Different Spaces for e-Development: What Can We Learn from the Capability Approach?

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ABSTRACT

"e-Development" is often pursued with a lot of thinking on the 'e' and little on the 'development,' rendering the link between them ambiguous and fragile. It is important to explicate what kind of "development" is being pursued, and how information and communication technology (ICT) can contribute to this goal. This article draws on Amartya Sen's capability approach to provide some theoretical reflections on e-development. It is argued that the capability approach, being a normative and evaluative approach, provides us with a different "space" to assess e-development and allows us to sensitize and take into account a variety of important issues surrounding ICT adoption for development. This article first provides an introduction to key concepts of the capability approach, which are then drawn on to generate implications for e-development research. © 2009 Wiley Periodicals, Inc.

Keywords: ICT for development; development as freedom; the capability approach; evaluative spaces

1. THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY IN DEVELOPMENT APPROACHES

E-development, or information and communication technology (ICT) for development, has been at the center of political discourse across developed and developing countries, nationally and globally. In recent years the emphasis has been on strengthening efforts and creating an enabling environment for the adoption and diffusion of ICT and on further reinforcing the commitment of the international community on ICT for development (United Nations, 2005; World Bank, 2006). However, e-development has often been pursued under ambiguous assumptions about what and how ICT contributes to development. There is also often an unquestioned belief that investing in ICT is the path toward social and economic development (Avgerou, 2000). Decades of research that examines the experience and lessons of e-development reveals that technology does not always (in fact, often fails) to serve intended purposes (Avgerou & Walsham, 2000; Heeks, 2002a) and that technological diffusion may not necessarily lead to development. Therefore, Walsham and Sahay (2006) call for more emphasis on the "meaning of development" and ICT's role in this.

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There have been various approaches to development in history. Some are still prevalent in today's development discourse. A dominant perspective of development since the Second World War is focused on economic growth. From this view, the outcome of development is measured by gross national product or per capita income. To achieve economic growth, large scale rapid industrialization and urbanization have to be pursued where conditions allow. The rationale is backed up by mainstream economic theories, such as neoclassical economics or Keynesian economics, which are characterized by capital accumulation, greater division of labor, technological progress, and trade, often with minimal governmental interventions.

The rise of per capita income has been achieved at the expense of overall environmental pollution, urban poverty and crime, and the erosion of traditional values and ways of life. As noted by Toye (1993, p. 24), "The process of very rapid industrialization, new or old, can create wide spread social distress and conflict, as well as previously undreamt-of levels of material wealth and technical advance." Nevertheless, the approach of development driven by economic growth has been adopted by national governments, international agencies, and global powers. For example, the World Bank and the International Monetary Fund, the biggest lenders in the world, adopted these ideas and promoted them with developmental programs in countries under their patronage. Under the framework of development as economic growth, ICT is primarily seen as either an industry in itself or a motor for industrialization, and much emphasis has been put on how ICTs can improve productivity and competitiveness. However, there is not yet evidence that investment in ICT boosts economic growth and increases standards of living in most countries (Akpan, 2003; Avgerou, 2003b). For example, India's global software industry benefits only a small group of people in the information technology (IT) industry, whereas 45% of the population remain illiterate and 1 of 12 children dies before the age of 5 (Warschauer, 2003). Whether such disassociation of economic growth and social development is sustainable has been called into question (Castells, 1999).

A perception of development related to that of economic growth is its equivalence to modernization—a concept emerging from the postdecolonization era of Asia and Africa after the Second World War. Despite its various connotations, "modernization theory" (Tipps, 1973) is usually related to a process of social transformation modeled after Western societies. Underlined with a traditional–modern dichotomy, modernization is often taken to be part an evolutionary historical process, although sometimes with revolutionary effect, whereby traditional, or underdeveloped, societies move along a single trajectory to modern, or developed, ones (Roberts & Hite, 2000). In other words, modernization entails "a series of transitions from primitive, subsistence economies to technology-intensive, industrialized economies; from subject to participant political cultures; from closed, ascriptive status systems to open, achievement-oriented systems; from extended to nuclear kinship units" (Tipps, 1973, p. 204). Generally, modernization theory calls for social changes of wealth accumulation, rationalization, innovation, and social education. Despite the ongoing discussions on postmodernism and globalization, the dichotomy between developed and developing countries persists, and the ideology of modernization still prevails—although the connotation of modernization may have to some extent changed or expanded.

As the benchmarks of a modern society are usually those in Western Europe and North America, the pursuit of modernization often implies that help and guidance from those countries are categorically desirable, through the means of, say, foreign investment, technology transfer, and mass media. As a result, Western values and advice have been often imported wholesale without deep reflection, and technologies, such as ICTs, have been

transferred as symbolic of modernization by many developing countries, and without much consideration of their compatibility with local conditions. Such simplistic "ICT fetish" has created a series of opportunity costs (Heeks, 2002a), and the poor are rarely given the chance to voice their needs. For example, 30 years of computerization in Ghana has seen improper use of IT resources and little impact on society (Aryeetey, 1998). Adoption of innovations and values across social and cultural contexts have again raised questions about compatibility and sustainability of ICTs in local cultures (Walsham, 2001; Westrup, Jaghoub, Sayed, & Liu, 2002) and institutional conditions (Avgerou, 2003a).

Many have called for a broadened concept of development (Seers, 1969) and have criticized the inadequacy of the orthodoxy of neoclassical economics (Stiglitz, 2002). Over the last two decades, the United Nations Development Programme has adopted a human development paradigm based on Amartya Sen's capability approach (CA), which is concerned with "the expansion of freedom . . . both as the primary end and as the principle means of development" (1999, p. xii). Expanding from the narrow focus of income and consumption, the human development approach tackles development challenges ranging from poverty, consumption, and sustainable development to gender equality, human rights, and democracy (Fukuda-Parr, 2003). Although the capability approach is deliberately vague (Sen, 1992) and contains ambiguities and unclear boundaries (Gasper, 2007), it was recognized by the Nobel Committee and fellow scholars for its contribution to the broader field of development studies, and has prompted important debates on issues such as measurement of inequality, capital, and savings, and the role of nonmarket institutions (Corbridge, 2002). Rather than providing a directly applicable tool kit for development, the essential value of the capability approach lies in its usefulness as a "mode of thinking" (Robeyns, 2005).

It is in this light that this article seeks to explore the value of the capability approach for the discourse of e-development, as most research on ICT for development often explicitly or implicitly takes the perspective of development as economic growth and/or modernization. The purpose of this article is not to provide a comprehensive introduction to the complexities and subtleties of the CA, which has evolved over several decades, driven by Sen himself and other scholars—interested readers are encouraged to follow the references of this article for more in-depth texts on the CA. Nor does it seek to address the challenge of operationalizing the CA in any particular way. Instead, this article draws on some fundamental concepts of Sen's work to provoke some reflections on the relationship between ICT and development. Above all, a CA perspective calls for an alternative "space" for assessing e-development, in other words moving beyond the space that centers on economic growth or modernization to consider and operate in a space that focuses on the effective opportunities people have to achieve what they consider to be valuable in life. In the rest of the article, I will first introduce the key concepts of the CA, its applications and critiques, then present a preliminary discussion on what we can learn from the CA to study ICT for development. The discussion will focus on four themes from the capability approach: means and ends of development; human diversity; agency and "restricted agency" (Peter, 2003); and a different "evaluative space" (Sen, 1993) for inequality. Some provisional research questions are also derived for the consideration of fellow researchers.

2. THE CAPABILITY APPROACH

Sen's capability approach 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). As most of Sen's work addresses the economics field, it is not

easily accessible to a wider audience. Therefore, attempts by other authors such as Alkire (2002) and Robeyns (2002) to synthesize conceptual elements of his work on the capability approach broaden opportunities for multidisciplinary engagement with the theory.

The conceptual foundation of the capability approach is based on Sen's critiques of opulence-focused approaches (focused on income, commodity command) or utilitarian approaches (focused on happiness, desire fulfillment), which are typically found in traditional welfare economics (Sen, 1985a). The word "capability" as used by Sen differs from its everyday sense, which usually refers to trained potentials, including skills, abilities, and aptitudes. Rather, "capability" in this approach reflects the real opportunities (environmental opportunities and individual abilities) that a person has to lead a life that s/he values (Gasper, 2007).

2.1 Functionings and Capabilities

The major constituents of the capability approach 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 are considered constitutive of well-being. The term refers to realized achievements and fulfilled expectations, whereas the notion of capabilities "represents a person's *freedom to achieve well-being* (Sen, 1987, p. 49, original italics)" and refers to effective possibilities of realizing achievements and fulfilling expectations. Thus, what the CA is concerned with is not only the functioning levels of people, but also their capabilities. It should be noted that "valuing" is distinct from "being happy with" or "desiring"—"valuation is a reflective activity in a way that 'being happy' or 'desiring' need not be" (Sen, 1985a, pp. 29–30). Therefore, the CA is consistent with the statement "I value x, and so I desire it," but not in line with "I desire x, and so I value it." (Sen, 1985a, p. 32)

2.2 Means, Freedom, and Achievement

Based on the distinction between functionings and capabilities, the CA differentiates from other economic approaches to poverty, inequality, and justice by distinguishing "means to achieve" (what one values), "freedom to achieve," and "actual achievement" (Sen, 1990b, 1992). Whereas approaches that focus on commodity demand or level of income only address the means of achievement, the CA puts the freedom to achieve at the central stage of assessment.

Because Sen's ideas are scattered over a large volume of his work and are often entangled with mathematical formalization, it is useful to borrow Robeyns's (2005) simplified diagram (Figure 1) to illustrate these concepts. Commodities, or goods and services, are seen merely as some of the *means to achieve* (Sen, 1985a). They are important only in light of the fact that
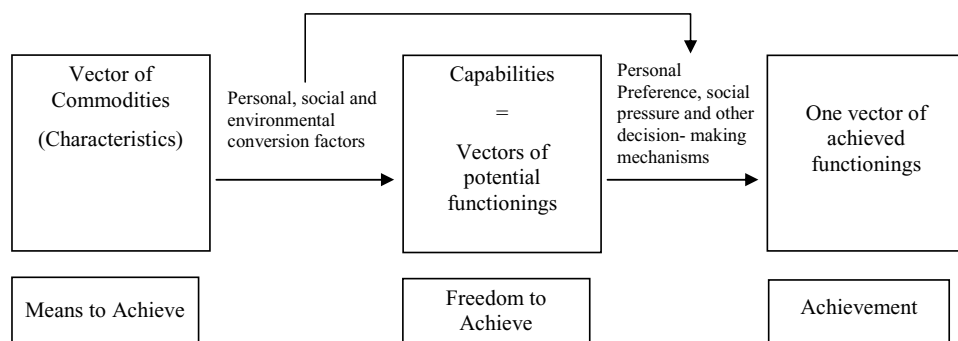
Figure 1 Stylized nondynamic representation of the core aspects of the capability approach (adapted from Robeyns, 2005).

their characteristics enable people to do and to be, namely, in the light of the capabilities one can generate from these goods and services. It should be noted that commodities should not be restricted to those that are exchangeable for income or money, as the capability approach should be able to be applied to nonmarket economies.

Commodities being the means to achieve, a person's freedom to achieve is defined by the capabilities, namely, potential functionings, with which she is endowed, including what her individual conversion factors allow her to generate from the available commodities. 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 requires only the respective behavior of other members, not any specific goods or services. The actual achievement of functionings is a result of personal choice, subject to personal preferences and other factors of decision-making mechanisms, from the capabilities available.

The extent to which people can generate capabilities from goods and services is influenced by three sets of conversion factors—personal, social, and environmental characteristics (Sen, 1992, pp. 79–87). Personal characteristics, such as mental and physical conditions, 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 behavior, materialism, religion), social institutions (e.g., rule of law, political rights, public policies), and power structure (e.g., hierarchy, politics). Environmental characteristics, including climate, infrastructure, institutions, and public goods, also play a role in the conversion from characteristics of the goods to individual functionings.

2.3 Human Diversity

One of the strengths of the capability approach is that it is able to account for human diversity that is pervasive in every section of society. Human diversity is implicated in both aspects outlined above: the distinction between functionings and capabilities, and the explicit accommodation of personal and socio-environmental factors in the conversion of commodities into functionings (Robeyns, 2000). According to Sen, "We are deeply diverse in our internal characteristics (such as age, gender, general abilities, particular talents, proneness to illness, and so on) as well as in external circumstances (such as ownership of assets, social backgrounds, environmental predicaments, and so on)" (Sen, 1992, p. xi).

The consideration of interpersonal variations among human beings differentiates the capability approach from other theories in that it explicitly distinguishes different 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 health care) (Sen, 1985a). For instance, a computer will have different influence on the lives of a literate person and an illiterate one. By the same token, two people with a similar set of functionings may have very different sets of capabilities, and vice versa. Two literate, physically and mentally healthy young women in the UK and in Afghanistan may enjoy similar functionings, but they may have very different life chances to lead a life they want, for example, to become a medical doctor.

This has great significance in assessing inequality, hence the question "equality of what?", which he argues is "truly central to understanding the distinction between different ethical approaches to social arrangements" (Sen, 1992, p. 130). The capability approach proposes a different "evaluative space" (Sen, 1993, p. 33), in other words, the plurality of functionings and capabilities, as opposed to income, utility, or desire fulfillment in traditional approaches. From this perspective, poverty should be seen as "the deprivation of basic capabilities rather than merely as lowness of incomes" (Sen, 1999, p. 87), which is only of instrumental importance.

Furthermore, Sen emphasizes the great variability in the instrumental relationship between low income and low capability, affected by individual, social, and environmental diversities. For example, elderly or disabled groups will encounter greater "conversion" difficulties in converting income into functionings. A relatively poor person living in a rich country may be more deprived in terms of capabilities compared to people with lower absolute income but living in less opulent countries. Sen (1999) gave the example that African Americans in the United States, although richer than people in the third world, have an "absolutely" lower chance to reach a mature age than do people in, say, China, Sri Lanka, or parts of India.

2.4 Well-being and Agency

A person's capability set, which comprises all the capabilities of a person, represents her freedom to achieve well-being and agency. This is the dimension that Sen proposes as the informational basis for assessments of inequality, poverty, justice, and development (Sen, 1985b). Sen defines agency as the freedom to set and pursue one's own goals and interests, which may also 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). In other words, the CA is concerned with an individual's real opportunities in achieving his or her "well-being freedom" and "agency freedom" (Sen, 1992, p. 57). The former is one's freedom to achieve things that are constitutive of one's *capability set*, whereas the latter is one's freedom to "bring about the achievements one values and which one attempts to produce" (Sen, 1992, p. 57). 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 that 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 6 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 caused by 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.

By putting agency as an explicit component of a person's capability set, any development policy or evaluation methods that are informed by the CA have to take into account the aspirations and needs of the people affected. In contrast, the stress on agency does not suggest an unconditional acceptance of whatever a person happens to perceive as valuable, or acceptance with as much intensity as valued by the person. There is still space, Sen argues, for the agency to be evaluated and appraised (Sen, 1985b). Taking agency seriously implies taking note of the motivations and constraints under which a person acts, which brings to the front the issue of "adaptive preferences" and "restricted agency" (Peter, 2003).

For example, Sen argues that the fact that married women tend to value their contribution to the household as lower than their breadwinner husband is based on general social perceptions of market evaluations of work, and hence the gender contributions to social goods. Such a tendency is further compounded by their already low bargaining power in the family, thus resulting in their resignation to fate (Sen, 1990a). In his recent discussion of identity and violence, Sen (2006) also expresses concern with deprivation of the freedom to think and the freedom of choice because of singular identification with a particular ethnic group, religion, or way of living. Although such restrictive views of identity are often historical legacies, they are also partly results of social policies. In other words, the capability approach has an implicit concern with power relationships, not dissimilar to Foucault's (1977, 1980) argument that inequalities and power relationships operate not solely through direct forms of repression but often through less visible strategies of normalization.

2.5 Applications and Critiques of the Capability Approach

The capability approach should be regarded primarily as a framework of thought or a mode of thinking about normative issues (Robeyns, 2005). Sen (1993) intended it to be used for a wide range of purposes. For this reason, the capability approach has been deliberately left "incomplete." For the same reason, the CA has been called "an unworkable idea" by some (Robeyns, 2006), and accused of being insufficiently specified by others (Clark, 2006; Corbridge, 2002; Gasper, 2007). Indeed, unlike Nussbaum (2000), who developed the capability approach in a slightly different direction and most notably provided a definite list of "central human capabilities," Sen deliberately restrained from prescribing a list of functionings to be taken into account, or an aggregative principle. The vagueness and incompleteness of the CA means that it is particularly difficult to operationalize in practice. Moreover, the CA poses extremely high information requirements for evaluating individual well-being and social states (Clark, 2006).

Nevertheless, capabilities studies have thrived in the last decade, and much effort and progress have been made in applying the CA in empirical studies. (See, e.g., Clark, 2006, Gasper, 2007, and Robeyns, 2006, for more detailed discussions.) Robeyns (2006) categorizes ten types of existing capability applications: general assessment of human development of a country; assessment of small scale development projects; identification of the poor in developing countries; poverty and well-being assessments in advanced economies; an analysis of deprivation of disabled people; the assessment of gender inequalities; theoretical and empirical analyses of policies; critiques on social norms, practices, and discourses; and finally, the use of functionings and capabilities as concepts in non-normative research.

For instance, Alkire's (2002) book *Valuing Freedom* has taken Sen's capability approach forward to develop a framework for specifying valuable capabilities, applied on cases studies of nongovernmental organization activities of poverty reduction. In terms of policy application, the capability approach has provided the foundations of the human development approach adopted by the United Nations Development Programme. Madon (2004) provides a good example of the application of the CA in ICT for development. She adopts the capability approach to go beyond traditional evaluation criteria on e-governance initiatives in the state of Kerala, India. Rather than measuring only expenditure, infrastructure, access, and skills, she argues that we should also look at what people can or cannot do with the ICT applications offered, and how effectively people benefit from them.

A frequently uttered critique on Sen is the belief that the capability approach is too individualistic, and pays insufficient attention to groups and social structures (e.g., Corbridge, 2002; Devereux, 2001; Navarro, 2000). It should be noted that Sen explicitly takes into account social environment, societal structures, and culture, first by the distinction between functionings and capability, and second by recognizing the conversion factors from commodities to functionings (Robeyns, 2005). Nevertheless, as the CA remains "incomplete," it does require additional social theories in supplement to perform specific evaluation and analysis—and the choice of different theories will probably lead to different outcomes.

The aspect of "agency freedom," which is a critical appeal of the CA, has not been very well developed, partly because it is particularly difficult to operationalize (Gasper, 2007). Most development approaches have concentrated on the well-being aspect, such as income, education, and health care. Even in the Human Development Reports, which adopt the capability approach as a conceptual framework, the focus has been on the well-being aspect of human development and the agency aspect has been much less appreciated. Nevertheless, there are some good examples in feminist studies that operationalize the CA with an emphasis on agency.

For example, Fukuda-Parr (2003) compares gender inequality seen from growth-oriented perspectives and from the capability approach. 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 health care, education, participating in economic life, and autonomy in decision making). In other words, it "measures gender equity in women's agency" (Fukuda-Parr, 2003, p. 314).

It is beyond the scope of this article to explore much more in-depth the discourse on how to operationalize the CA. In general, the capability approach has provided an invaluable analytical and philosophical foundation (Evans, 2002). Application of the CA doesn't have to be empirical; it can be used for the purpose of analytical reasoning or as a critical lens, as attempted in this article. The capability approach provides a conceptual basis on which many critical issues and embedded relationships are sensitized for investigation. It is hoped that researchers who find Sen's ideas inspiring will pursue practical application of the CA in their specific research areas. In the next section, I will draw on the above mentioned concepts to generate some implications for future research in e-development.

3. A CA PERSPECTIVE ON e-DEVELOPMENT

The capability approach is certainly not specific with regard to ICT adoption for development. It offers little about understanding the details of technology and their relationship

TABLE 1.   A Capability Approach Perspective of ICT for Development

Means and ends of development	• Considers substantive individual freedom as the ends of development • Essentially concerned with ICT's contributions to people's capabilities to achieve a valuable life • Concerned with effective opportunities for people to use ICT for what they consider valuable
Human diversity	• Questions what conversion factors are in place to generate potentials to achieve, and to allow people the freedom of choice to realize the achievement • Attention to diversity of and discrepancies in human conditions
Agency	• Concerned with not just "haves" and "have nots," but "cans" and "cannots" • Emphasizes the agency of ICT users, therefore taking into account their aspirations and needs • Accommodates and critically evaluates the design of social arrangements and cultural values in relation to individual capabilities
Evaluative spaces	• Questions in which space should ICT projects be evaluated • If we are concerned with equality in e-society, equality of what?

with social processes, whereas the information systems field has accumulated rich stocks of knowledge in these aspects. Nevertheless, the capability approach entails a critique on the utilitarian assumptions of development, and is able to bring to the surface, systematically and coherently, a set of key concerns for scrutiny based on an explicit philosophical foundation. Many issues unveiled by applying the capability approach are not new to the literature of ICT for development, but here we examine them from a CA perspective and see what we can learn from it. I will focus on the following four elements of the capability approach derived from the introduction in the previous section, and discuss how they can shed light on our research in e-development (Table 1):

1. Means and ends of development.
2. The impact of human diversity on conversion from commodities to capabilities.
3. The agency aspect of capabilities and the recognition of "restricted agency."
4. Different "evaluative spaces" for inequality.

Each of the following subsections elaborates these aspects respectively and suggests a few research questions that can be used as starting points if we were to take the CA perspective in future research. These research questions are summarized in Table 2 in the appendix.

3.1 The Means and Ends of Development

A fundamental question is whether ICT is intrinsically good and beneficial for human development or whether it, as a type of commodity, plays an instrumental role in development. There have been discussions about the rationalities of development lying behind the discourses of e-development (Castells, 1999; Escobar, 1995; Wade, 2002). Avgerou (2003b) points out that the link between ICT and economic growth is dubious, and that it has in fact become an institutional actor in developing countries, supported by the power alliance

TABLE 2.   e-Development Research Questions Generated from the CA

Elements of the CA	Research Questions for e-Development
Means and ends of development	• What kind of "development" is ICTs supposed to promote? • How do ICTs help people to achieve what they consider to be valuable?
Commodities, capabilities, and human diversity	• What capabilities can potentially be generated from a certain type of ICT? • Are they appropriate for local conditions at this stage? • What conversion factors (personal, social, environmental) need to be in place for capabilities to be generated from a certain type of ICT? • What decision mechanism affects the actual adoption of a certain type of ICT, or the selection of certain characteristics of a type of ICT over other characteristics? • How does ICT interact with these decision mechanisms (and their changes)?
Agency and restricted agency	• What are the needs and aspirations of the potential ICT adopters? • What are the rationales behind those needs and aspirations? • What conditions enable or restrict the "agency" of the ICT adopters? • How does ICT interact with these conditions?
Evaluative spaces	• What essential capabilities are deprived? • Who may be disadvantaged by the deprivation of these capabilities? • What are the relationships between different types of capability deprivations?

of the institution of "development" (Avgerou, 2003a). Thompson (2004) shows that the appropriation and discursive deployment of ICT has been associated with the mainstream discourse of progress and rationality, and has been used to further interests of "technocratic" and "mainstream" stakeholders. However, most articles in the existing research still seem to be ambiguous about what development means when they discuss the contribution of ICT to development (Walsham & Sahay, 2006).

In practice, the question of means and ends of development is also one of importance in relation to national policies of development. Although China has been recognized for creating an economic miracle over the last three decades, its economic growth has been accompanied by dire inequalities and slow progress in democratic development. Similarly, diffusion of technology sometimes has been pursued as an end in itself. It is not uncommon that e-development initiatives stop at the level of provision and uptake of digital technology, and are evaluated from a technological perspective rather than a human-centered one (Madon, 2004). The capability approach, I argue, offers a framework of thought to locate technological adoption in the bigger context of development, as means rather than ends. Drèze and Sen (2002, p. 3) make a comment on this point

It should be clear that we have tended to judge development by the expansion of substantive human freedoms—not just by economic growth (for example, of the gross national product), or technical progress, or social modernization. This is not to deny, in any way, that advances in the latter fields can be very important, depending on circumstances, as "instruments" for the enhancement of human freedom. But they have to be appraised precisely in that light—in terms of their actual effectiveness in enriching the lives and liberties of people—rather than taking them to be valuable in themselves.

Thus, from a CA perspective, ICT goods and services are meaningful in the light of its contribution to the users' capability set. The characteristics of ICT—such as the functionalities for information collection, storage, processing, and dissemination, the facilities for instant communication across time and space, and the potentials for knowledge generation and diffusion—provide the means to achieve, which can be converted into the capability set of the user. This has implications both at a policy level and at the level of community-based e-development projects. The CA perspective thus leads us to these research questions:

1. What kind of "development" are ICTs supposed to promote?
2. How do ICTs help people to achieve what they consider to be valuable?

3.2 How Does ICT Contribute to Human Development?

The emphasis on *human diversity* in CA offers a critique on the unquestioning pursuit of ICT diffusion across contexts and a tendency to apply universal criteria on using ICTs as developmental instruments. Certainly, different proposals have been made to reconsider the centrality of technologies. Heeks (2002b) proposes that, rather than focusing on e-development, we should be discussing *i-development*: "information-centered, integral to its environment, integrated with development objectives, intermediated, interconnected, and indigenized" (p. 10). Zheng (2005) argues that it is important to cultivate an information culture where people are able to effectively take advantage of information for meaningful purposes. These perspectives are alternative to the determined and often unquestioned pursuit of ICT adoption and diffusion across social and cultural contexts.

A CA perception of ICT stresses human diversity, namely, interpersonal variations in conversion factors and decision-making mechanisms in e-development. For example, ICT adoption can be affected by the level of information literacy and computer literacy of the user, the telecommunication infrastructure, the economic power of the user, or the extent to which knowledge generation and sharing are encouraged in that particular social environment. Moreover, while the capabilities constitute potential functionings that a person can achieve, the achieved functionings are substantiated by the individual's choice to take certain actions upon the available commodities. Such a decision is again subject to factors such as personal values, social pressures, or other decision-making mechanisms.

Therefore, even though ICT is perceived as commodities, it has to be considered in connection with the conversion factors and decision-making mechanisms when applied in the context of development. This is in line with what Avgerou (2008) calls "social embeddedness of IT innovation." National and organizational differences (Barrett & Walsham, 1995), conditions of local cultures (e.g., Metcalfe & Joham, 2003; Zheng, 2007), institutional structure and power processes (Silva & Backhouse, 2003), type of governance (Ciborra & Navarra, 2005), and information infrastructure (Rolland & Monteiro, 2002) are all examples of social and environmental conversion factors that reflect human diversity in the context of e-development.

Taking the view of ICTs as commodities and means to achieve development as freedom gives rise to the following research questions:

1. What capabilities can potentially be generated from a certain type of ICT?
2. Are they appropriate for local conditions at this stage?
3. What conversion factors (personal, social, environmental) need to be in place for capabilities to be generated from a certain type of ICT?

4. What decision mechanism affects the actual adoption of a certain type of ICT, or the selection of certain characteristics of a type of ICT over other characteristics?
5. How does ICT interact with these decision mechanisms (and their changes)?

3.3 ICT, Agency, and Development

It is not unusual that simplistic correlation has been made between ICT acquisition and the improvement of people's well-being. The word "capability," under such circumstances, usually refers to people's ability to use ICTs, such as computer skills, whereas the CA would be concerned with life opportunities and the range of options for people to access and use ICTs to both improve the quality of life and to accomplish their goals. For example, to have access to the Internet does not necessarily mean that the person has the learning ability to benefit from the rich source of information, or that citizens are able to use information to pursue what they consider as important objectives.

Users and potential users of ICT are often perceived as passive receivers of innovations, as many technologies are transferred to the third world from contexts of more advanced economies (Walsham, 2001), and are often imposed on local users under the claims that these particular technologies are "good for them" (Bailur, 2007). Even local e-government projects or e-health initiatives are often implemented without the consultation and involvement of citizens or health care workers. The capability approach emphasizes the agency of ICT users, and thus takes into account the needs and aspirations of the people whose interests are affected by the innovations. This has two implications. First, it signifies the need for public discussions, participation, and social inclusion in the process of ICT adoption and diffusion (Heeks, 2002a; Puri & Sahay, 2003). Furthermore, the impact of ICT adoption is not to be evaluated merely in terms of the number of adopters, how well it matches the intentions of the designers, or the economic benefit it generates. Rather, it should be evaluated in terms of the extent to which it meets the needs and expectations of users (Madon, 2004).

An essential emphasis on situated agency from the perspective of the capability approach also indicates the need to actively reflect, or even to challenge, deep-seated power structure and rationalities (e.g., Thompson, 2004). Participatory development may disguise or even strengthen incipient articulation of power embedded in social and cultural practices, hence the "tyranny of participation" (Cooke & Kothari, 2001), as it is possible that participatory methodologies may reify existing inequalities and affirm the agenda of elites and other more powerful actors (Kothari, 2001). Often in e-development research, social conditions and cultural values are perceived as merely contexts of ICT adoption, or sometimes as barriers (Walsham, 2001). The stress on agency from the capability approach creates the possibility to not only accommodate, but also to critically evaluate the design of social arrangement and of the basis of cultural norms. Therefore, from the perspective of the CA, potential contradictions and tensions entailed by ICT adoption are not only to be recognized, but also possibly to be questioned and evaluated.

The attention to situated agency in the CA leads us to the following research questions in e-development:

1. What are the needs and aspirations of the potential ICT adopters?
2. What are the rationales behind those needs and aspirations?
3. What conditions enable or restrict the "agency" of the ICT adopters?
4. How does ICT interact with these conditions?

3.4 Social Exclusion in e-Society—Inequality of What?

It is mentioned above that the capability approach has mostly been used as an evaluative framework, as it proposes capabilities (well-being and agency) as the *evaluative space* for assessment of poverty, inequality, and development. Madon (2004) provides one such example on ICT project evaluation. How does the CA shed light on inequalities in relation to ICTs (i.e., social exclusion in the e-society)?

The concerns regarding social exclusion in an information-based world were at first most commonly framed as the "digital divide," and were expressed in terms of the access to technological resources (Warschauer, 2002). Such a focus has expanded to the integration of a wider range of social resources in the process of social exclusion and inclusion (Cornford & Klecun, 2003; Warschauer, 2003), and further to broader inequalities and deprivation endemic in societies (Trauth & Howcroft, 2006; Van Dijk & Hacker, 2003). A wider debate on social exclusion in an e-society recognizes 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 & Howcroft, 2006).

Sen (1992) proposes a different evaluative space for inequality: capabilities. He argues that social exclusion can be seen as capability deprivation because, first, being excluded from social relationships may be directly part of capability poverty (Sen, 2000). 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, p. 5, 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" (Sen, 2000, p. 6).

Zheng and Walsham (2008) draw on Sen's (2000) perception of social exclusion in e-society as capability deprivation, and recast the problematization of digital divide to one that focuses on the deprivation of capabilities that are considered essential in the e-society. They argue that 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 unfavorable terms (denied free flow of information communication), namely, "unfavorable inclusion." Thus, inclusion in one space can coexist with exclusion in another space.

In summary, the CA perspective offers a lens to view inequalities in e-development. These inequalities underline these research questions:

1. What essential capabilities are deprived?
2. Who may be disadvantaged by the deprivation of these capabilities?
3. What are the relationships between different types of capability deprivations?

4. CONCLUSION

The paramount interest in ICTs in the development discourse calls for a level of reflection and caution in terms of what ends ICTs are supposed to serve, and how technological progress contributes to social development. Investment in ICTs has often been justified for

the purpose of economic growth or modernization. In contrast, a CA perspective of ICT emphasizes embedding ICT in the pursuit of human development (i.e., allowing individuals to achieve greater capabilities and to lead a life they value).

A CA perspective on e-development essentially means adopting functionings and capabilities as an *evaluative space* for assessment of poverty, inequality, and development. Just as gender inequality should be evaluated in terms of deprivation on women's agency rather than on income disparity alone, social exclusion in e-society can also be considered as capability deprivation at different levels. Such a perspective allows us to bring out the complexity and multiplicity implied in e-development, and to reject simplistic assumptions about the role of ICT in human development.

Seeing development as the expansion of capabilities of humans to lead a life as they value, ICT should be viewed as means to achieve such a goal in the process of development, in which a whole set of conversion factors are required to be in place. Addressing these conversion factors, which affect the well-being freedom and agency freedom of individuals, is as important (if not more important) than ensuring the availability of technology.

One may take these conversion factors to be conditions for ICTs to be effectively diffused and exploited. They are more than that. The conversion factors are conditions that enable people to do what they want with their lives, with or without the facility of ICT. Such capabilities (apart from being free from hunger and disease) include, for example, to be literate; to be able to use information tools such as ICT to seek, evaluate, and use information to the advantage of themselves or others; to have the freedom to access information that is of public interest; and to express their opinions. In other words, rather than maximizing access to technology, ICT for development should take into account the free flow of valuable information to enhance both well-being and agency freedom of individuals.

A CA perspective on e-development also attaches great importance to the agency of individuals. Recognizing people's agency, and mobilizing it to take advantage of the potentials of ICT, should also be taken as integral to development. Furthermore, although the CA perspective underlines the aspirations and needs of individuals, it does not embrace unquestioned compliance with conditions of cultural norms or social structures, or solely with individual perceptions and values. Instead, it casts a critical eye on the "situatedness" of agency, so that the deep-seated reasons of social structures and arrangements can also be brought under scrutiny.

Finally, although this article is intended to be a general introduction of key elements of the capability approach that can be used to illuminate e-development research, it has not taken into account methodologies and level of analysis in the application of the capability approach. These issues are important and will be explored in future articles. Above all, this article suggests a shift of *space* in studying e-development. Moving beyond the measurement of technology diffusion, productivity, and narrow cost–benefit analysis, research on e-development can extend into a space of "freedom."

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