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Are ICTs Prerequisites for the Eradication of Poverty?

Abstract:

I provide a philosophical analysis of the claim that ICTs are necessary preconditions for the eradication of poverty. What are the links between information and communication technologies (ICTs) and poverty? I first define technology and then give a brief depiction of ICTs. Thereafter I define poverty and give a brief explanation of its context and causes. Next I discuss the relationship between poverty and ICTs in three paradigm cases: [i] the role of ICTs in poor societies, [ii] the effect of poor ICT knowledge and skill of individuals in highly developed technological societies, and [iii] the impact of impoverished ICT knowledge and skills on the rich, powerful, and intelligent ones in society. I propose a procedure for decision making about the appropriation of ICTs by individuals and societies. I assess the claim that both access to ICTs and effective use of them are preconditions for the eradication of poverty.

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Introduction

Everyone familiar with the development of information and communication technologies (ICTs) over the past few decades is amazed at the spectacular progress made in designing new, more powerful technologies with an ever wider range of useful applications. For example, to observe the ICT automated production of motor vehicles or to draw cash in different countries from one's own bank account through ICT enabled automatic teller machines leaves almost anyone astonished at the precision, speed, and effectiveness of these powerful technologies.

As with most new pioneering technological innovations in the past two centuries, like telephones, automobiles, radio, and television, the availability of ICTs, access to and effective use of them are unevenly distributed both within countries and between them.¹ The expression 'the digital divide' describes uneven access to, and use of, ICTs throughout the world, both within and between countries.² Many people regard the digital divide as a matter of serious moral concern, as they judge that people without proper access to ICTs in today's interconnected global village lose out on important economic and social opportunities to secure their survival and improve their quality of life.³

Is this judgement correct? Has proper access to ICTs become a precondition for survival and flourishing in our world today?⁴ If this judgement is

correct, it would imply an empirical claim that every poor person in whichever part of the world needs one or more of the following, i.e. a computer, television, radio, and mobile phone, as prerequisite for the eradication of their specific cases of poverty. Somehow such a claim seems to fly in the face of our common sense judgements about the eradication of poverty in many areas of the world.⁵ Informed people everywhere judge that poor people need proper jobs with adequate income to escape poverty. If such income is sustained over time, basic necessities such as decent housing, enough food, proper shelter, and appropriate clothing can be acquired. This solution was good enough to eradicate poverty throughout most of our known history as a species. Thus, are ICTs really prerequisite for the eradication of all cases of poverty?

One could approach this topic from another angle. Sometimes poor people need fitting skills and the right kind of training to be able to get a job. At other times their country's economy must grow and diversify to offer opportunities they qualify for. But do poor people need ICTs as prerequisites to eradicate their poverty, i.e. to get rid of their poverty at its roots? Does their society have to employ ICTs to make a success of their income-generating activities to be able to offer employment to all citizens?⁶ Is our contemporary world so different from all previous human worlds that we now require ICTs for our mere survival?⁷

networked system. Development without the Internet would be the equivalent of industrialization without electricity in the industrial era." Castells, Manuel: *The Internet Galaxy*. 269.

¹ Compaine, Benjamin E: *The Digital Divide*. 102.

² See Tavani & Bolt, David B. and Crawford, A.K.: *Digital Divide*. 20, 98.

³ Some warn that the Internet could amplify the social differences rooted in class, education, gender, and ethnicity, Castells, Manuel: *The Internet Galaxy*. 260. Current evidence suggests that the in the first decade of its existence, the Internet has therefore reinforced existing economic inequalities. See Norris, Pippa: *Digital Divide*. 66. See also Moss, Jeremy: *Power and the digital divide*. 162. Note the deep concern of the G8 heads of state who set up the Digital Opportunity Task Force to identify ways in which the digital revolution can benefit all the world's people, *Digital Opportunities for All*.

⁴ Castells think not to be connected to the Internet is "tantamount to marginalization in the global,

⁵ In 1973 E. F. Schumacher could still suggest that "there is nothing in the experience of the last twenty-five years to suggest that modern technology, as we know it, can really help us to alleviate world poverty..." Schumacher, E. F.: *Small is Beautiful*. 123. See also the relative absence of ICTs amongst the solutions to the ten most urgent global challenges as identified by the Copenhagen Consensus in 2004. See www.copenhagenconsensus.com.

⁶ These questions about the role of technology in development have often been asked in the past, as technology has always held promise as an engine of economic growth for transforming developing nations. Norris, Pippa: *Digital Divide*. 6.

⁷ Note how the change in the work situation is described, "the large-scale introduction of com-

In this essay I want to provide a philosophical analysis of the claim that ICTs are necessary pre-conditions for the eradication of poverty from our world today. I will ask questions like the following. What are the links between information and communication technologies (ICTs) and poverty? Can poor people appropriate ICTs and thereby hasten the eradication of their poverty? Can a lack of knowledge about, and skill in the use of, ICTs cause people to become or remain poor?

To answer these broad questions, I will first define technology and then give a brief depiction of ICTs. Thereafter I will define poverty and give a brief explanation of its context and possible causes. Next I will discuss the relationship between poverty and ICTs in three paradigm cases: [i] the role of ICTs in poor societies, [ii] the effect of poor ICT knowledge and skill of individuals in highly developed technological societies, and [iii] the impact of impoverished ICT knowledge and skills on the rich, powerful, and intelligent ones in society. In a final section I will propose a procedure for decision making about the usefulness of the appropriation of ICTs by individuals and societies. I conclude by assessing the claim that both access to ICTs and effective use of them are preconditions for the eradication of poverty.

What is technology? And ICTs?

What is technology? Technology is the art and craft, i.e. the smart use of human rationality and the intelligent development of specialised bodily functions, to design and develop skills and techniques and fabricate artefacts. We use these skills, techniques, and artefacts for making and doing things necessary for our survival or useful for our flourishing. This means we develop and use technology to ensure the material necessities for us to survive and to acquire the comforts of life for us to thrive. Technology provides us with means, tools, and instruments to realise the fundamental goals we as humans set for ourselves.⁸

puters into the workplace has changed the very nature of many jobs from hands on to computer-aided or controlled processes requiring an entirely different skill set." Bolt, David B. and Crawford, A.K.: Digital Divide. 53.

⁸ See Kaplan's remarks on the difficulties of defining technology. Kaplan, David M.: Introduction. xiii – xiv.

Through technology we optimise our human potential in a diversity of daily activities. We apply our technological skills to improve our efforts to produce food, make clothing, construct buildings, transport ourselves and our belongings, communicate with others, provide medical care and defend ourselves and our society.⁹ The kind of technology available in a society is affected by the materials and instruments readily accessible, the amount of financial means available for investment, the number and quality of skilled and knowledgeable people, and the kind of ideas in circulation that might stimulate or suppress innovation and receptivity to new ideas.¹⁰ We typically evaluate our technological products by [i] their effectiveness, i.e. whether they serve the purpose we had in mind or produce the desired or intended results and [ii] their efficiency, i.e. whether they work productively with a minimum wasted effort or expense.¹¹

How do ICTs fit into this definition of the nature and role of technology? What we currently refer to as information and communication technologies [ICTs] are based on a variety of analog and digital technologies that give us telephones, radios, television, and computers. My focus is on digital technologies, as these computer-based technologies are either [i] the cause of world-wide concern about their effects that reinforce existing inequalities or [ii] the reason for excitement about the promise that they might yield important solutions to get rid of crushing poverty.¹²

⁹ Jonas, Hans: *Toward a Philosophy of Technology*. 24

¹⁰ See Kaplan, David M.: Introduction. xiv.

¹¹ Note how McNamara states this point, "the measure of any tool or process is whether it answers a need in the most efficient fashion, relative to other options, given existing constraints." See McNamara, Kerry S.: *Information and Communication Technologies, Poverty and Development*.

¹² McNamara articulates both the promise and threat of ICTs. He says that "the hopes engendered by the new technologies and networks had as their mirror image a fear that differential access to these tools and innovations would increase inequality, further handicap the poor and disadvantaged, and deepen (perhaps irreversibly) the economic decline, social instability, and environmental degradation of poor communities and countries. Concerns about a digital divide and about its eco-

One possible definition of a computer, the symbol of digital technology, is provided by the Concise Oxford English Dictionary: "an electronic device capable of receiving data and performing a sequence of logical operations in accordance with a predetermined but variable set of procedural instructions (a program) to produce a result in the form of information or signals" (COED). This definition points us in several directions that make deeper understanding of this technology possible. An 'electronic device' points to the fact that computers are designed, need maintenance, and require a constant flow of electricity. 'Capable of receiving data' means that this technology can only deal with particular kinds of problems through receiving certain kind of 'stuff' or 'material,' i.e. so-called 'input.' Input here are matters that can be presented to a computer in the form of data, i.e. information offered in specified formats to be processed. Data input is processed by 'performing a sequence of logical operations in accordance with a predetermined but variable set of procedural instructions (a program).' To do something useful with data requires people capable of designing programmes that convert the input according to the requirements of the people in need of the computer's functions. The conversion of input leads to output 'in the form of information or signals.' The output must be a result useful to some detailed aspect of one or more of our fundamental human goals related to survival or flourishing. Again, output can only be meaningful if there are people to understand and interpret it, or people who can connect and convert such output to other technological processes reliant on information or signals for their effective functioning.

Two issues follow from this discussion of a possible definition of a computer. The first issue is the kinds of problems that ICTs can address and the other issue is the prerequisites for sustainable, productive

economic and social implications first appeared primarily in the United States, an expression of the growing awareness that access to the Internet and the broader economic and social opportunities it represented mirrored — and threatened to exacerbate — existing economic, social, and ethnic divides within American society. Yet quickly the concept — and the concern — took on a broader global dimension, as analysts and policy-makers focused increasingly in the late '90s on how the spread of a global Internet-enabled economy held the risk of leaving the poor behind." McNamara, Kerry S.: Information and Communication Technologies, Poverty and Development.

use of ICTs. The definition of ICTs implies that ICTs embody very specific kinds of advanced technologies applicable and useful for particular problems only. What are the kinds of problems that are amenable to ICT solutions? The spectacularly fast development of this technology in less than a century has enabled us to use its wide range of applications for a variety of functions. As technology ICTs function as instruments, means, and tools to accomplish some of our fundamental goals related to our survival and flourishing.¹³ So what are the kinds of things that these technologies empower us to do better, faster, more productively, and perhaps more economically?

ICTs have overlapping functions that can be dissected and classified as follows: (1) a *calculative-financial* function in which ICTs calculate complex mathematical formulae, do sophisticated statistical computations, and perform intricate financial transactions; (2) an *administrative* function in which ICTs enable us to keep track of how we organise aspects of our dealings with the world and one another, such as business transactions, academic records, the lending and returning of books in libraries, the recording of climate patterns, or the management of livestock on farms; (3) an *information* function that enables us to store and retrieve all kinds of information in large quantities, such as encyclopaedias and expert databases; (4) an *automation* function by which manufacturing, operational, design, and administrative processes are taken over from human labour and done automatically by the superior programmed functioning of ICTs, like the manufacturing of automobiles; (5) a *communication* function through which human communicative abilities are extended, such as electronic mail and text messages, websites, and cellular telephone technology, and [6] an *entertainment* function through which ICTs provide us with almost endless possibilities to play games, watch movies, listen to our favourite music, and take and manipulate as many photographs as we wish. These functions can be combined in various ways, for example, to facilitate education in schools and universities and enable more efficient management in corporate and public enterprises.

¹³ McNamara says that "to the extent that ICTs can help achieve those other goals, they are a worthwhile tool of development efforts, but they remain tools, not goals." See McNamara, Kerry S.: Information and Communication Technologies, Poverty and Development.

ICTs also require that certain preconditions are fulfilled for them to be usable. To be able to access and utilise the functions of ICTs require several other technologies and skills as prerequisites. For example, the definition above refers to a computer as an electronic device, which means that a constant supply of electricity is needed to operate a stand-alone personal computer. A telecommunication infrastructure is necessary for the full use of the Internet, mobile phones, and digital television. Similarly, basic literacy and adequate acquaintance with the mindset of software functioning are needed for minimally competent use of these technologies. For more advanced uses of ICTs more sophisticated skills are needed.

There is no one, standard way in which to utilise ICTs. Almost all ICTs can be used at a wide variety of different levels. They constitute a set of multi-functional technologies that can be used at many levels for a variety of purposes by users with a varying range of skills. For example, some people with basic literacy skills use a personal computer as an electronic typewriter for their personal communication. Others, like some highly trained physicists, also use their computers for complex mathematical modelling of stellar phenomena. In whatever depth or functionality a person uses ICTs, the crucial question for any technological innovation remains: does this innovation help us do some things more productively or more efficiently and thus add more value to our lives?

The use of ICTs in a specific society exposes its level of technological modernization. To judge the level of technological modernization one must note the following. The quality of the electrical and digital infrastructure and the competence of people trained in the use of ICTs show the possibilities for effective utilisation of ICTs in that particular society. The range of ICT functions applicable to and useful for societal functioning expose the extent to which a society depends on state of the art technology. The depth of penetration and scope of the diffusion of ICTs in that society point to the various functions of ICTs employed, the depth and quality of their use, and the range of their penetration into the personal and working lives of individuals. This penetration and diffusion show the extent to which sophisticated technologies have been embraced and integrated as useful means to ensure the survival and enhance the flourishing of people's lives. In some technologically highly developed societies where ICTs have penetrated deeply into the lives of citizens and been widely diffused in many industries and sectors of society, access to and competence in the use of

ICTs have become requirements for most employment opportunities available. The intriguing question that as yet remains unanswered is whether these technologies have altered the conditions for high performance economic functioning to such an extent that integrated use of ICTs have become a *sine qua non* for economic success in today's global village.

What is poverty?

What is poverty and what could ICTs do to change the lives of poor people and poor societies? In this section I want to establish possible links between poverty and technology. Through a brief definition and explanation of poverty I want to show which problems of poverty can be solved by means of technology and which aspects of poverty call for different kinds of solutions.¹⁴

Poverty is a concept uniquely applied to humans to indicate when a specific person has fallen below the standard of life thought appropriate for someone in that culture. My general definition of poverty is as follows. Poverty can be seen as a lack of adequate economic capacities to maintain physical health and engage in social activities distinctive of human beings in a particular society. 'Economic capacities' refer both to available resources as well as human abilities and capacities to utilize resources effectively.

This general definition of poverty can be split into two parts. One part refers to absolute poverty which means that persons do not have adequate economic capacities to provide enough food, clothing, shelter, security, and medical care to maintain their physical health. It stands to reason that people living in absolute poverty will find the cost of access to ICTs, and training in their use, prohibitive.

Another part of the general definition of poverty refers to relative poverty which means that although people have adequate economic capacities to provide enough food, clothing, shelter, security, and medical care to maintain their physical health, they cannot participate in any other activities regarded as indicative of being human in that society. People who are relatively poor will also be hard pressed to

¹⁴ The section on poverty contain ideas worked out in two conference papers written by the author called, "Defining poverty as distinctively human" and "Why poverty is such a complex affair."

find the resources to enable them to make productive use of ICTs.

Poverty must be understood against the following background. A basic challenge for our species is the need to identify, locate, extract, convert, and consume resources for survival first and flourishing lives thereafter. These resources can be (i) edible products found or cultivated by means of natural resources like soil, water, or organic material; (ii) materials for designing, manufacturing, and constructing new composite materials, tools, buildings, and infrastructure, (iii) living beings to provide or produce things we need as food, clothes, or tools, (iv) ideas and innovations that improve or enhance any aspect of our lives, and (v) skills, talents, knowledge, or insight that can provide services to others. The role of technology with respect to these resource identifying, extracting, converting, and consuming processes is obvious. Good technology in its various guises enables us to do all these things better, faster, and more economically.

Humans have the intellectual and bodily characteristics that allow them to locate and convert resources in ways almost infinitely more complex than animals. We use resources in different ways that require variable degrees of human intervention. Words that refer to the location and conversion of food resources, like collect, harvest, produce, slaughter, and prepare reflect these degrees. We consume or use some resources directly, like fruits and flowers. Others need simple preparation, like meat and seeds that we process and cook or bake. In some cases we use complex processes to produce food, for example, followed by even more detailed processes of design and manufacture to deliver highly intricate products like beverages or fancy sweets. In all these cases of resource dealing processes humans manifest a particular level of technological prowess. The plans, procedures, or mechanisms we devise to do these things illustrate our knowledge of the issues involved and demonstrate the level of applicable technological and other skills we have acquired, developed, and mastered.

Once a particular community successfully locates and converts resources to ensure survival and builds a flourishing social life, several new demands arise. New needs and wants for more sophisticated products and services develop, which in turn put increased pressure on the community's abilities to locate new kinds of resources and find novel ways of converting them to suit and fulfil new demands. In this context new and improved technologies play a crucial role to satisfy ever growing demands.

Human resource dealing processes, i.e., the complex series of human activities consisting of the location, conversion, exchange, and distribution of resources, can be short-circuited and thwarted in a diversity of ways, some of natural and others of human origin. Humans can directly or indirectly influence these activities as follows. A particular community might be without sufficient resources or run out of resources and fail to find replaceable ones. These cases point to the possibility of a failure of scientific knowledge or technological skill. Population growth might outstrip available resources and conversion skills. Societies might neglect the transfer of scientific knowledge and development of technological skills for the location and conversion of resources. Fewer recruits, or recruits with lesser knowledge and skill might fail their particular community in locating, converting, or exchanging resources in the quest for survival and flourishing. It might be that the importance of the acquisition and application of technology was not adequately stressed in such societies.

Reasons other than neglecting scientific research or a lack of technological innovation are more often the causes responsible for making people poor. Political and economic factors are some of the important causes of poverty. A skewed or restricted allocation of opportunities to members of society for participation in location and conversion of resources might diminish the society's capacity to ensure survival. A disproportionate distribution of rewards to some participants at the expense of others on grounds such as the supposed extraordinary value of their work, or their group membership, can create poverty as well as resentment and conflict. Similarly, powerful political groups can employ political processes and mechanisms to determine and enforce distributions of resources that deliberately enhance some citizens and exclude or neglect others. They deny citizens voice and vote to struggle for their fair share in resource dealing processes.

If some groups dominate their particular communities through accumulation of excessive rewards for their role in resource dealing processes, other groups may be significantly disadvantaged through their meagre share of resources so that it weakens the central social project of location, conversion, exchange, and distribution of resources in a particular community. In this way poverty disables the capacities of segments of society to contribute their share to the joint societal project of ensuring survival and enhancing flourishing. Eventually the existence of such disabled segments harms society as a whole.

Many forces independent of human influence also cause poverty, i.e. they thwart, distort, or short-circuit the complex human activities of the location, conversion, exchange, and distribution of resources, i.e., resource dealing processes. Natural disasters like hurricanes, volcanic eruptions, floods, droughts, and tsunamis can devastate resource dealing processes. Climates can enhance or destroy the cultivation and production of food and clothing. Geology can determine which mineral resources are available. Epidemics can devastate the economies of continents or exacerbate existing poverty by dealing fatal blows to key actors in resource dealing processes.

Poverty can affect individuals only or a society as a whole. Whole human societies become poor when the highly complex processes of location, conversion, exchange, and distribution of resources are short-circuited or foiled on such a large scale that significant parts of the population are classified as poor. Individuals are, or become, poor when they do not have, or cannot, find any rewarded role within resource dealing processes, or are excluded from them, for whatever reason. Their poverty is due to the fact they do not have roles or functions rewarded in their society's quest for the location, conversion, exchange, or distribution of resources, nor are they compensated for this lack.

In summary, poverty is the result of any of thousands of possible kinds of failure or obstruction somewhere in the highly complex series of processes involved in the location, conversion, exchange, and distribution of resources. Lack of appropriate technology to realise fundamental human goals can be an important one amongst the many causes of poverty.

If the lack of appropriate technology is one of the important causes of poverty, what role can ICTs play in the eradication of poverty? This question must be answered in two parts. One part of the answer is that ICTs must be introduced and applied in a society within the broader context of the general guidelines for the eradication of poverty. The following truism undergirds my view on the eradication of poverty. Individuals and society are deeply intertwined, in the sense that their fates are linked and have a reciprocal influence on one another. This means that individuals and society have a complex complementarity, i.e. strong individuals with properly focussed outputs can, though not necessarily will, benefit their society, and weak societies often, though not always, fail to equip their members for successful survival. If this truism is accepted, then

interventions to eradicate poverty must never focus on either individuals or society alone.

The guideline implies that any interventions to eradicate poverty must ensure a multitude factors are in place in society that will enhance the ability of poor individuals to acquire capacities and learn responsibilities that will enable their escape from poverty. Not only individual transformation to equip people for survival and flourishing, but especially social transformation is necessary to create and establish conditions favourable for the effective eradication of poverty. Social issues, such as governmental budget priorities, a state's macro-economic policies, and entrepreneur-encouraging practices that indicate the need to transform a society, require as much attention as individual requirements for education and training, or feeding and housing schemes.

The ideas about the societal infrastructure and policy framework needed for the empowerment of individuals and the developed capacities of individuals required to strengthen the intellectual skills and capacities available to society apply similarly to the challenges of providing a society with comprehensive ICT connectivity that reaches the majority of the population. National policies and subsidies to create enabling environments for investment in and deployment of ICTs must go hand in hand with individual training, capacity-building and empowerment to deliver the human labour power needed to optimally exploit the usefulness of ICTs.¹⁵

These general guidelines for the eradication of poverty aside, what specific role can ICTs play to eradicate poverty? The second part of the answer to the question about the role of ICTs in the eradication of poverty now comes into play. In terms of what I have done thus far ICTs can only play a role in the eradication of poverty if certain preconditions are fulfilled. These preconditions are: [1] Enough resources and infrastructure must be available to

¹⁵ Accascina set as prerequisite for the use of ICTs the following, "Appropriate and forward-looking IT and telecommunication public policies, legislation and an understanding of their overall impact on a country's welfare." See Accascina, Gabriel: Information technology and poverty alleviation. See also the report by Peters, Teresa: E-Ready for What? the report commissioned by the G8 called Digital Opportunities for All and the article by Arunachalam, Subbiah: How the Internet is failing the developing world.

provide a constant flow of electricity and effectively functioning telecommunications connectivity, as well as resources to afford appropriate ICT equipment, software, and their maintenance; [2] sufficient numbers of people must have adequate literacy skills and appropriate training to master ICT programmes relevant to poor people's needs and to properly maintain ICT equipment; and [3] the challenges requiring detailed attention in order to enable the eradication of the poverty of specific persons must be amenable to the particular functions that ICTs can fulfil, i.e. advanced and improved administration, automation, calculation, information storage and retrieval, communication, and entertainment.

What are the possible links between poverty and ICTs?

Within the context of the human nature of poverty and its multiplicity of causes as sketched above, what difference can ICTs make to the lives of poor people? I want to examine the possible impact of ICTs in three cases I judge to be typical of situations where ICTs can be relevant to the lives of poor people.

Case 1: ICTs, individuals, and poor societies

Imagine a very poor society where the vast majority citizens make livelihoods from agriculture. The citizens are illiterate and have barely enough means to buy seeds, agricultural tools, or fertilizer. ICTs for use by themselves make no sense, as they have more urgent priorities for simpler technologies to enable them to secure the necessities for survival. One can imagine that government or civil society relief organizations might use ICTs to improve the productivity and effectiveness of the services they provide such rural poor people. One could also think that the children of the rural poor might be empowered by being taught basic uses of ICTs, provided ICT competent teachers, electricity, and telecommunication infrastructure are available.¹⁶

Desperately poor people might have other needs for ICTs not related to the means they require directly

¹⁶ Note how important it is to have teachers properly trained in the use of ICTs and that have the ability to integrate ICTs into the curriculum. See Bolt, David B. and Crawford, A.K.: *Digital Divide*. 26, 40, 55 – 56.

for survival.¹⁷ For example, they could want improved communication with their children, parents, and friends. They might benefit a lot from knowing in advance about inclement weather approaching, or from receiving accurate information about governmental services available to them. Poor people might want to become involved in protest action to strengthen their voice to express demands for better governmental services.¹⁸ Through the use of ICTs that empower their communication and improve their information they can participate more readily in activities such as the ones listed above. One should also not underestimate the value of the entertainment ICTs can provide poor people. Lack of suitable, affordable entertainment is a fairly common complaint by poor people.

Now let us imagine a slightly better off society with huge urban populations and semi-literate to literate citizens. Suppose such a society has an upwardly mobile economy where at least some opportunities become available for decently trained individuals by way of permanent employment in civil service departments or administrative, managerial, or specialist positions within smaller or larger companies. Skill and knowledge in ICTs might just provide the edge for many talented people to grasp the opportunities for employment to escape their poverty. Similarly, in such a society some kinds of entrepreneurs can set up small businesses that might easily outperform others through the advantages that good accounting software [the calculative-financial function], excellent information retrieval software [the information function], or stock taking software [the administrative function] can provide.

The two examples above refer to the value of ICTs for individuals in poor societies. But what about the role of ICTs to improve the situation of a poor society within the global context of interdependent

¹⁷ See Compaine, Benjamin M. and Weinraub, Mitchell J.: *Universal Access to Online Services*. 154.

¹⁸ Some authors refer to the 'democratic potential' of ICTs. See Norris, Pippa: *Digital Divide*. 6. She further states that "the networking potential of the Internet and its ability to link transnational advocacy networks, grassroots political organizations, and the independent media around the world has aroused hopes that civic society can be nurtured and mobilized through digital technologies." Norris, Pippa: *Digital Divide*. 171.

states that have strong trade, sport and cultural links that spur on even more development and growth?

Note the challenges to modernize technology that face developing countries within the context of our global economy. Can any developing country refuse to convert to the full-scale use of ICTs to make their production processes more efficient? Can they refuse technological modernization that will enable their businesses to become more competitive in local markets, that nowadays all form part of what has become one diffused, interconnected global market? As in all cases of decision making about appropriate technologies the main questions will be [1] whether a particular technology assists us to do things better, faster, and more efficiently, [2] whether the technology will deliver good returns on investment over the longer term, and [3] whether we can make the infrastructure and labour power available to effectively utilise a proposed new technology.

Case 2: ICTs and poor individuals in rich societies

Let us now imagine how the lack of ICTs in a person's employability profile can impoverish a person and impair that person's effective functioning in a rich, modernized society. In most well off, technologically advanced societies competencies in the efficient use of ICTs have almost become prerequisite for employment in a very large range of jobs. People who are ICT poor are almost disqualified from good employment. They are furthermore excluded from many opportunities to get the benefits offered by ICTs, like improved communication. Their interpersonal functioning is not as optimal as their society makes possible and their abilities allow. In a metaphoric sense their lives are thus also impoverished by their inability to utilise technological resources that can enhance the quality of their lives and help them accomplish some of their fundamental goals.

Case 3: Lack of ICTs as impoverishing factor for rich and intelligent people.

In wealthy, technologically advanced societies rich companies and intelligent individuals can be impoverished if they fail to adapt meaningfully to sweeping changes brought about by a technological shift such as the winds of change generated by the ICT revolution. Imagine a highly successful, large grocery store that refuses to computerise in any way.

Management cannot keep track through administrative software when they have to order goods to avert running out of stock nor can they order via the online websites of their suppliers or through their e-mail addresses. The company refuses to buy automated financial software and customers thus cannot pay by credit card nor can the salaries of its employees be administered through effective payroll software. The company cannot keep in touch with the drivers of their vehicles via mobile phones and cannot make use of the extra security satellite tracking systems offer. Such a store will soon be judged a dodo and be rejected by customers, suppliers, and employees for its ineffective service.

Even highly intelligent people like excellent academics can lose if they are incompetent with respect to ICTs. Although many academics might think the nature of their job does not require great ICT competencies, even the best minds in the world might suffer inconveniences, be deprived of valuable information and opportunities, or lose time if they fail to adapt to the ever increasing use of ICTs. An ICT-impoorished academic will become dependent on others for typing teaching materials and research reports. This might mean waiting unnecessarily to get things done. Similar losses will occur when such academics cannot use state of the art technology for communication with their peers or for retrieval of the best intellectual resources contained in the latest published research. Thus, even in a job based on reading books, writing research reports, and talking to students ICTs can enhance the productivity and creative output of academics.

Decision-Making on the Role of ICTs in Poverty Eradication

Can ICTs play a meaningful role in the eradication of poverty? Not necessarily, as their role depends on various factors. I want to propose the following ideas for possible guidance in decision making on the possible value of ICTs in every specific case of poverty.

(1) Introducing new technologies into the lives of poor people must add value to their existing livelihoods or create new livelihoods better than existing ones.¹⁹ This means that ICTs must enable poor

¹⁹ See McNamara's point regarding this issue, "The challenge, then, is both to improve the current livelihoods of the poor and provide them with new

people to acquire basic necessities more easily without adding too much extra cost, or assist them to know about and access governmental services without wasting their time. Access to, and use of, ICTs must make poor people more employable or aid them to improve the management and administration of their economic activities. Also, ICTs must improve their communication with family, friends, relatives, business associates, colleagues, and important service delivery institutions without too much hassle. ICTs must open up new vistas of better quality live for poor people that are within their grasp, suitably developed and trained.²⁰

(2) New technologies must fit into existing lifestyles, sets of values, and patterns of activity or create new ones which can meaningfully convert older ones.²¹ Meaningful conversion means new technologies will modify lifestyles, generate values, and produce patterns of activity that can be maintained by already existing or easily acquired educational levels, sustained by available resources, and are acceptable to the people involved and affected.²² ICTs must thus be adapted to the people they are meant to serve. What does this mean? Once people have basic literary skills, they must be made familiar with and be trained in appropriate ICT skills to suit their needs. The chosen ICTs must also be affordable and

their use must be sustainable over the longer term. Poor people must be assisted to adapt to the changes ICTs bring about in their lives and be guided to utilise new opportunities at their command. Software and even the Internet itself must be developed and adapted to suit the specific needs of the people concerned. The Internet should be shaped by its users according to their needs and values so as to have value in their lives.²³

(3) The decision to implement new technologies must be made judiciously. This implies that the new technology must be appropriate in the circumstances. Thus, the technology must be tailored to the society's most urgent needs,²⁴ must be for purposes that will benefit the society most, and must fit the developmental level of the people and the economy they are intended for. Most possibly poor societies will find it difficult to afford a comprehensive introduction of state of the art ICTs in all sectors of society. Cool heads and wise judgement will be required to determine the areas of intervention where the introduction of ICTs will be in the best interest of the further growth and development of ICT knowledge and skills that will enhance the productivity and competitiveness of the society in question.²⁵

opportunities appropriate to their circumstances while building their capacities and reducing their vulnerabilities so that, over time, they can broaden their economic opportunities as the economy itself grow and diversifies." McNamara, Kerry S.: Information and Communication Technologies, Poverty and Development.

²⁰ McNamara puts it as follows, "ICTs, properly adapted to specific circumstances, have enormous potential. The key to realizing that potential is to begin the analysis not with the presence or absence of ICTs, but with the specific, interdependent causes (both local and global) and components of persistent poverty in a given country, the most effective measures for addressing those causes, and then and only then the tools (not just ICTs, but other resources, policies, 5 partnerships, etc.) necessary to proceed." McNamara, Kerry S.: Information and Communication Technologies, Poverty and Development.

²¹ Pacey, Arnold: The Culture of Technology. 96.

²² See McNamara, Kerry S.: Information and Communication Technologies, Poverty and Development and Schumacher, E.F.: Small is beautiful. 141.

²³ See Couldry, Nick: Digital Divide or Discursive Design? p. 90.

²⁴ For McNamara the case is clear: we must select the most urgent needs to focus on. He says that any "development strategy requires difficult choices, and priorities need to be chosen on the basis of an understanding of what are the most urgent needs of a given country and the actions most likely to have a positive impact on those needs." McNamara, Kerry S.: Information and Communication Technologies, Poverty and Development.

²⁵ Note how McNamara suggests we make decisions on these matters: "one begins not with the question of what ICTs a given country lacks and what we can do about it (the implicit question underlying much digital divide analysis) but what specific types of change are required to make this country more sustainably prosperous, in ways that include even the poorest. ICTs are then brought into the analysis as possible instruments (among others, including both resources and policies) of these desired changes, not as a thing to be desired in themselves." McNamara, Kerry S.: Information and Communication Technologies, Poverty and Development.

Conclusion

In this essay I have argued for ideas that can assist us to rely on our considered judgement to determine the appropriate role of ICTs in the eradication of specific cases of poverty. If these ideas are taken seriously, limited funds for aid to poor people can be optimally employed to make the biggest difference to their lives. Note, however, that new technologies must always be used conjointly with other measures to eradicate poverty, as the idea of quick technological fixes for serious problems of poverty flies in the face of state of the art expertise on the complexities of eradicating poverty.²⁶

I plead the case for a nuanced use of ICTs based on our considered judgement of the most urgent needs that must be addressed to eradicate specific people's poverty. We can already clearly see the tremendous range of application of ICTs and their pervasive influence throughout the world. Some or other form of ICTs – appropriately adapted to people's needs and competencies – is practically already a prerequisite as an important tool to complement other strategies needed to eradicate poverty.

Considered judgement about the introduction of ICTs is necessary, as any technology can be judged obsolete in a specific context, regardless how old or new it is. Even the latest and most sophisticated technology can fall into disuse, can become something no longer used, or not used at all, if it does not appropriately address the needs and does not fit the capacities of the people concerned.

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²⁶ See Pacey, Arnold: The culture of technology. 100

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