policies), and power structures (e.g. hierarchy, politics). Environmental characteristics, including climate, infrastructure, resources, and public goods, are also important in the conversion from goods to individual functionings. It should be noted that not all capabilities have to be generated from goods or services. For example, being a respected member of a community only requires the respectful behaviour of other members rather than any specific goods or services (Robeyns, 2005).

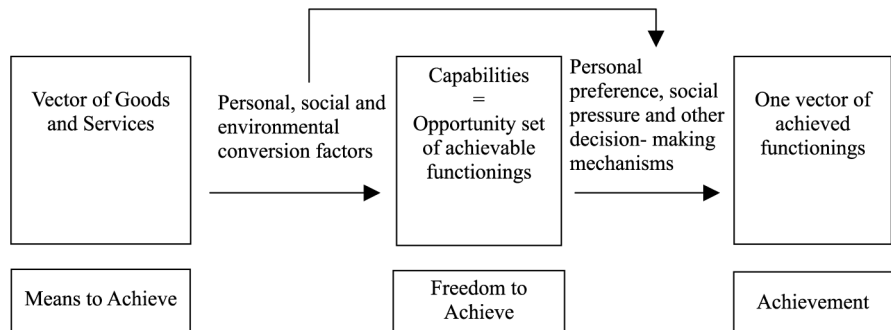


Figure 1.

Source: Adapted from a stylized non-dynamic representation of core aspects of the capability approach (Robeyns 2005)

The actual achievement of functionings is a result of personal choice to select from the capabilities available, subject to personal preferences, social pressure and other decision-making mechanisms. These are again affected by personal, social and environmental characteristics, such as personal history and social influences. One limitation of Figure 1 is that it does not show the dynamic relationship between commodities and conversion factors. In other words, conversion factors are not static; they are constantly changing. The exploitation of commodities, such as technology, certainly contributes not only to social conditions but also to personal characteristics which, in turn, feed back to conversion factors and decision making mechanisms. Therefore, commodities are important for their contributions to both individual capabilities and to conversion factors.

Social exclusion as capability deprivation

Sen (2000) argues that social exclusion can be seen as capability deprivation because, firstly, being excluded from social relations may be directly part of capability poverty, as illustrated by Adam Smith who suggested that the inability to interact freely with others is an important deprivation in itself (Smith, 1976). Social exclusion can also lead to other deprivations, thereby limiting our living opportunities. Therefore, social exclusion can be perceived as “*constitutively a part of* capability deprivation as well as *instrumentally a cause of* diverse capability failures” (Sen, 2000, original italics). The real importance of the idea of social exclusion, Sen suggests, lies with the emphasis on “the role of relational features in the deprivation of capability.”

Furthermore, Sen (2000) makes other points on the dynamic connotations of the idea of social exclusion. First, rapid changes happening around the world and the process of globalisation produce impacts through bringing new groups of people into economic, social and cultural contact with others. Second, a subtle issue that is often neglected in the more simplistic discourse on social exclusion is the danger of “unfavourable inclusion”. There are circumstances where deprivation arises from unfavourable terms of inclusion and adverse participation, rather than as a result of direct exclusion as such. These are both important arguments that have implications for social exclusion in the e-society. We will discuss these points further in our later case analyses.

The perspective of social exclusion as capability deprivation provides a conceptual basis for the current paper. Taking this approach, we can explore social exclusion in e-society by addressing the following questions:

- What capabilities have become essential under the defining conditions of the e-society?
- Who may be disadvantaged by the deprivation of these capabilities?
- What are the relations between different types of capability deprivations?

To be more specific, the capability approach provides a set of concepts to unpack the relationship between technology and social exclusion as capability deprivation, as elaborated in Table I. Since social exclusion is primarily concerned with the deprivation of opportunities, we are only focusing on the first half of Figure 1, that is, the conversion from commodities to capabilities, i.e. the opportunity set of achievable functionings, rather than the actual choice of realising those opportunities.

In the following sections, we will present two examples of social exclusion in the e-society, each representing a different form of capability failure which prevents people

Table I.
Social exclusion as
capability deprivation

Commodities	What type of technology? What characteristics of technology are relevant to local conditions?
Conversion factors	Personal factors: e.g. gender, age, health conditions Social factors: e.g. social norms, social institutions, politics Environmental factors: e.g. climate, infrastructure, resources, and public goods
Agents	Whose capabilities are deprived? e.g. managers, direct users, indirect user, non-users
Capabilities	What capabilities are deprived? – Well-being freedom: e.g. health, education, respect . . . – Agency freedom: e.g. religious freedom, social and political participation

from actively taking advantage of the opportunities and benefits provided by the e-society. We will analyse the two cases in the light of the selected concepts as presented in Table I. The perspective of social exclusion as capability deprivation will be used to illustrate two aspects of the phenomena: firstly, social exclusion in the e-society is multidimensional, multi-layered, and varies across societies, cultures, and communities; secondly, social exclusion in the e-society is often relational and results from types of capability failure other than the deprivation of technological usage.

Information literacy in South Africa

The research presented here constitutes a small part of an international project called HISP – the Health Information Systems Program (Braa *et al.*, 2004; Braa and Hedberg, 2002). HISP was initiated in 1995 as a collaborative project between two universities in South Africa and Norway, together with South African health departments and non-governmental organisations. The vision of HISP is to “support the development of an excellent and sustainable health information system that enables all health care workers to use their own information to improve the coverage and quality of health care” (Williamson *et al.*, 2001). HISP has achieved considerable success in a number of developing countries, but particularly in South Africa where the initiative was first applied. The HISP project in South Africa has implemented District Health Information Systems (DHIS) software, complemented by paper-based District Hospital Essential Data Set registers in the hospitals of Eastern Cape province, which are the subject of the case analysis below. The approach has, across South Africa as a whole, greatly improved the collection of information from grassroots health facilities.

The empirical research was conducted by one of the authors over two cycles for a total of two-and-a-half months during visits to two rural hospitals in South Africa, while the other author has a familiarity with HISP and the South African context due to frequent interaction over the last decade. The original purpose of the case study was to observe how health information was collected and used in the rural hospitals, and whether the DHIS was effectively integrated into day-to-day practices. The research methodology was mainly participative observation, combined with interviews and a focus group, with a specific emphasis on information practices. A total of eight interviews were conducted, including government officials at the provincial level, information officers at the district level, heads of hospital and hospital staff. A focus group meeting was organised in one of the hospitals involving about 15 hospital staff.

The emphasis of the research lay with observing and communicating with people about their work and lives.

Inequality of
what?

Cultural background

The Xhosa culture, in which this study took place, is a prominent example of an African oral culture (Alagoa, 1990; Miller, 1980; Kaschula, 1991). As opposed to written literature, people in “primary oral cultures” communicate through “oral literature”, or oral art forms, which may take different forms such as folk tales, myths, epics, praise poems and historical accounts or rituals (Goody, 1997; Ong, 1982). Primarily oral-based communication and thoughts can be characterised as “homeostatic and situational” rather than “abstract”, “empathetic and participatory” rather than “objectively distanced”, and close to the “human lifeworld” (Ong, 1982).

These characteristics of oral cultures have significant effects on the patterns of information usage. Gough and Bock (2001), for example, show that the writings of Xhosa-speaking students manifest strong influences from their oral primary discourse, and relative underdevelopment of secondary discourse in both Xhosa and English. Moreover, the authors note that other research has suggested “epistemological oppositions” from some students to the ways of thinking about knowledge and interpretation in their university, conflicts between “dominant” and “marginalised” literacies, i.e. between Western academic literacy and local oral literacy genres. This forms part of the context for the research study that was initiated because the two rural hospitals were experiencing problems with collecting data for the DHIS. Beyond the visible technical difficulties, the investigation revealed fundamental issues with information literacy (Bruce, 2002). Selected examples will be given below.

Information literacy in rural hospitals

Hospital Alpha was a small remote hospital with four volunteer doctors and about a dozen nurses. There was only one patient record, which lay on the desk in the sisters’ duty room in the wards and, as a rule, was read out by a sister-in-charge to the hospital manager. In other words, the manager listened to the numbers to get an idea of what was going on in the hospital without keeping any paper record in her office. Since all records were mixed, there was no clear information about total numbers of admissions, discharges, and deaths, etc., at the end of the month. In the pharmacy, the only records were the orders that they had placed for the inpatient wards and the operating theatre. When asked how she usually determined the amount of drugs to supply the wards, and what to order for stock each month, the sister replied, “I work here and I know”.

Hospital Beta was a big hospital seeing over 100 outpatients everyday, and its major wards served several hundred inpatients-days per month. A key information problem was the fact that numbers from the admission registers, midnight censuses (check on patients actually present at midnight), and monthly reports did not usually correspond. Apart from possible missing records, another factor was numeracy. For instance, the midnight census might be done correctly but the sum was wrong at the end of the month, giving inconsistent inpatient-day numbers. As nobody had noticed these errors, it seemed that the numbers were never used. While there were colourful graphs of some basic indicators posted on the walls of each ward, there was little evidence of interpretation or use of the graphs. When asked what purpose the graphs were supposed to serve, one nurse replied that they were for visitors to see. Inspecting

closer, one could often find errors in the graphs. If the indicators involved some simple calculations, most nurses could not figure out how the results had come about.

Little institutional support was received by these hospitals to learn to use health indicators due to resource shortage and other reasons, even though HISP operates in close collaboration with local health authorities. According to the HISP facilitators, historically, these remote hospitals had been neglected and isolated. They were seldom visited by their superiors in the district or province. Statistics requested from these superiors were therefore felt to be imposed, to be submitted unquestioningly, but irrelevant to the hospitals staff's own work. In Alpha, the hospital managers paid little attention to data collection tools or procedures. Without any medical background, the "information officer", a clerk at the reception, found himself isolated and helpless with a computer which he found "too complicated". Similarly, the "information officer" in Beta also found herself isolated and disrespected. She wanted to quit her job:

... I feel that they [the sisters] undermined me. And this has been a long time ... They look at me as if I don't do any work ...

One reason behind these struggles could be the relatively clear hierarchies, and hence boundaries, among the health workers. With epaulets on the uniform indicating the various types and levels of trainings, professional hierarchy was explicitly visible, and constantly reinforced and respected. As a result, requests for data collection were easily dismissed unless coming from a senior health manager.

The Xhosa nurses were quite competent in recalling patients on an individual basis. It seems that, for the nurses, patient information was more embedded in their daily practices. For example, they would remember that the pregnant woman accepted last Wednesday stayed on the bed next to the door and delivered a baby boy weighing 3 kg last Saturday. Whether this information was recorded on the register in a timely and accurate manner was irrelevant to them. As mentioned earlier, the patterns of thought in primary oral cultures such as that of the Xhosa tends to be intuitive and situational rather than abstract and logical. In other words, the South African health workers may be more comfortable with "embodied" or "encultured" knowledge than "encoded" knowledge (Blackler, 1995). On the other hand, when they were shown and explained indicators of their hospital as compared to other hospitals, such as maternal deaths, etc., they were clearly interested and concerned.

In an area with low infant immunisation rate and prevalent TB and HIV/AIDS, remaining isolated from coordinated healthcare provision and supervision is clearly no longer viable for these remote communities. According to the volunteer doctors, due to the lack of equipment in the hospitals as a result of ineffective management, patients often had to be referred to bigger hospitals in the town hours away, and some of the patients were delayed in their treatment simply because they could not even afford a further trip. Health authorities at the district or provincial levels had difficulty assessing the situation of health provision in those areas due to unreliable data, if there were any data at all.

Analysis

Table II summarises an analysis of this case from the theoretical stance developed earlier. From a capability approach perspective, one factor that contributes to the deprivation of the freedom of South African people to live in an environment without

Commodities	Agents	Conversion factors	Well-being freedom	Capabilities deprivation Agency freedom
Computers Health information systems	Health workers Information officers	Information literacy – Understanding the value of info and knowledge – Capability to access and use info in their work – Institutional support for using information	To live in an environment without devastation from epidemics	To be able to collect and exploit information To be included in the district health information system To take advantage of computer technology To be connected to the resources on the internet, etc.
	Patients	Income Healthcare facilities Distance to facilities	To live in an environment without devastation from epidemics To receive quality healthcare	

Table II.
South African case:
capability deprivation
partly due to low
information literacy

the devastation of health epidemics is the limited capacity of local healthcare facilities which, in turn, is handicapped by the lack of health information and its use at grassroots level. The hospitals were given advanced computers – flat screen Dell desktops with fully-licensed Windows XP. If located in a western hospital, the computers could have been an integral part of a health information system which stores and transfers patient information, obtains and shows test results, and even provides prescriptions. However, given the totally different conversion factors in the rural South African hospitals studied here, the computers and associated health information systems provided a much more limited set of potential functionings. They may not even be the most appropriate commodities to bring about developmental outcomes in this context.

Information literacy constitutes one set of personal, social, and environmental conversion factors which lead to the capability deprivation of local people in exploiting information to advance their goals. Information literacy refers to not only individual cognition or skills of the health workers and information officers. It also includes the perception of the value of encoded information, and the institutional support for the health workers to collect, interpret and use information. For example, the health workers complained about not having any feedback when they submitted forms or made graphs on the wall. They were not taught how to interpret the indicators that they were asked to collect and to integrate those numbers in to their work practices, which they were actually keen to do. Therefore, the numbers remained irrelevant to them, and the activity of collecting them was resented and resisted. Their agency freedom to make effective use of the computers and health information was curtailed. This in turn contributed to reduced well-being freedom on the part of the patients, in terms of receiving high quality health care.

Of course, better healthcare also requires other conversion factors to be in place, such as medical resources, education, and appropriate institutions. However, the ineffective mobilisation and exploitation of information is one factor contributing to capability deprivation. The implementation of the computers in those hospitals can be perceived as “unfavourable inclusion” or “adverse participation”, where the computers were only seen to be bringing imposed tasks of collecting data and filling forms without making any effective contribution to the quality of healthcare. The point is not that we should impose Western numeracy on them, but that if the purpose is to mobilise information, it should be first and most importantly relevant and useful to the South African health workers. Even though the DHIS software has been designed to be as flexible as possible, the relative absence of conversion factors renders it irrelevant in some contexts. While the remote communities suffering from prevalent epidemic disease should not remain excluded and neglected, investing in computers and other commodities alone are certainly not a sufficient solution to the deprivation of capabilities. Socio-cultural mechanisms combined with more creative ways sensitive to local contexts are needed to in any attempt to be inclusive.

Information freedom in China

The original purpose of the Chinese study was to look at the development of health information systems in China in relation to the access and use of health information by healthcare professionals and citizens. The case study below focuses on the SARS outbreak, which highlights some of the underlying tensions that could have gone

unnoticed if one focuses on the technological diffusion of HIS. A mixture of several types of qualitative methods were employed together, each with merits in collecting data of a different nature. While primary data have been the main source for qualitative research in the field of information systems, Jarvenpaa (1991) argues that secondary data allow us to “pan for gold”. Examples of research on secondary data include Walsham (2001), Silva and Backhouse (1997), and Thompson (2004). A combination of the two sources of data was used in this field study. Primary research data on health information systems in China was collected through participant observation, semi-structured interviews, and questionnaire surveys during field visits by the first author, who is Chinese. The case study of SARS relies mainly on secondary sources (*Caijing Magazine*, 2004). Due to the domestic and international attention drawn to SARS, the outbreak and the subsequent social repercussions were relatively well documented and discussed in documents, newspapers and journals (e.g. CNN, 2003; WHO, 2003a).

Social and cultural background

China is the largest developing country where a considerable number of people are still living in poverty. Therefore, the Chinese government attaches primary importance to people’s lives, health, and basic human rights, namely, “rights of subsistence and development” (SCPRC, 2004). Freedom to information has been considered part of civil and political rights, but it has not received prominent attention until recently. Conventionally, the public receives government information passively from the major state-controlled media. With the progress of e-government projects in the last two years, most government institutions and departments have set up web sites which provide some public information and government documents. However, online public service delivery has lagged behind the web sites. At the same time, the state exercises relatively strict censorship and control over the press and the internet (RSF, 2003). For example, cybercafés are required by law to monitor their users and the web sites they visit, to filter pornographic web sites, and to block some political sensitive web sites or erase sensitive comments left on various internet forums. Many news web sites of major foreign media are blocked, such as BBC News. A number of cyber-dissidents have been jailed (RSF, 2003).

The information control and surveillance can be linked to the characteristic of hierarchy in Chinese society (Redding, 2002), or what Hofstede (1980) terms “high power distance”. Over 2,000 years of feudal and paternalistic governance dominated by Confucian doctrines have left a strong component of power hierarchy in the Chinese culture, which entails a respect towards perceived superiors, in social structures, work places, communities, and families. Therefore, it often remains unchallenged, or even considered legitimate, that information is withheld, not for the benefit of the public, but rather for the maintenance of the social structure. When inequality is taken for granted, it is not surprising that access to information is not considered an intrinsic right of members of the society. However, as China emerges as one of the most influential members in globalisation processes, such norms and corresponding institutional conditions are increasingly being challenged, and the diffusion of ICT also plays a role in this process.

At the beginning of the 1990s, the Chinese government launched the state policy of “informatisation”, referring to nationwide adoption and diffusion of ICT. The strategy of “driving industrialisation with informatisation” was formally decreed by former Premier

Zhu Rongji in 2001 and reinforced in the following years (CIIA, 2004). In the last 15 years, ICT infrastructure and applications have diffused at a fast speed in China, and accelerated after 1999. Behind the rapid diffusion of ICT was a robust growth of the ICT sector (Lu, 2000). Meanwhile, after the accession to the WTO, China has shown its commitment to embracing the TRIPPs[3] agreement (Khan, 2002). ICT adoption in the healthcare sector has progressed significantly. Computer systems applied in hospitals consist of a mixture of applications of PC, local area networks, and partial or full application of different types of hospital information systems (HIS). It is estimated that about 30-40 per cent of hospitals in China have implemented some form of management information system (but about 80 per cent in economically advanced areas), and a few hospitals are exploring clinical information systems and other more advanced hospital information systems. As revealed by some interviewees, HIS adoption has to a large extent been a response to pressure from central health authorities.

SARS outbreak

At the beginning of 2003, an unprecedented epidemic, later named as SARS, broke out in China, and quickly spread to other countries via Hong Kong. By July 2003, the epidemic caused a total of 813 deaths globally, out of 8,437 infected cases. Mainland China lost 348 lives in the outbreak, Hong Kong 298, and Taiwan 84. The damage of the epidemic far exceeded the loss of lives. The outbreak exposed a series of weaknesses in China's public health system. It challenged the Chinese government's credibility, unsettling social and economic order, and caused severe economic costs.

The first SARS case appeared in November 2002 in Guangdong Province. It was reported as a regional outbreak of pneumonia, causes unknown, with a certain degree of infectiousness. No action was taken upon the report, and health authorities dismissed suspicions of an epidemic outbreak, which occurred at the end of January 2003 during the national holiday of the Chinese New Year. An indication of the outbreak was that 45 medical staff in one big hospital contracted the disease after a patient was hospitalised. Word of a mysterious deadly virus was spreading quickly, but there was still no official media report on the subject.

On 10 February the press received three "urgent notices" from government authorities requiring them to "strictly comply with news disciplines", and not to report SARS. Instead, a warning of a "spring flu" was given. On the next day, the first press conference was given by the Guangzhou (capital city of Guangdong province) municipal government, briefing on the circumstances of the disease, and announcing 305 SARS cases and five deaths. Claiming that the situation was "under control", the authority pledged to fight the disease with "modern scientific methods". By 28 February there were already 792 SARS cases and 31 deaths from Guangdong province, totalling 487 new cases in 17 days. Hospitals in Guangzhou were under tremendous pressure fighting the epidemic. In the two most severely affected hospitals, 93 and 30 medical workers were infected respectively. Since no control was exercised at the customs and borders, on 21 February a doctor from Guangzhou travelled to Hong Kong for a wedding and passed SARS to six other travellers of different nationalities, who then brought the disease to Canada, Singapore, and Vietnam. In March 2003, SARS broke out widely in Hong Kong. Vietnam was the first country to notify the World Health Organization (WHO), which immediately issued a global warning and requested cooperation from the Guangdong provincial authority.

In Beijing, the first official report appeared on 26 March from the China News Agency, quoting the Beijing Health Department that the imported SARS epidemic in Beijing was effectively controlled and that there had been no indigenous cases in Beijing. On the next day, Beijing was labelled an “affected area” by the WHO. On 2 April, the Minister of Health gave the first television interview on SARS, announcing that there were 12 imported SARS cases in Beijing by March 31. This was the first time the central government officially briefed the public on this subject. On April 4, the deputy director of the National Tourism Bureau dismissed travellers’ concerns about SARS, which was unfortunately followed by the death of a senior official of the International Labour Organisation two days later.

On 8 April the American magazine *Time* published a signed statement from a 71-year-old retired military surgeon, Dr Jiang, member of the Communist Party, who publicly contested the Health Minister’s televised press statement. He stated that the government had stopped the military hospitals from revealing their SARS cases for the sake of the annual meeting of the National People’s Congress, and that the situation was much worse than what was claimed. In response, the WHO launched an investigation into Beijing’s SARS report mechanism, and issued a travel advisory against travelling to certain areas of the world. On 20 April the Health Minister and Mayor of Beijing were dismissed. On the same day, the official count of confirmed cases in Beijing dramatically jumped from 39 five days earlier to 339. Over the following two weeks, about 100 additional cases emerged everyday. The Ministry of Health started announcing daily the numbers of confirmed and suspected SARS cases. One month later, Beijing was removed from the list of affected areas by the WHO. Nationwide, 26 out of 31 provinces, autonomy regions, and municipalities reported to have had SARS cases, totalling 5,327 cases with 348 deaths (WHO, 2003b).

The SARS outbreak not only triggered state action on public health information systems, but also sparked a heated discussion on information openness and government transparency. China has learned the hard way that their conventional practices of information control may incur a high price under certain circumstances. As summarised by WHO (2003b):

This is the most important lesson for all nations: in a globalised, electronically connected world, attempts to conceal cases of an infectious disease, for fear of social and economic consequences, must be recognised as a short-term stop-gap measure that carries a very high price – loss of credibility in the eyes of the international community, escalating negative domestic economic impact, damage to the health and economies of neighbouring countries, and a very real risk that outbreaks within the country’s own territory can spiral out of control.

Why was information covered up at the beginning of the epidemic outbreak? Under the current Chinese legal system, local authorities must not reveal information about infectious disease to the public unless authorised by the Chinese central government or China Health Ministry. In fact, information on epidemics had always been classified as a state secret. A senior official at China CDC remarked:

In the past, information on epidemics was indeed highly classified. The main purpose was to maintain social stability. Of course, the SARS incident indicated a lack of information communication in the public health sector. But the media also exaggerated the situation. The common way of handling information was “intense internally, relaxed externally”.

To date, there is no national legislation on information freedom and access to government documents in China. The first local provision on freedom of information in China, *Guangzhou Municipal Open Government Information Provision*, went into effect in Guangzhou on 1 January 2003 (Horsley, 2004). On 1 May 2004, the largest city in east China, Shanghai, adopted the *Provisions of Shanghai Municipality on Open Government Information*. Most recently, on 30 April 2008, the State Council released a new regulation on the publication of government information on its working procedures and many matters of public concern, such as land acquisition for development (Yan, 2008).

Analysis

What we wish to highlight in this example of SARS is a focus on the lack of information freedom as constitutive of, and a contributor to capability deprivation. In the SARS case, Chinese health workers suffered deprivation of agency freedom in terms of being able to communicate effectively with other health workers, to be informed of an epidemic crisis and thus to perform their health care role effectively. Similarly, the Chinese public are deprived of the freedom to participate in public affairs. This resulted in deprivation of well-being freedom, in terms of catching SARS, on the part of both patients and health care workers. This analysis is summarised in Table III.

The means to social inclusion in the form of having access to information resources on the internet – the information infrastructure - is rapidly developing in China, albeit not on an equitable basis. It has been a state priority to develop and diffuse information technology, aligning with the global aspiration to a network economy. Therefore, at one level, part of the Chinese population are being actively included in the e-society, while those who have been left out could be said to be excluded, e.g. from sharing and taking advantage of the available information resources, or from communicating on the ICT platform.

At another level, we argue that, even among the sections of society which have been “connected” and considered part of the network, there exists a different type of social exclusion, or “unfavourable inclusion”. This does not concern the adoption of technology, but the freedom people have to be notified of public information and be engaged in public affairs. The rapid diffusion of ICT infrastructure does not mean that information is allowed to flow freely in the Chinese society. Not only are most internet cafés under strict surveillance, the media under tight censorship, and some overseas web sites regularly blocked, but also information of public interest, e.g. epidemic information as in the case of SARS, is systematically kept from public knowledge.

Referring again to Table III, healthcare workers in China are capable of being engaged in accessing and creating health knowledge via some ICT tools, thereby being included in the e-society at one level. However, the denial of access to government held health information and the voice to express concerns constitutes social exclusion at another level. Similarly, members of the public and the press may have access to the internet and other sources of information but, if information freedom is actively curtailed, their agency freedom is restricted. As Sen (2000) commented:

exclusion from the process of governance and political participation is indeed an impoverishment of human lives, no matter what our per capita income may be.

Commodities	Agents	Vector of conversion factor	Well-being freedom	Circumscribed capabilities Agency freedom
Health information systems Media Internet	Health workers	Information freedom – Access to information without censorship	To help patients without contracting diseases	To communicate with other health institutes To be informed of an epidemic crisis To effectively perform better healthcare To be engaged in public affairs To monitor the performance of the government To voice their concerns
	Citizens in the press	– Access to government held information Freedom of speech	To receive quality healthcare	

Table III.
China case: capability
deprivation partly due to
low information freedom

In the case of SARS, this resulted in a delayed expression of public concern, no doubt resulting in a higher level of deaths. Interestingly, the international focus and internal debate following this crisis may have already resulted in higher levels of information freedom in China, at least in the area of epidemic health information.

Conclusion

This paper has engaged with the debate on social exclusion in e-society by introducing aspects of Sen's capability approach as a conceptual basis. The perception of social exclusion as capability deprivation highlights the importance of grounding the investigation in local conditions. Discussing social exclusion in general terms risks oversimplifying the complexity and heterogeneity of social issues at stake. Therefore, there is a need to ask the question upfront: "Social exclusion from what"? From a capability approach perspective, the question is deprivation of what capabilities that are considered essential in the e-society.

The distinction between well-being freedom and agency freedom enables an analysis of social exclusion at multiple levels. One could be excluded from taking advantage of information online by being deprived of access to the Internet. At another level, one can also be excluded from participating in political and public affairs by being denied certain information that should be available to the public, despite available access to the communication channels. Exclusion in this sense could be conceived of as one type of inclusion (connected to the digital network) but under unfavourable terms (denied free flow of information communication), namely, unfavourable inclusion. Thus, inclusion in one space can co-exist with exclusion in another space. Furthermore, there is also a subtle distinction between passive exclusion, i.e. due to existing environmental, social and cultural conditions, and active exclusion, i.e. due to institutional and political reasons.

The two empirical studies we presented serve as examples to illustrate how social exclusion in the e-society can manifest in different forms under different conditions, as deprivation of different capabilities. In the South African example, the rural hospitals seemed to be included in the DHIS, yet were in effect excluded from actually benefiting from the health information which they took part in collecting. This arises from, in part, the level of information literacy of the local people. Coming from an oral culture, the health workers had not adapted to the type of encoded information required in an e-society, nor could they see it as anything but imposed by higher authority due to the lack of institutional support. This form of exclusion, or unfavourable inclusion, then in turn contributes to the deprivation of quality healthcare in the area. In the Chinese case, again, despite the rapid diffusion of the internet and health information systems, the Chinese people are still being excluded from a free flow of health information, therefore deprived of the capability of taking part in public affairs, not to mention monitoring the performance of the government. The two cases each exemplify one aspect of social exclusion in an e-society, while there could be many other aspects that one could explore. The capability approach, we propose, could be an analytical tool to do so.

This paper is also an attempt to apply aspects of the capability approach in social studies of ICT in developing countries. The approach has been criticised as being too abstract and utopian, and difficult to apply directly to the analysis of empirical material. We would argue that, while the capability approach can certainly serve as a philosophical basis or a framework of thought in general (Zheng, 2007), we can use the

key concepts as sensitising devices in analysing empirical cases. The distinction between functionings and capabilities, for example, conceptually guides us to go beyond the material conditions of living to consider the importance of social opportunities and issues like social exclusion. Very often ICT is still primarily considered as a production tool or an industry to boost economic development. This is a perspective which remains narrowly focused on the functionings of individuals. If capabilities of people are the ultimate concern, i.e. their freedom to lead a life they value, then social inclusion and the ability to participate in the e-society automatically become primary issues.

In this paper, we have applied a framework of conversion from commodities to capabilities, which highlights the conversion factors and their relationship with people's capability in the e-society. It also sheds light on the "relational features" of social exclusion. In other words, social exclusion as capability deprivation in one space is often related to capability deprivation in another space; and social exclusion of one group of people may cause capability deprivation in another group. The capability failure of the rural South African health workers to use encoded information and the media of the ICT gave rise to their exclusion from being effectively integrated into the district health information systems. This then, in part, contributes to the capability deprivation of the local patients to receive quality healthcare. Moreover, such a passive exclusion also takes place when the agency of local people is not given sufficient attention. In other words, the data collection requirements did not sufficiently take into account the local needs of the people, nor was the data fed back and utilised in a way that was meaningful to the health workers. The rupture of the information system from local context then led to the social exclusion from the e-society in terms of usage of information.

Social exclusion in the e-society needs to move beyond the distribution of ICT among the population, and the inequality of social-economic status behind it. If the e-society is expected to be a better place than earlier societies, it will not be just the digital technology that makes the difference. Rather, it would be the utilisation of the flow of information and channels of communication which potentially enhance people's freedom to pursue a life that they have reason to value, including participating in economic, social and political activities. Conceiving social exclusion as inequality in different spaces, or different types of capability deprivations, the capability approach provides a lens to address the complexity and multiplicity of the phenomena in the e-society.

Notes

1. Sen (2000) traces this capability perspective idea to Aristotle's account of the richness of human life which is linked to "life in the sense of activity", and also to Adam Smith who defined "necessaries" in terms of their effects on the freedom to live non-impooverished lives, such as "being able to appear in public without shame".
2. The capability approach has been significantly extended by the philosopher Nussbaum (2000, 2003) who differs from Sen in several aspects, especially in her pursuit of a universal list of "central human capabilities" that should be endorsed by all governments.
3. Trade-related aspects of intellectual property rights.

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