

Why Activists Cannot Afford to Neglect the Internet

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Cyber-activism is an area that has only recently started to get attention. Activists, who see far more basic problems like hunger, malnutrition, illiteracy and exploitation all around them, have not always appreciated its strategic importance. What is increasingly being realized, though, is that the Internet can not only play a significant role in tackling these pressing problems, it has the potential of fundamentally changing the balance of power in society.

The Internet is a remarkable example of people power: a network of millions of people around the world works without any international body or government controlling it. No provision was made for a 'headquarters' in its design, since its early design parameters included the ability to survive catastrophes such as a nuclear attack. No matter how many of its nodes are destroyed, the remaining network should be able to continue functioning. A real-life test of this concept came during the Gulf War in 1991, when the US military faced huge difficulty in knocking out the Iraqi command network, which was built using commercially available Internet technology. However, this robustness isn't merely in the hardware. Over the years the Internet has developed an ethos that resists control. John Gilmore put it best when he said, "The Internet treats censorship as a malfunction and routes around it."

The reasons for this remarkable ability are many. The routing of packets from source to destination is a technologically sophisticated, yet conceptually simple task. It therefore easily lends itself to automation, making it a relatively efficient and progressively cheaper activity, since according to Moore's Law the performance to cost ratio of hardware doubles every 18 months. Censorship, on the other hand, is complex and often requires manual intervention. With increasing volumes of data flowing through the Internet, this becomes ever more difficult. Then again, there are many on the Internet who actively oppose any efforts at censorship. A web site that is banned in a particular country easily finds mirror sites to host it elsewhere.

But let us use the word censorship here broadly, and define it to mean anything that prevents people from providing and accessing information. Poverty, lack of telecommunications facilities or English language skills can far more effectively prevent people from accessing the Internet than any government censor board. However, computers are becoming increasingly cheaper. In the market already are set-top boxes that attach to a TV and a phone line, and cost only in the range of Rs.5000. Cheaper and more powerful devices are on the way. It is also becoming possible to access the Internet to a limited extent through mobile and even public phones. With the increased availability of vernacular language content on the Net, ignorance of English is becoming less of a liability while an improving ability to handle voice directly is making large segments of the Internet accessible even to the non-literate.

In short, the Internet is a network that is increasingly able to reach even poor people,

and crucially, allows them to easily become content producers, instead of merely passive consumers. It also, naturally, defies government and multinational control -- certainly reason enough for activists to examine it closer.

Opportunities in Convergence

Even before the arrival of the Internet networking was always the cornerstone of human civilization. In order to establish its usefulness the Internet needed to find better ways to do things that were already being done - it thus converged with traditional industries. Examples of such convergence include e-mail and electronic publishing, where traditional methods have somewhat been pushed into a niche. These uses of the Internet have proved very useful for NGOs: e-mail has helped cut cost for communication and training, and kept membership informed and better able to participate in decision-making. Web publishing similarly reduced the cost of dissemination, and made fund-raising easier.

The Internet hasn't stopped at essentially text-based activities such as mail and publishing. Currently, as it gains the ability to handle audio and video, it is beginning to converge with large telecom, media and music industries. This offers new opportunities to NGOs. To appreciate this, we need to examine the role of audio and visual elements in communication, and how the Internet can handle them better than conventional industries.

Audio vs. Visual

Language is at the heart of communication. While communication involves both the ear and the eye in the early years of our lives (and for the non-literate, all their lives), language consists only of sound. When we examine telecommunications technologies, the main one being TV which combines pictures with sound, most others use sound exclusively, such as the telephone and various forms of radio, including AM, FM and Citizens Band. In other words, except for the print media which were invented at a time when communicating via sound over long distances was technologically impossible, all communications technologies have sound as a central element - many exclusively use sound. Even in television, often termed a visual medium, simply turning the volume down can easily help one appreciate the crucial role of sound.

The reason for the pivotal nature of sound in communications is not hard to find. As Victor Zue put it "Speech is natural - we know how to speak before we know how to read and write. Speech is also efficient - most people can speak about five times faster than they can type and probably 10 times faster than they can write. And speech is flexible - we do not have to touch or see anything to carry on a conversation" (*Talking With Your Computer*). Not just people who cannot read or write at all, even those who are literate, typically spend most of their day communicating orally.

Audio communication is far more democratic than written. Writing skills are very unevenly distributed, and few write well. As opposed to this, the human race is filled with people who are powerful oral communicators, from politicians and singers to hawkers on the street. An understanding of sight and sound has long been a matter of philosophical study. "To the ancient Chinese, the eyes constituted a yang type of sense organ: male, aggressive, dominating, rational, surface-oriented, analysing things. The ears, on the other

hand, are a yin sense: female, receptive, careful, intuitive and spiritual, depth-oriented, perceiving the whole as one" (*Nada Brahma: The World is Sound*, Joachim-Ernst Berendt). This comparison drives home the point well - that these two senses are not competitors but complementary to each other. This, as discussed below, the Internet does far better than conventional communications industries.

Conventional Communications Industries

A large number of industries have been built around communications. These include radio, TV, telecom, and the music industry. All are deficient in their handling of this crucial human faculty. Many, such as the telephone, produce sound of a quality far poorer than what has been technologically possible for several decades. Radio technologies, with the dubious exception of short wave, do not allow global reach. Those that do allow sound to travel large distances, such as the telephone and CDs, are grossly overpriced. Most don't have storage built in, requiring the telephone, radio or TV user to be 'online', consuming at the same instant at which the content is transmitted. Radio and TV have the added disadvantage of content censorship, as well as restricted access - only a limited number of such stations can operate in a given area, and only a few privileged people have the opportunity of determining the nature of the content they carry.

When it comes to handling numbers of people, telecommunications technologies operate at ends of the spectrum. The telephone is essentially a one-to-one device, while radio and TV are mostly deployed in the one-to-millions mode. CB for a while tried to occupy part of the yawning space in the middle, but it doesn't scale well - its coverage is a small geographic area, and if too many people take to it, CB communication easily degenerates into cacophony. Cable TV has been used to a limited extent to communicate within a community, but TV is a difficult and expensive medium to produce software for. Cable networks can carry dozens of audio channels in addition to the TV at little extra cost, and audio content is easy to produce. This could be exploited as a means for the local community to discuss and solve problems, as well as to educate - community radio, in other words. However, this has received little attention.

Newton Minow, then chairman of the FCC, in 1961 described "the vast wasteland" of TV as "game shows, violence ... sadism, murder, western bad men, western good men, private eyes, gangsters, more violence, and cartoons". Even, when it does convey information, as in a news program, TV is shackled by the two-minute rule. In the words of George Gilder, "The rationale for the two-minute rule is that the viewer will not tolerate more than two minutes of an unwanted story. Its only function is to forestall the zapper, but its effect is to frustrate any viewer with more than a superficial interest in a story. Increasingly it reduces TV news to a kaleidoscope of shocks and sensations, portents and propaganda, gossip and titillation" (*Digital Darkhorse*).

Despite these shortcomings, the electronic media are highly influential. A spectacular example is the effect of the televised Rodney King beating. "Domination of the information channels by television dramatically assisted the civil rights movement in the 1960s, altered the presidential political process in the '70s, popularised hospices, malpractice suits, feminism and the plight of the homeless in the '80s. Significant social change is already attri-

butable to the pervasiveness of the electronic media. And we are just at the beginning of such social change" (Leonard Sussman, *Power, the Press and the Technology of Freedom: The coming age of ISDN*)

The Internet in Audio-Visual Communication

Services such as Napster highlight the growing importance of the Internet in the audio sector. They have already resulted in an explosion in the amount of music available to consumers, disregarding legal restrictions such as copyright laws and the stiff opposition of the music industry. Likewise, Internet telephony is threatening the fat profit margins of the telecommunication companies¹.

The reasons for the Internet becoming significant in the audio sector are not hard to find. When compared with conventional audio industries, the Internet offers a low-cost option for reaching people around the world without censorship. Storage is a given, so the content can be transmitted on demand. Further, the Internet also allows the consumer to obtain more or less information on a subject.

Already, the Internet has provided a strong boost to radio: local stations became global without much financial investment, and thousands of stations with an amazing diversity of content are now available in this manner. Even poor people can now start their own radio stations, and have their voice heard around the world, if they have Internet access. This is a significant avenue for NGOs to explore, particularly since their content may not always be attractive to enough people for the conventional radio and TV networks to be interested.

This rapid growth of Internet-based audio has taken place even though the Internet is 'smart' only when it comes to text, and treats pictures and sounds as just so much baggage. The advent of affordable text-to-speech and voice recognition systems is allowing computers to handle speech intelligently², so that users can move effortlessly between the media of text and sound, with rapid progress expected in this field of intense research. "I believe the next generation of speech-based interfaces will enable people to communicate with computers in much the same way that they communicate with other people", says Victor Zue. Sound shall cease to be just baggage, and become instead our preferred means to control the computer. Billions of web pages³ that contain text-based information will become accessible via audio devices.

The implications of this development are momentous. Speech is a far more ergonomic medium of communication than text which makes it easier for people to produce content for the Internet that others can easily find. Not only would this dramatically increase the amount of content on the Internet, it would also make it available to all those who only have access to a phone. Audio input-output devices - the microphone and the loudspeaker - are mass produced and very cheap, so with the falling price of microprocessors a computer designed for speech input and output should be very cost-effective to produce, within reach of even poor people. Since the number of the poor is very large, a computer that they can afford would have very large demand, pushing its price down further still.

We therefore have a medium that is our favourite for communication getting a boost as an easily accessible means to produce Internet content that the entire world can find and consume at its leisure. Some opportunities for activism in this field are discussed below.

Telecom

Government and private sector misperceptions of what the poor may want to, or be allowed to consume have prevented appropriate technologies from reaching the poor. In India and in many other developing countries, telephony was for long treated as a luxury, and only in the last two decades has there been gradual acceptance that it is a part of essential infrastructure. In the 1980s, when manned phone booths (essentially shared phones) were introduced, they were a spectacular success even though Indian telecom rates were among the highest in the world. And the Internet can make telephony substantially cheaper.

Conventional telephony follows a model similar to the railroad - just as a section of track is reserved for a particular train passing through, a dedicated circuit connects the parties to a telephone conversation. Internet telephony follows a model closer to the motorway - the spoken message is broken up into small packets, akin to cars, that enter and leave the channel without requiring an exclusive connection. The disadvantage of Net telephony is also apparent from this analogy: when there is a lot of Net traffic, there is congestion, as in the case of any motorway, and audio quality suffers. Then again, conventional telephony spends more than the actual cost of completing the call in accounting, billing and bill collection - expenses that Net telephony avoids. This is why Internet telephony is shaking the foundations of the multinational telecommunication companies⁴.

Internet telephony is banned in India, because it threatens the monopoly profits of VSNL. The drastic drop in telecom prices that Net telephony would bring would not just empower poor people; it would also lead to a dramatic rise in the use of telecom, which is closely correlated with GNP per capita. Clearly, the development of the country is being held ransom by the narrow perspective of a few bureaucrats. This issue needs to be urgently taken up by activists. And there are even more exciting developments taking place.

Computers not long ago followed the mainframe model: intelligence and storage was centralized in a big, relatively powerful computer, while the user access device was a dumb terminal. George Gilder⁵, among others, has pointed out that telecom still follows the same paradigm: the central switch is smart while the telephone instrument is treated like a dumb terminal. The arrival of intelligence at the terminal in the form of the PC pushed mainframes into a niche. Instead of buying time on a mainframe, people paid one-time for a small but increasingly powerful computer on their desktops. A similar development is expected to revolutionize telecom in which we today essentially 'buy time' on the switch each time we make a call. The arrival of smart, small switches - also based on PCs - is beginning to change the paradigm in telecom in a similar fashion.

Based on a wireless networking standard, the so-called 802.11b, relatively inexpensive equipment is available for computers to interconnect over distances that can go up to a few kilometres. Using such equipment, groups of people like Consume.Net in London have started their own wireless networks that provide broadband connectivity for the one-time cost of the equipment. This is an approach that NGOs in India too could easily follow as an attractive alternative to dial-up access to the Internet, which is hopelessly inadequate for their burgeoning bandwidth demands, yet is all that most such organizations can afford. Interestingly, it is very easy and not expensive to get a license in India to use the frequency that such wireless networking uses (in the 2.4 GHz band), so such a network can be set up quickly.

Radio

It is ironic that in the case of radio, where not only the receiver, even equipment for production of content is within the reach of poor people, government monopoly still persists. While some private channels are being licensed, they will work under severe restrictions. For instance they are prevented from covering news and current affairs, and they must pay the government exorbitant license fees. A station in Mumbai must pay the government almost Rs.10 crore (over US\$ 2 million) a year as license fee.

Nonetheless, this area is opening up. Besides private stations, the Indira Gandhi National Open University is starting 40 FM stations in large urban areas, with some time set aside for NGOs. Worldspace has launched the Asiastar satellite, and offers a plethora of channels in high quality. Both of these avenues will seek to maintain some degree of content regulation.

For radio stations on the Internet, satellite broadcasting as a possibility will soon open up. A major advantage of Internet radio is that it can easily incorporate text, pictures, animations, and even limited full-motion video. It is thus suitable not just for dissemination via conventional radio, but also via TV.

This area could certainly do with some activism on the policy front: there is a good case to be made for short-range broadcasting in areas outside the coverage of government stations to be opened up to the local community. A concerted lobbying effort by NGOs is required to make the government open this up.

TV

Most Internet users do not yet have enough bandwidth for full-motion video. Even with this serious liability, the Internet is already providing a taste of its power: NGO organisations such as the Independent Media Centre⁶ have used it to provide an alternative to the establishment viewpoint, for instance during the international protests against the World Bank and IMF in Seattle, Washington, etc.

Sites such as webcamnow.com work imaginatively with the bandwidth restrictions to allow anyone to internationally disseminate TV-like content at a reduced frame rate, and are proving highly popular. Given the strong influence of TV in shaping public opinion, this is an area that NGOs need to keep a close eye on.

Communication and Citizenship

Given the importance of communications in democratic society, denying people access to the means of communication is tantamount to disenfranchising them. Those who do not write well find it hard to get published in the print media, while radio and television severely restrict access to the means of production to members of the general public. Under these circumstances, citizens find it hard to gather and provide others with the information they need to responsibly participate in democratic decision-making. This participation encompasses not just the ritual election every few years, but also access to bureaucracy and the processes for problem solving, round the year. So far, in effect, only those problems which are able to attract media attention are addressed. Once low-cost access to the Internet becomes possible through audio devices, the Internet will allow people to find like-

minded persons, communicate with them without censorship, and organize to have their problems solved.

We are, in short, provided with an historic opportunity to bring into the ambit of the Internet, and that of democratic decision-making, millions of poor people. What is needed is a strong push towards universal access to communications technologies that the poor can afford, and innovative sharing schemes for those that they cannot. A good example of the latter is the *Grameen* Phone initiative in Bangladesh⁷, where a 'telephone lady' in the village is provided micro-credit facilities to buy a mobile phone, which then becomes a shared resource for the entire village. For incoming calls, she simply carries the phone to the recipient, and for outgoing calls, the caller comes to her or sends for her. In either case, she gets a share of the revenue this call generates, and possibly also a tip.

The Indian government, like many others, does not seem to see any possibility of offering telecommunications services in rural areas in a commercially viable manner, and is stuck on the tired formula of cross-subsidy⁸.

Poor people waste an inordinate amount of hard-earned money due to lack of information. The need is for projects based on low-cost modern technologies around the Internet to target poor users - the demand is certainly there. Is anyone listening?

NOTES

- 1 "VSNL set to lose \$600 million in foreign currency post decontrol", *Financial Express*, August 12, 2000.
- 2 See, for instance, <http://speechbot.research.compaq.com/>
- 3 The Rapidly Changing Face of Computing, Jeffrey R. Harrow, July 24, 2000, <http://207.18.199.3/rcfoc/20000724.html> citing Cyveillance's Sizing the Internet study released in July 2000 (<http://www.cyveillance.com/newsroom/pressr/000710.asp>)
- 4 Internet Telephony to grow to \$6.9bn in Asia-Pacific by 2005, <http://www.expressindia.com/fe/daily/20001231/fec31008.html>
- 5 See for instance "Metcalf's Law and Legacy": <http://www.seas.upenn.edu:8080/~gaj1/metgg.html>
- 6 <http://www.indymedia.org/>
- 7 *Village Pay Phones and Rural Poverty: Insights from a Grameen Bank Initiative in Bangladesh*, Abdul Bayes and Joachim von Braun: http://www.zef.de/zef_deutsch/f_first.html
- 8 New Telecom Policy, 1999-2000: http://www.dotindia.com/flash/NewTelPo_Details.htm - Universal service obligation.