

Do Information Society Technologies support the participation principles of sustainability?

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Abstract

This article highlights some of the potentials of Information Society Technologies (ISTs) for sustainable development. Concentrating on Agenda 21's communicative core paradigm, aspects of digital support for participation and co-operation are analysed. The discussion focuses on education, work, and political commitment.

1. Communicative paradigms of sustainable development

Within the most important document of Earth Summit in 1992 – the Agenda 21 – the importance of communicative aspects is underlined in nearly every chapter. Be it information, participation, co-ordination or co-operation: there is a constant plea for efforts to be made regarding this concern, and concrete groups, whose role is to be strengthened by these means. In its Preamble it says: "The broadest public participation and the active involvement of the non-governmental organisations and other groups should also be encouraged." (Earth Summit 1992, Preamble) Additionally, in Section IV some means for sustainable development's implementation are mentioned (e.g. Chapter 34: Transfer of environmentally sound technology: co-operation and capacity building; Chapter 37 National mechanisms and international co-operation for capacity-building, or Chapter 40: Information for decision-making).

Within this global action plan, new media is supposed to play an important role – supporting all above cited aspects, most of all in the information sector: "Establishment and strengthening of electronic networking capabilities" (Chapter 40.25). Other fields of action can only be deduced implicitly, like in the field of education, where the technically driven possibilities of electronic communication is literally enclosed, yet not explicitly mentioned. Means of implementation for the promotion of education, public awareness and training focus on "(...) fuller development of open universities and other long-distance teaching" (Chapter 36.A/g).

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Meanwhile, nearly a decade has passed since Rio with an ongoing process of technological improvements and new inventions. Focussing the progresses and rapid growth within the field of computers rises the question whether information and communication technologies are able to contribute to the communicative paradigms of sustainable development.

2. Can Information Society Technologies (ISTs) serve as appropriate "tools" for sustainable development?

Information Society Technologies (ISTs) support the combined transmission and reception of data, visual and audio information and the sharing of files or programs in synchronous or asynchronous modes. Actual discussions plead for defeating the era of the restriction hypothesis in the scientific distinction of direct (face-to-face) and computer-mediated communication, the latter in the past often being judged as less expressive and less powerful (Schultz 2001). Undisputedly, there is a change in the system of characters: the formerly clear-cut dividing line between language and writing is dissolving (Sandbothe 1997).

In the following, special emphasis is laid upon the aspects of participation and co-operation in society. The chosen topics are closely connected to citizens' everyday life. Societal fields of interest are education, work, and participation in political and planning processes. It is obvious that all these different communicative processes require different IST-designs.

2.1 Shaping the future by education

In his depiction of a framework for pedagogical CMC Techniques, Paulsen (1995) mentions four communication paradigms: information retrieval, electronic mail, bulletin boards and computer conferencing. Each paradigm is technologically represented by different one-alone, one-to-one, one-to-many and many-to-many approaches. Due to this article's focus on participative and collaborative aspects, emphasis is laid on one-to-many and many-to-many approaches.

2.1.1 Online and distance learning

According to the credo of lifelong learning, distance education is seen as one of the most promising ways to promote and support public awareness and training (Agenda 21, Chapter 36). Three generations can be distinguished: the forthcoming years (1985-1994) were characterised by system development and experimentation with emerging technology. In the second generation (1994-96), a period of transition from computer conferencing to Internet systems with text-based user interfaces took

place. It has not been before the third generation, (1996 to the present), that efforts for “a vigorous expansion and the introduction of large-scale online education” (Paulsen 2001) began, accompanied by the introduction of graphic user interfaces and the World Wide Web (WWW).

Concerning the co-operative paradigm, the majority of these offers has to be seen under a critical light, because often enough the only “innovative” step is making formerly printed materials accessible via the Internet. At the same time pedagogical implications and layout principles for completely different readability requirements are ignored. In these cases, ISTs are simply used as a substitute for transportation whereas the high potential of “new media” - approaching new learning contexts - are totally neglected.

2.1.2 Computer-supported collaborative learning (CSCL)

Collaborative learning seems to be an adequate measure to bridge formerly neglected educational gaps. This type of learning processes emphasizes "group or co-operative efforts among faculty and students, active participation and interaction on the part of both students and instructors, and new knowledge that emerges from an active dialog among those who are sharing ideas and information" (Turoff 1995). According to the application and use of study elements these learning environments can be grouped into knowledge-based, problem-oriented, or exercise -based approaches, all being suited for the use within telematic learning environments (TLE's). It is important to highlight the fact that different learning processes require different CMC-designs. In case of problem-oriented approaches, TLE's have to offer appropriate features for effective teamwork (so-called groupware). Clark (2001) calls these instruments for simulation and communication “collaboration tools”.

2.2 Changing working places

2.2.1 Virtual working spheres within learning organisations

Due to the relevance and complexity of problems to be handled by enterprises and administrations, flexible reaction patterns do have to evolve, overcoming the former inflexibility. In other words: the re-organisation and re-shaping of working-processes is a severe challenge for slowly changing institutions and traditional "bureaucratic" administrations. Responsiveness to actual development inevitably contains

- Interdisciplinarity, aiming at cross-sector co-operational approaches,

- Project-oriented working, meaning short-term assignments of different departments in flexible constitution of teams (Adomßent 2001a).

As can be easily deduced, working in project groups demands communicative skills for every members of a team, no matter or what function s/he might have within the group.

2.2.2 Computer-supported co-operative work (CSCW)

Successful computer-supported co-operative work (CSCW) among others includes effective organisation of teams concerning the management of their work process, flawless information exchange, and sharing of workspaces (Guttormsen Schär & Haubner 2001). A satisfying communication on different levels has to be established. In this context, the most important distinction has to be drawn between person space and task (or action) space, of which the latter has to be distinguished from physical or virtual presence (Harrison & Dourish 1996). In business environments, online co-operation is constantly on the rise but not state of the art, yet. An approach to overcome the bureaucratic “lag” of IST-implementation into municipal administrations by an online-course on project management for local authorities, following the didactic learning-by-doing concept, is described by Adomßent (2001b).

Besides established entrepreneurial or administrative working contexts, the Internet allowed informal working groups to evolve, temporarily concentrating on self-selected projects. Dominating (only?) prerequisite is shared interest in topics like co-operative learning and working (www.e-writing.de) or botany (www.rz.uni-hamburg.de/biologie/botol.htm). For an author it must be a new and challenging experience to let future readers participate in the development process of their book.

2.3 Political commitment and participation in planning processes

The importance of political commitment and participation in planning processes can be seen as the core paradigm of Agenda 21. In Chapter 23 it says: "Critical to the objectives, policies and mechanisms agreed to by Governments in all programme areas of Agenda 21 will be the commitment and genuine involvement of all social groups." What has been reached so far by telematic means?

2.3.1 Computer-mediated participation (CMP) in local planning processes

Opportunities of computer-mediated participation (CMP) seem quite promising for the realisation of local projects in co-operation with municipality (Burg 1999). Letting people actively involve in creating, planning and designing their local environment perfectly matches the participative paradigm of Agenda 21 (Asplund 1999).

The major challenge for the designers of appropriate software tools is to make it both comprehensive for average citizens, and - at the same time - let it be able to represent real life complexity (Fleischhauer et al. 1998).

2.3.2 Opportunities for cyber-democracy

Time has to tell whether the forthcoming variety of Internet platforms for participation in legislative (<http://www.elektronische-demokratie.de>) and political processes will be able to keep their promise. In Germany, it is too early to estimate the fruitfulness of political discussions on the Internet, because this process has just begun. Since the beginning of 2001, there seems to be run towards being online, no matter if political parties (www.buergerprogramm2002.de), national (<http://www.elektronische-demokratie.de>) or supranational governments (<http://europa.eu.int/futurum>) are concerned. According to the transience of Internet itself, it does not form communities. The opposite seems to be more realistic: there are as much activities like newsgroups, mailing-lists or whatever as there are special interests (Bolter 1997). Other reports fear that safety problems could undermine political legitimacy (www.internetpolicy.org). Due to the dominance of writing, keyboard capabilities may lead to political differentials, as the quickest typewriter will do the most talking.

The participation possibilities in voting are seen critically, too: methods like “internet voting” or “deliberate polling” are feared to lead to a poor simulation of democracy instead of broadening the opportunities of democratic participation (<http://www.i-vote.de>). More optimistic viewpoints most often stem from early stages of the digital age.

3. Outlook

To sum things up: it is important to contrast all the optimistic perspectives with the - sometimes: harsh - facts of reality. Taking a closer look reveals a perpetuation of intra-generative inequity between industrial and developing countries. To make it short: Poverty still is the limiting factor, regardless if one looks at the inevitable IST-infrastructure or the hardware prerequisites to let people participate at the fruitfulness of the digital age. Although media competence is seen as a predominant factor, sometimes even called a “basic cultural technique”, it is uncertain if the digital divide will be bridged by intercultural efforts. At the same time the danger of digitally reproducing traditional processes of exclusion and social injustice, caused by political - not technical! - reasons, constantly has to be kept in mind.

In the end future development will remain as open as it has always been. Let us all do our best to make it a sustainable one!

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