Our common digital future

ICTs bring enormous benefits but their widespread and developing use involves crucial issues of access and democracy. Prof. Dr. Cees J. Hamelink argues that pupils need to critically examine the field of ICTs and society if they are to participate fully in shaping the future.

In his 1994 speech to the International Telecommunication Union, the US Vice President Al Gore presented his vision of the emerging 'Global Information Infrastructure' (GII). He told his audience that the GII, made possible by the new information and communication technologies (ICTs), will provide solutions to environmental problems, improve education and health care, create a global marketplace and forge a new Athenian age of democracy. The creation of the GII, according to Gore, is 'an essential prerequisite to sustainable development'.

Even if one does not share all the blissful prospects of the American VP, it is obvious that ICTs can perform tasks that are essential to democratic and sustainable social development. They can provide low-cost, high-speed, worldwide interactive communications among large numbers of people, unprecedented access to information sources, alternative channels for information provision that counter the commercial news channels and they can support networking, lobbying, and mobilising. Educational facilities can be improved through using ICTs to facilitate distance learning and on-line library access. Electronic networking has also been used in the improvement of the quality of health services, since ICTs permit remote access to the best diagnostic and healing practices and, in the process, cut costs. Digital technologies for remote sensing can provide early warning to sites vulnerable to seismic disturbances, and can identify suitable land for crop cultivation.

In addition, computer technology can assist in the development of flexible, decentralised, small-scale industrial production, thus improving the competitive position of local manufacturing and service industries. In a number of countries (Singapore, Brazil, Hong Kong) the introduction of computer-aided manufacturing (CAM) technologies in small-scale industries has been very successful. In addition, as the World Commission on Environment and Development noted in its report, Our Common Future, such decentralisation of industry reduces levels of pollution and other negative impacts on the local environment.

Another important advantage is the relative ease with which new public spaces can be created in cyberspace. Through digital networks new global communities are being established. Increasingly, organisations in developing countries are integrated into these webs of horizontal, non-hierarchical exchange that have already proved themselves able to counter censorship and disinformation. Members of ecological movements and women's organisations, human rights activists, senior citizens and many other groups have made impressive use of the ICTs.

The issue of inequity

The most immediate issue that confronts this development potential is the great inequity around the world with regard to access and accessibility of the ICTs. There seems general agreement in the scientific literature and in public policy statements that the so-called ICT-gap between the developed and developing countries is widening and that this hinders the integration of all countries into the Global Information Infrastructure.

The seriousness of the ICT-gap is clearly demonstrated by figures on the world distribution of telephones. In early 1997 some 62% of the world's main telephone lines were installed in only 23 affluent countries which account for 15% of the world's population. Over 950 million households in the world (65% of the total) had no telephone (ITU 1998). More than 50% of the world's people have never had a phone call.

For all ICT equipment there is a highly uneven geographical distribution. The estimated number of personal computers in the world in 1996 was 234,200,000. The share for Europe, the USA and Japan was 79%. Africa had 1%. Of the total number of fax machines in 1996, Europe, the USA and Japan had 88%; a stark contrast with the 0.5% for Africa. Internet host computers are distributed across the world such that the USA, the EU countries, Canada and Japan combined made up 85.8% of the world's total in 1997.

The reality of the widening gap in ICT capacity raises the serious concern that the poorer countries may not be able to overcome the financial and technical obstacles that hamper their access to the new technologies. The equitable sharing of communication infrastructures (the electronic highways systems created by telecom carriers such as satellites, cables, fixed lines and mobile transmissions), computing capacity (computers, peripherals, networks), information resources (databases, libraries), and ICT literacy (intellectual and social capabilities to deploy ICT in beneficial ways) demands an enormous effort on behalf of the international community.

Massive investments are required for the renovation, upgrading and expansion of networks in developing countries, for programmes to transfer knowledge, for training of ICT skills – in particular for women.

An obvious question regarding the financial obstacles is whether the international community is ready and willing to provide the massive investments needed. By way of illustration of the scope of funds involved: it would take some US $12 billion to get 50% of the Philippine population on the Internet. To increase teledensity from 0.46 lines per 100 inhabitants to 1 per 100 in Sub-Saharan Africa would require an investment of some US $8 billion.

Such investments for the technical infrastructure need to be supplemented with funds for the acquisition of the skills...
needed for the effective operation of ICTs. Technical skills are necessary for the maintenance of hardware, the modification of software, and the manufacture of electronic goods. Managerial skills are essential to the operation of networks, information systems, and databases. Information skills are crucial to the processing of all the information made available through the ICTs. This needs planning and funding of extensive educational programmes.

The realisation of the ICT development potential is therefore not primarily dependent upon the features of the technologies themselves, but rather upon the institutional arrangements that govern their deployment. And the most immediate challenge for national governments and the international community is the insight that the use of ICTs for social development will not be determined by technological developments but by political decisions.

‘Faith in progress replaces voting’
[Ulrich Beck in Risk Society]
There is presently a widening gap between the domains of technological developments and political decision making (Winner 1993). The development of biotechnology provides a good illustration. Scientists and investors cooperate to produce artificial tissue, blood vessels and organs such as hearts and livers. Business Week (1998: 44) expects that the bio-industry will soon bring a veritable ‘body shop’ with human spare parts on the market. Irrespective of possible advantages versus disadvantages, the whole process evolves outside any form of social control. The German sociologist Beck points out that social concerns and anxieties about developments in genetic technology have no impact on the real decisions in this domain. These decisions have already been taken because the question whether certain developments were socially desirable was never posed. ‘One can say ‘no’ to progress, but that does not change its course at all.’ (Beck 1992) This course is determined outside the political domain.

No votes are taken in parliament on the employment and development of microelectronics, genetic technology or the like; at most it might vote on supporting them in order to protect the country’s economic future (and jobs). It is precisely the intimate connection between decisions on technological development and those on investment which forces the industries to forge their plans in secret for reasons of competition. Consequently, decisions only reach the desks of politicians and the public sphere after being taken. (Beck 1992)

There is today a worldwide trend for governments to delegate the responsibility for basic social choices to the marketplace. The democratic control of important social domains is thus increasingly eroded without any major societal debate. Following their desire to deregulate, liberalise and privatise, many governments are leaving the governance of the new ICTs in the hands of private entrepreneurs.

The European Commission’s Action Plan, *Europe’s Way to the Information Society* (1994), for example, states that European regulation must promote the mechanisms of the marketplace. The Commission proposes that through liberalisation a competitive climate can be created within which the forces of the market can freely operate. ‘The creation of the information society will be entrusted to the private sector...’ (p.10)

One implication is that the realisation of the development potential of ICTs comes to depend more on investment decisions than on considerations of common welfare. For anyone who cherishes the democratic ideal, this is a regretably short-sighted position that demonstrates a basic lack of democratic sensitivity. If democracy represents the notion that all people should participate in those decisions that shape their future welfare, such social forces as the ICTs cannot just be left to the interests and stakes of commercial parties on the market. If we are serious about the democratic nature of our societies, there is public responsibility in such a crucial domain as the design, development, and deployment of ICTs. Since the choices that are made in this domain have far-reaching impact on societies, the political process requires the broadest possible participation of all those concerned. In other words, there is an urgent need for an extensive public dialogue about ‘our common digital future’.

In essence the democratic process requires the culture of dialogue. This means that citizens deliberate and reflect on the choices that optimally serve the common interest. This implies that they should be able to distance themselves from their own assumptions. They need the capacity to reason through their own positions and justify their preferences. This requires ‘Socratic qualities’ of all participants in the dialogue, as argued by the American philosopher Martha Nussbaum:

_In order to foster a democracy that is reflective and deliberative, rather than simply a marketplace of competing interest groups, a democracy that genuinely takes thought for the common good, we must produce citizens who have the Socratic capacity to reason about their beliefs._

(Nussbaum 1997)

This capacity can and should be learnt.

For Socrates the critical investigation of our own assumptions is the essence of all serious reflection. Socrates establishes that our positions are often more determined by beliefs than by knowledge and we often fail to explain these beliefs. The Socratic approach does not ignore the significance of factual knowledge, but wants to explore its meaning. Socrates is in search of wisdom and therefore he seeks whether we know what our knowledge represents. His investigations reveal in a merciless manner that we often talk about many matters we have little understanding of and that frequently we do not even understand our own thinking. This sceptical attitude is very useful in relation to the domain of the ICTs. With regard to our digital futures there are many more beliefs than serious explanations. There is an abundance of dogmatic propaganda by ‘digiphiles’ about revolutions and new societies. The problem-solving magic of ICTs tends to be exaggerated and the possible risks belittled. There are also the unfounded fears of the ‘digiphobes’ about the uncontrollable
nature of technological development and their unproductive all-out refusal to get involved with the new possibilities of the ICTs. Socratic education would provide the future citizens of cyberspace with a techno-sceptis that empowers them against both unrealistic accounts of the ‘digitphiles’ and the calamity-only scenarios of the ‘digitophobs’.

Crucial for the democratisation of technology choices is the education, in a major way, of the scientific and technical understanding of the public to the extent that some forms of democratic participation in scientific-technical policy making becomes feasible and useful, and not simply an empty populist ploy. (Wartofsky 1992)

Against the argument that the public might make unwise decisions, it is far from certain that this is indeed the case when the public has access to full and undistorted information about matters of choice. Moreover, the expertise needed can be learnt; the capacity for informed and balanced public decision making is not part of the human constitution. As Dewey has argued,

effective intelligence is not an original, innate endowment ... the actuality of mind is dependent upon the education which social conditions effect. (quoted in Hickman 1992)

ICT education
Civic intervention is obviously rather meaningless if people are inadequately informed. Therefore there is worldwide an urgent need for well-designed programmes of ICT education. There is a growing interest in this, but usually the resources are insufficient and the dominant approach tends to focus on the development of instrumental ICT skills. These are certainly important but they have to be complemented by the training of the reflexive capacity to critically think about the social consequences of technological choices. This requires that the educational system should enable children to ask critical questions about the social and moral issues that are raised by ICTs. To achieve this, educational systems around the world need well-designed curricula for in-depth courses on the social and ethical implications of the deployment of ICTs in societies.

In 1994 the International Baccalaureate (IB)1 introduced a pilot course on Information Technology in a Global Society (ITGS). By 1998, ITGS was taught in more than 80 schools worldwide. The syllabus (for 16 to 19 year-olds) provides an exemplary model of teaching that addresses the most important social and moral implications of ICT developments. It is very encouraging to establish that this new topic is received by so many schools with great enthusiasm.

The ITGS syllabus begins with an introduction to the nature of ICTs, then discusses social implications in a global society, the process of ethical decision making, areas of social impact and problem solving in a social context. Attention is given to the analysis of ICT tools, hardware, software and services. Specific areas of impact are studied, such as security, reliability, teleworking, telebanking, freedom of expression, intellectual property rights, democracy and cultural homogenisation. Among the aims of the programme are to:

- promote an understanding and appreciation of the social significance of information technology and networking for individuals, communities and institutions;
- analyse and evaluate in a critical manner the ethical considerations arising from the widespread use of information technology and networking;
- appreciate the key elements of continuity and change in the development of information technology and networking leading from the past, through the present and into the future, and to assess their impact;
- develop an understanding of new technologies as methods of enhancing and expanding our knowledge of the world, and of meeting the needs of society.

With the ITGS programme, the IB has developed a very appropriate curriculum to contribute to its larger mission which places a strong emphasis on the ideal of responsible citizenship. The IB aspires for its students to become critical and compassionate thinkers, lifelong learners and informed participants in local and world affairs.

The present programme can obviously be further refined and improved. Most important is, however, to ensure that this approach finds a much broader application into all kinds of primary and secondary education. Teaching courses on ‘ICTs and Society’ should be a permanent feature of education worldwide. Only in this way can we hope that future generations are empowered to participate in those choices that will determine the quality of their lives.

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References

1. The IB is a non-profit organisation that provides primary and advanced education in over 750 schools in more than 90 countries.