

## Information and Communication Technology (ICT) and Gender

This publication is the first step in an attempt to synergize the efforts of the Department of Science and Technology, and Vigyan Prasar in particular, with non-governmental organizations to address, through innovative uses of ICTs, a pervasive social problem in the country: that of gender discrimination. The idea for a publication of this kind came out of the debates and discussions that took place during a seminar convened by the Gender Network, a network of gender researchers operating out of the Institute of Social Studies Trust in New Delhi. The seminar brought together researchers from India and abroad, representatives from Government and non-Government organizations and activists, policy planners and senior bureaucrats, and members of the corporate sector, to see how a multi-stakeholder interaction of the kind could feed into the process of informed policy making in addressing the twin problems of income and gender inequalities in our societies.

The issue is of great relevance as regards the role of technology in addressing social concerns, especially when technological development is state sponsored.

### About Vigyan Prasar

Vigyan Prasar is an autonomous organization under Department of Science and Technology, Government of India, and is engaged in large scale science popularization activities throughout the country. Vigyan Prasar utilizes various means, media and modes through which it attempts to reach the masses. The programmes include publications, utilization of radio and television, information systems, science clubs, ham radio, activity kits and so on.



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# Information and Communication Technology (ICT) and Gender



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and  
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## Preface

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The Department of Science and Technology (DST) in India has been the official arm of the Government of India that has been engaged, among other things, in the promotion of science communication and the spirit of rational thinking among the people of India through its various projects and programmes. Vigyan Prasar, an autonomous body associated with the DST, is one of the main conduits of this endeavour. An abiding interest in the work of Vigyan Prasar has been to take its message to every nook and corner of this country of continental proportions and heterogeneity, especially to reach out to the relatively disadvantaged segments of the population, be it through its ICT-based programmes for rural schools or through its projects on the community radios. In that sense, DST and Vigyan Prasar have already been engaged in the job of addressing the issue of narrowing the 'digital divide' in the country, and through it, addressing one of the pressing social issues in the country, i.e., that of unequal distribution of ownership of and access to resources in the country : the issue of poverty.

This publication is the first step in an attempt to expand the range of such concerns to include another pervasive social problem in the country, that of gender discrimination. The idea for a publication of this kind came out of the debates and discussions that took place during the National Seminar on Information and Communication Technology Policies in the context of Gender and Development Divides in India, which was convened by the Gender Network, a network of gender researchers located at the Institute of Social Studies Trust at the

India Habitat Centre, New Delhi 110 003, on September 9, 2005. The Seminar brought together a range of experts from various fields - researchers from India and abroad, NGO representatives and activists, policy planners and senior bureaucrats involved in policy making in the government, and representatives of the corporate sector - to see how a multi-stakeholder interaction of this kind could feed into the process of informed policy making in addressing the twin problems of income and gender inequalities in our societies. The proceedings of this seminar are included in Appendix II of this publication, and the List of Participants in Appendix III.

We are grateful to all participants to the Seminar, and to all those in Vigyan Prasar and in the MIMAP-Gender Network, who contributed to this publication in different ways. We are also grateful to the International Development Research Centre (IDRC) of Canada for sponsoring the research carried out under the Gender Network, which has been a thematic activity under the Micro Impact of Macro Adjustment Policies (MIMAP) Program Initiative of IDRC for several years. We hope that this small step will mark the beginning of an increasing involvement of the scientific community in the country in addressing social issues such as gender discrimination.

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## Should 'Gender' Issues Concern ICT Specialists?

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Swapna Mukhopadhyay\*

### 1. Why mix 'gender' with ICTs?

Technology-related matters are generally looked upon as issues that belong to the realm of scientists and technological experts. Gender is seen as a societal issue that is best left to other people who should be directly concerned with them: people such as social reformers, social science practitioners, NGOs, Government Social Welfare Departments and the like. So when a branch of the Department of Science and Technology of the Government of India decides to bring out a publication jointly with an institution involved in action research on gender issues, eyebrows are raised. Why, after all, should one mix up Information Communication Technologies with Gender, even if the latter was a pressing social issue that needs to be tackled at some level, by somebody? What can the scientists do about it?

Many IT experts and technologists may well be asking these questions, and for the most part, many of them may think that it is not such a good idea after all. And they may think so for a variety of reasons.

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For one thing, one would argue, Information and Communication Technologies are there for everyone to use, irrespective of their sex. If women are interested, they should go ahead and make use of them as much as men do. Some have argued that in India ICTs may in fact have benefited women disproportionately more than men. Look at the huge number of women, who are being employed by Call Centres and BPO enterprises, they would say. They would cite the instance of microchip technology embodied in mobile phones being beneficial not just to women from relatively well off families in urban areas, but also to very poor women from rural areas – such as women members of the Grameen Bank in Bangladesh – who are using these devices in a variety of ways to boost their incomes<sup>1</sup>. In Western countries such as Canada, the 'New Economy' has proved to be more beneficial to women as compared to men in the labour market, as the well-researched best-seller by Nuala Beck has demonstrated way back in the early Nineties.<sup>2</sup>

So, it is argued, pro-women affirmative action may not even be called for in the ICT sector. And even if it were, it is the job of people working in the social sector, and not of scientists, to ensure gender justice in all spheres of life, including the sphere of the new technology.

But social activists and researchers who have knowledge about ground conditions have a different story to tell, and might beg to differ from the opinion that scientists and IT experts need not get involved in these questions. And they would do so also for a variety of reasons.

<sup>1</sup> These were some of the arguments one has encountered while talking to a cross section IT experts on the issue. For information on some recent developmental projects with a gender focus using ICT's, see the Special Issue on Gender and ICT in ICT4D, Vol. III, No. 3, March 2005. Also see [www.grameentelecom.net](http://www.grameentelecom.net)

<sup>2</sup> Nuala Beck. *Shifting Gears: Thriving in the New Economy*. First published by Harper Collins in 1992.

A Seminar organized on the 9th of September at the India Habitat Centre brought diverse groups of people from both sides of the debate together, to discuss the issues across the table. Results from some on-going and recently concluded field research were presented and the case for proactive action for women in official programs and projects in the ICT sector was debated. This booklet is a result of that dialogue.<sup>3</sup>

The Seminar that brought together the diverse groups of participants had two basic questions to consider:

One, are ICTs gender neutral? In other words: are men and women being affected in the same way by the new technology? Have they similar kinds of use and access to it? If not, why so? What indeed is the nature and extent of these differences? And what are the consequences of ignoring them, now and in the future?

Two, should scientists be bothered about these issues? Even if the new technology is found to be biased against women in some important ways, is it their job to try to set it right? In particular, should such concerns be reflected in state policies on technology, and if so, how can scientists and IT experts working within official folds take cognizance of this matter?

The issue is not simply about ICTs in the context of gender. It is a question of general relevance on the role of technology in addressing social issues, especially so where such technological development is state-sponsored.

## **2. Does the new technology have gender differentiated impact?**

### ***A review of evidence***

On the first issue, past research and some on-going and recently concluded field studies from the region provide

<sup>3</sup> See Appendix II.

evidence on the gender differentiated use and impact of ICTs and what indeed are the likely consequences of allowing them to persist.

[A new set of research being conducted in some South Asian countries<sup>4</sup> and the work carried out by a number of NGOs across India, corroborate the findings of some older studies which suggest that the new technology does affect men and women differently. While the nature and extent of the difference varies from one situation to another, the evidence presented strongly suggests that there are differences in the access and ownership of ICTs and differences in the use of ICT-related services between men and women.<sup>5</sup>]

As for the argument that women are doing very well in terms of employment gains in IT and IT-enabled services sectors, and that working conditions in these outfits are comparatively much better than say, in factory work, available evidence cuts both ways. [It is true that in terms of the wages and salaries earned and the work atmosphere, on an average, BPO and call centre jobs are generally far better than semi-skilled factory work. However one needs to keep in mind that even here the distribution of gains has a strong gender dimension. A significantly higher percentage of men as compared to women are to be found in high end IT jobs. In an ILO Survey carried out on IT workers in India, less than 6 % of project managers and only 25 % of the high end 'consultants' carrying high remunerations were found to be women, whereas 60 % of Call Centre employees with relatively much lower average pay were women. (Rothbocek,

<sup>4</sup> Research carried out in India, Sri Lanka and Vietnam under the 'ICT and Gender' module of the Gender Network Project sponsored by the International Development Research Centre of Canada at the Institute of Social Studies Trust, New Delhi.

<sup>5</sup> Cf. Appendix II

Vijaybhaskar, Gayatri, 2001). It is also interesting to note that women in high end IT jobs tend to be concentrated in the 20-30 year age group and are mostly unmarried, while men are found to be much more evenly distributed across both age groups and marital status.] This is because marriage for women appears to be far less compatible with retaining these jobs than it is for men. In general, women appear to have fewer career options within the sector than men do (Mitter 2001, Gothaskar, Mitter and Ng 2005). Also, even with the high rate of expansion of these jobs, they continue to account for a very small percentage of the official work force, and of the population of women in working age groups. The benefits emanating from the sector do not touch the majority.

As for the wonders that mobile phones are doing for Grameen Bank women and for other NGO-driven action programs, one would argue that such positive outcomes have emerged only because of the agency of organizations like the Grameen Bank or the M.S. Swaminathan Foundation which have seized upon the opportunities provided by the technology and have taken appropriate proactive action to ensure that benefits reach the poor women. Examples of NGO-initiated success stories such as these only prove the point that one needs affirmative action to reap the benefits of the technology for vulnerable groups.

The new technology can be useful for women in ways that go beyond providing them with jobs and raising their household incomes. The technology can be equally beneficial to men as well in more or less similar ways. It is true that for women, the benefits can extend to areas of work that are traditionally done mostly, if not only by women, such as work within the domestic sphere, and can take care of women's 'practical needs' in more cost-effective and efficient ways. But that is only part of the story.

The reason that ICTs can be vitally important for women in particular in countries like ours is that their benefits can go beyond their income earning potential and related 'practical needs' considerations alone, — into areas that can change the very circumstances of women's lives. These technologies can provide a powerful instrument in the hands of policy makers to galvanize a process of social change. They can help in reaching out to every nook and corner of the country with the challenging task of questioning the mindset that accords a secondary position to women in society. They have the potential to restore to women their basic human rights and dignity on par with men.

### 3. Status of women in India and Strategic Gender Needs

The Constitution of India confers equal rights to women in all spheres. But in practice the average woman is still less educated, earns less, and works longer hours than the average man. Many families in India continue to favour their sons over their daughters, in terms of providing educational opportunities, health care and generally an enabling environment for personal growth. In many Indian families, women have to deal with crippling social constraints at every stage of their lives and have far lower decision making powers than men do. The disaffection is so deep-rooted that sex-determination clinics all over the country are being used to selectively abort female foetuses, resulting in falling sex ratios at birth in many places in the country. Violence against women within and outside the household - that most powerful of indicators of women's powerlessness - has emerged as the single most alarming phenomenon that strikes women from diverse backgrounds under all kinds of circumstances. What is more alarming is the fact that even as women are getting more and more involved in the world of education and work, the gender bias in Indian society, instead

of slowly disappearing, is mutating to assume new forms under changing socio-economic conditions.<sup>6</sup>

A far larger section of Indian society than is good for comfort, subscribes to the idea that women are second class citizens, who are relatively powerless, and should be put under the 'protection' of, if not domination by, men. The alarming increase in the incidence of violence against women is a consequence of this perceived powerlessness of women.

Unfortunately, this view on the sanctity of women's subordinate position is held not just by men but also by a significant fraction of Indian women. So it is not a question of a fight between men versus women. It is a question of the difference between one set of norms and values, and another : one that accords equal rights and powers to men and women and the other which is comfortable with the idea of a social hierarchy where women are placed under men in terms of social status.

The challenge therefore is to change the mindsets of men and women who believe in social hierarchies based on the sex of a person. The challenge is to invest women with the power to fight the dehumanizing mindset that accords the girl child a lower status in the household than her brother; or one that looks upon the young bride in the family as a convenient source of torturous dowry demands that could well end in gruesome murder.

<sup>6</sup> There is a large and growing literature on the subject. The first comprehensive official account on the subject can be found in the Report of the Status of Women in India, Government of India, 1974. For more recent data, see 'Men and Women in India', Department of Women and Child Development, Govt. of India, various years. There are numerous other accounts of the phenomenon by several regional, national and international organizations and individual research projects devoted to the study of gender imbalances in Indian society which are far too many to cite. On the resilience of gender discrimination manifesting in diverse mutations under changing socio-economic conditions, see Tracking Gender Development : Continuity and Change in South Asia, Mukhopadhyay and Sudarshan (eds.), Kali for Women, 2003.

It is in this context that the concept of 'Strategic Gender Needs' assumes significance. According to the social anthropologist Caroline Moser who coined this term so frequently used in gender studies, Strategic Gender Needs are those needs of women which have to be fulfilled in order to initiate a process of transformation in the subordinate position of women in relation to men. In that sense the deployment of all strategies that lead to women's empowerment can be looked upon as catering to the strategic gender needs.<sup>7</sup>

#### 4. Can ICTs address 'Strategic Gender Needs' in India?

The new technology has enormous reach. What is more important, it can operate on interactive modes permitting two-way communication. The increasingly affordable proactive infrastructure makes it an eminent candidate for initiating dialogues on important issues involving all sections of the population. If gender discrimination is a social phenomenon that is hurting half the population of the country, and yet if ideas about women's subordinate position in the family and community are ideas that continue to dominate the thinking of large sections of the population, then what better way but to start a dialogue on this issue between men and women across the country.

Technologies are instruments for addressing developmental needs. And 'gender development' is a developmental need just as alleviation of poverty is. One may be called social, and the other economic. But without addressing social needs, there can be no long lasting solutions to economic needs.

<sup>7</sup> Caroline Moser. *Gender Planning and Development: Theory, Practice and Training*, Routledge, 1993.

To the question as to whether ICTs can address issues of strategic gender needs, the answer is a resounding yes.

#### 5. Do official agencies have a special role to play?

The answer to this, once again, is an emphatic 'yes'. The state has a special role to play in this in India. Historically the state has played different roles in the development of the ICT sector in different countries in the West. Almost everywhere the private and the public sectors have joined hands in the development of the IT sector. But the nature of the partnership has varied depending on whether or not the state had taken a leading role in the initial phases of the development of the sector, or had operated more as an enabling agent throughout. In European countries it has been more of the first model while in the States it has been more of the other.

In India, growth of the IT sector has been primarily a function of private entrepreneurship. The state has had more of an enabling role in its development. However with its professed commitment towards equity in state policy, and the huge ICT infrastructure at its command, the Indian state can play a very special role in addressing some of the pervasive social problems facing the country such as low social status of women in Indian society. It is a pity that as of now, neither the long list of recommendations of the Task Force on Information and Communications Technologies of the Government of India nor any of the several state level ICT Policy documents have this item on their agenda, although given the existing program design of the Department of Science and Technology, this can be done with marginal effort and with virtually no investment of financial resources<sup>8</sup>.

<sup>8</sup> Report of the Task Force on Information and Communication Technologies. Government of India, 2000



## 6. Where to start?

The most natural way of starting this process would be to utilize the appropriate official infrastructure and design interactive programs questioning the rationale behind the low status of women. The pressing need of the day is to start addressing the mindsets: in the same manner the scientific community has tried to address the unscientific or irrational mindsets of our people - about various beliefs and superstitions, and show that being gender sensitive and treating women in our families and communities with human dignity and human rights is for the benefit of all.

The IT community needs to wake up to the fact that they have a powerful instrument in their hands for social transformation : an instrument which can be used to address one of the most persistent problems plaguing our society. There is a pressing need to address the rational foundation of social beliefs.

For developing the program content, the DST scientists will have to take the assistance of others who are more cognizant about ground conditions, such as NGOs and social activists. They need to join hands with people such as these since they are the ones who have more intimate knowledge of such conditions. The groups need to work together if such an endeavour has to succeed.

The next paper by Dr. Kamble shows how a beginning in that direction can be made, within the current program profile of Vigyan Prasar with marginal additional financial resource requirements, if any.

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# Bridging the Gender Divide – The ICT Way

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Vinay B. Kamble\*

## Introduction

The Department of Science and Technology (DST) and Vigyan Prasar (an autonomous organization under DST established to popularize and communicate Science and Technology in India) have been addressing issues related to women's status in Indian society in a limited manner. From time to time, Vigyan Prasar has taken up programmes for women with its widespread infrastructure. With the enormous scope of the new technology, however, one can think of breaking new grounds and make the technology work not only for economic but also for social transformation.

In the following pages we give an account of the current scenario in terms of the infrastructure and programmes of Vigyan Prasar. We also indicate where and how new beginnings can be made in terms of programme design with social issues such as gender discrimination within the broad framework of the official structure as it exists now.

## The Indian Scenario

India's Satellite Instructional Television Experiment in the mid-1970s was probably the biggest social experiment

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anywhere in the world that established the importance of satellite communication in the field of education in India. The widespread use of personal computers since nearly two decades ago, advances in telecommunication, internet a decade ago, and mobile phones along with the convergence of various technologies has, in the form of Information and Communication Technology (ICT), opened up new opportunities and challenges in the field of education.

However, the vast potential of ICT remains largely untapped. The efforts have been piecemeal and sporadic. A beginning for introducing computers in the school system was made through the Computer Literacy and Studies in Schools (CLASS) project in the early 1980s. However, schools faced problems of infrastructure, appropriate software and a lack of trained manpower. Recently, the scenario has changed with large number of cyber cafes, increasing use of personal computers in schools, homes and workplaces, and internet connectivity. Today, India even has a satellite – Edusat – exclusively for education, science and technology, which no other country has. No doubt, ICT holds renewed promise as a powerful tool for education and development. *Like any other technology, ICT also is expected to be gender neutral and hence equally benefit men and women.* The debate on the digital and gender divide, however, continues unabated. Why is that? Is it that ICT has benefited haves rather than have-nots?

Indeed, the digital and gender divide signifies more deep rooted divides of income, development and literacy. This is especially true of developing countries like India where fewer people own computers and have access to the internet. The reasons are many – they are too poor, illiterate or have more pressing concerns like food, healthcare and security. A computer is of little use if there is no food or electricity or if one cannot read. True, there have been a few sporadic attempts to set up centres with the aid of international donor agencies and local government support to offer villagers a range of information

including market prices for crop, job listings, government welfare schemes, healthcare, etc. However, due to the more basic problems outlined above, a large section of population has remained deprived of the ICT boom in the country.

### ICTs – Infrastructure and Facilities

There are varied infrastructural facilities for utilization of ICTs that exist in the country today (Table 1). However, all of them assume that everybody is free to use the available information. *They are not targeted to specific groups like women – but can be.* Incidentally, the target group while addressing gender related issues would essentially consist of school girls at primary, secondary and tertiary levels and out of school girls, women / young mothers, and women from economically and socially backward classes. Indeed, the factors that need to be addressed include cultural attitudes and discrimination. For example, women are less likely to possess radio or mobile phones. Moreover, they may not have access to an income to use public facilities, information centres may be at places that are not comfortable to visit, or domestic responsibilities may limit their leisure time, and what is more, it may be difficult for them to use facilities in the evening.

Table 1: Infrastructure in Place

Video programmes/Studios	: C-DIT, CIET, SIETs, EMRCs, CEC (UGC), JAMIA, IGNOU
Audio / Radio Programmes	: AIR, VP, NCSTC, NCERT, IGNOU
Labs / workshops for Fabrication and R&D	: NCSM, VP, NCERT, VASCSC
Print Media	: NISCAIR (CSIR), NBT, VP
Folk Media	: NCSTC, AIPSN, KSSP, KRVP, TNSF etc.
Multimedia / Internet	: C-DIT, VP, IITs

Indeed, we have a strong infrastructural base. We have, for example, a radio / TV network that covers almost entire country with software production facilities, and countrywide telecom network / internet connectivity. We have countrywide networks like the All India Peoples' Science Network, National Council for Science and Technology Communication (NCSTC) Network, Nehru Yuva Kendra Sangathan (NYKS), Krishi Vigyan Kendras (KVKs), Nehru Vidyalaya Sangathan (NVS), Kendriya Vidyalaya Sangathan (KVS) and so on. Further, Government organizations like Vigyan Prasar (VP), NCSTC, Development and Educational Communication Unit (DECU) / Indian Space Research Organization (ISRO) and other agencies, and a large number of NGOs are engaged in Science and Technology communication. The activities undertaken by these organizations are enumerated in Table 2. The abbreviations used are spelt out at the end of the article.

In any case, ICT as a tool should be used with care so that it serves to bridge the social divide and equalize opportunity; *inappropriate and insensitive use may in fact widen the divide*. Given the growing reach of the technology, it is imperative that efforts are initiated to utilize ICT to face the challenges of our transformation into an information driven society.

**Table 2: S&T Communication Activities in India**

1. Radio / TV programmes / satellites
2. WorldSpace Satellite Radio
3. Popular science literature / books/Slide sets / charts / activity kits/ Science Magazines
4. Science Jathas
5. Folk and traditional media
6. exhibitions / Vigyan Rail - Science Exhibition on Wheels
7. Science Centres / Parks / Museums / Planetaria
8. Computers, Ham Radio, Internet etc.
9. Interactive radio / TV programmes and Multimedia
10. Internet / chat sessions / CD-ROMs

## Using the Existing Infrastructure

How do we make ICTs particularly useful to women, the illiterate, and the disadvantaged who are at the bottom of the socioeconomic ladder? The deciding factors in determining whether the gender divide can ever be bridged are the cost of the technology and ease with which one can have access to it. Indeed, Information Technology (IT) is the newest powerful tool for access to information. Edusat, India's satellite for education, science and technology; and the WorldSpace digital satellite radio have opened up new vistas in communication technologies.

Vigyan Prasar has been utilizing various ICTs - means, media and modes - for S&T communication and popularization with inculcation of scientific outlook as the main objective. The clientele consists of children, women and men from all walks of life including socially, economically and culturally disadvantaged groups. Can this infrastructure be used to address social issues in general and gender issues in particular? What ICTs could be used, and how? We only need to put things together in order that we can effectively address the gender related issues. In what follows, we describe the initiatives taken by Vigyan Prasar for S&T communication and popularization using different ICTs which could be targeted to address the gender related issues.

## Vigyan Prasar's Initiatives

### 1) Amateur (Ham) Radio

Ham Radio is a creative hobby that allows one to communicate on specified bands of radio spectrum. Though a hobby, Ham Radio becomes inevitable during emergencies, and disaster mitigation. When all the normal channels of communication break down – as it happens during earthquake, cyclone, floods – it is ham radio that plays a vital role in

establishing communication channels between the affected areas and the outside world. Vigyan Prasar/Department of Science and Technology (VP / DST) is in the process of establishing a ham radio network in the identified districts, and make available ham radio equipment to selected organizations for establishment of ham radio club stations. *Some club stations could be established in girls' schools and women's colleges. Interested girls / women could be trained to become hams who could be appointed operators in charge of the station.*

## 2) Using Edusat

Edusat provides an interactive satellite-based distance education system for the country utilizing audiovisual medium, and employing Direct-To-Home (DTH) quality broadcast. With its multiple regional beams covering different parts of India and a beam covering the Indian mainland, it is possible to establish talk-back terminals for interactive programmes on science education. These would provide an interactive channel for students with experts and could include talks, lectures / demonstrations, discussions, question-answer sessions, and also can be utilised for education on natural disasters and relief operations. Talkback terminals and receive-only terminals could be set up at selected rural schools that could also be utilized by other schools in the neighborhood.

VP, in collaboration with ISRO, has established a satellite interactive terminal network in the country with 20 talk-back terminals – two way video and two way audio – for interactive programmes for science communication. The terminals have been established in States prone to various disasters. The network hence could even be used as an emergency communication network during and after natural disasters. In due course, the network would be expanded to 100 terminals. Studio with uplink facilities have been established at Vigyan Prasar, New Delhi.

The clientele for the interactive programmes would consist of students, women, and the general public – especially from rural areas. The main purpose would be to impart education with entertainment on issues related to life and environment, sustainable development, disaster awareness and preparedness – *including issues related to gender. These terminals could also provide communication links and help form discussion groups of women with their counterparts in other parts of the country.* The interactive programmes would include talks, lectures / demonstrations, discussions, question & answer sessions, etc.

## 3) Community / Campus Radio

Community / Campus Radio could broadcast educational and informative programmes along with entertainment to the local population. Community radio can play a vital role in disseminating information about warnings, Dos and Don'ts in the event of a disaster, and providing a channel for communication to pass on welfare messages, monitor relief operations etc. *Appropriate programmes could be produced and broadcast by women. Even the operation of the station could be undertaken by women.* Vigyan Prasar has initiated steps to set up community radios at a few selected places in the country.

## 4) WorldSpace Radio

Of late, WorldSpace Satellite Radio has opened up the possibility of a countrywide digital audio science channel. It can cover the remotest and the most interior parts of a vast country like India with the help of a specially designed satellite radio receiver. WorldSpace Radio is a digital satellite communication radio system using geosynchronous communication satellites specifically for radio broadcasts. Essentially, it is a direct-to-home radio.

Access to news, educational broadcasts, and entertainment from all around the world through its unique

global relay capability is the remarkable feature of the WorldSpace system.

Since the broadcast is digital, it is possible to download the data files - sound as well as picture files - into a personal computer. It is hence possible to transmit and receive slides / visuals, store them in a personal computer, and synchronize with the audio broadcast for a full fledged lecture-cum-demonstration which can be projected on to a large screen to an entire class. Two-way interactivity on WorldSpace radio is possible through telephone lines or internet. In particular, production of software is relatively easier and cheaper to produce. WorldSpace can prove to be an important tool for science communication and education in India.

Vigyan Prasar has been broadcasting science communication programmes on WorldSpace radio for three years now daily for one hour. *Special programmes targeted towards women addressing issues of their interest could be produced and broadcast on a regular basis.*

### **5) Using Radio and Television**

Vigyan Prasar has been producing a variety of radio programmes on different aspects of S&T for various target groups. These programmes are broadcast from various stations of All India Radio in different languages from different regions of the country; and Gyan Vani (FM radio channel of Indira Gandhi National Open University).

VP and Development and Educational Communication Unit (DECU)/ISRO have been producing and telecasting programmes on various aspects of S&T on Doordarshan on a regular basis. There is a plan to have an exclusive slot on Doordarshan National Channel for women in very near future.

Radio and Television continue to be effective - and shall continue to be effective - for reaching out to different groups in the society. Together, both cover the entire country. Doordarshan now even offers a bouquet of Direct-to-Home satellite radio and television channels. A dedicated satellite channel for S&T communication - one on radio and one on television - can help in speeding up the transformation of our country into a nation of literate and scientifically minded people.

### **What kind of programmes?**

Indeed, a variety of programmes could be produced for the various communication media described above. A few of the possibilities include: one way Radio / TV broadcasts, phone-in programmes on radio, interactive TV using phone in, teleconferencing using one / two way video and two way audio, interactive TV with computer support through e-mail, video conferencing, discussion groups on FM / community radio stations, and chat sessions dealing with gender related issues.

Surely, communication technologies by themselves cannot be expected to bring about any attitudinal change in the society. What matters is the 'appropriate' content - or software, as it is called. Further, it is imperative that preliminary surveys are carried out to ascertain the needs of the clientele. Equally important is the evaluation of the programme after its conclusion. As a matter of fact, evaluation needs to be built into the programme from the very beginning.

### **VIPNET Science Clubs**

Science Clubs could prove to be an effective means to address gender related issues. Vigyan Prasar Network of Science Clubs (VIPNET Clubs) is a massive programme to create and nourish a national network of science clubs - VIPNET Clubs.

Already 6000 clubs have been registered in different parts of the country and affiliated to VIPNET. The number has been growing at the rate of 100 clubs per month. A monthly newsletter VIPNET News highlights the activities being undertaken and those to be undertaken by various science clubs. VP organizes awareness and training programmes exclusively for clusters of VIPNET Clubs. *Formation of science clubs in girls' schools and getting them to address issues related to gender bias in the families and communities could go a long way in addressing the gender related issues.*

### **New Technologies vis-à-vis Traditional Technologies**

There is no gainsaying the fact that despite the penetration of computers and increasing internet connectivity in the country even in rural areas, the importance of traditional communication technologies like radio, television and print media can neither be overemphasized or undermined. We cannot afford to turn a blind eye to the older technologies and the proven means of delivery systems. Even simple technologies like loudspeakers and printed newsletters could form an integral part of an internet hub located in a village.

**Table 3: What are the concrete proposals, then?**

1. Form Science Clubs in Girls' Schools. Get them address issues related to gender bias in the families and communities.
2. Involve them in the interactive terminal network of Edusat. They can interact with their counterparts in other parts of the country too.
3. Form discussion groups on FM / Community radio stations. Women could produce their own programmes.
4. Websites / chat shows dealing with different aspects / issues relevant for women.
5. Make use of ham radio, Edusat, radio / TV, community radio and WorldSpace satellite radio to address gender issues.

Folk forms like puppetry, street plays, literacy and vigyan jathas have played and continue to play an important role in addressing gender issues. Vigyan Rail – Science Exhibition on wheels was an innovative experiment in taking science to the people. These and other traditional technologies alongwith ICTs could help us address gender related issues more effectively.

### **Conclusions**

We have briefly described the novel initiatives undertaken by Vigyan Prasar using the ICTs for S&T communication and popularization. We have stated that although there are varied infrastructural facilities that exist in the country, all of them assume that everybody is free to use the information. They are not targeted to specific groups like women – but can be. Based on the experience of Vigyan Prasar, concrete suggestions have been made on how to go about targeting these facilities for women (summarized in Table 3).

Where do we begin, then? Technologies, by themselves, are not democratic, or gender neutral. Their use and adoption by society depend on economic, social, educational and cultural factors. Making ICT available to women alone will not help bridge the gender or the digital divide. *What is required is not just the change in the mindset of men, rather the entire society which must change its ways of thinking if we are to make a real impact.* We shall need to involve international agencies like UNICEF, UNIFEM, Government Departments / Ministries, non-Government agencies like MSSRF, MARG, SEWA, professional agencies like C-DAC, NIIT, and local NGOs and individuals in our endeavour. *We must pool resources, expertise, and experience of all organizations / agencies and individuals to address the gender issues.*

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**Bridging the Gender Divide – The ICT Way:****Abbreviations used**

AIPSN	All India People's Science Network
AIR	All India Radio
C-DIT	Centre for Development in Imaging Technology
CEC	Consortium for Educational Communication
CIET	Central Institute of Educational Technology
CSIR	Council of Scientific and Industrial Research
DECU	Development and Educational Communication Unit
DST	Department of Science and Technology
EMRC	Educational Media Research Centre
ICT	Information and Communication Technology
IGNOU	Indira Gandhi National Open University
IIT	Indian Institute of Technology
IT	Information Technology
ISRO	Indian Space Research Organization
JAMIA	Jamia Millia Islamia University
KRVP	Karnataka Rajya Vijnana Parishat
KSSP	Kerala Sastra Sahitya Parishat
KVK	Krishi Vigyan Kendra
NBT	National Book Trust
NCERT	National Council of Educational Research and Training
NCSM	National Council of Science Museums
NCSTC	National Council for Science and Technology Communication
NISCAIR	National Institute for Science Communication and Information Research
NYKS	Nehru Yuva Kendra Sangathan
SIET	State Institute of Educational Technology
TNSF	Tamil Nadu Science Forum
UGC	University Grants Commission
VASCSC	Vikram A. Sarabhai Community Science Centre
VIPNET	Vigyan Prasar Network
VP	Vigyan Prasar*

\* In Hindi and Sanskrit, Vigyan means Science and Prasar means Spreading. Hence, Vigyan Prasar literally means Spreading of Science.

**Appendix I**

## Reaching the Unreached Through ICT\*

V. S. Ramamurthy\*\*

**ICT Revolution**

We are in the middle of a revolution. This revolution is ushered in by two technologies - Information Technology and Communication Technology - more commonly referred to by the umbrella term Information and Communication Technology (ICT). Today, computers can process large volumes of data and information in the quickest possible time. Communication technology allows one to send information from one place to another instantly. This revolution is transforming the world into a Global Village. Geographical distances, political boundaries and social differences are all likely to be eliminated by the new technology. This globalization process is not limited to trade and commerce alone; it has extended to include education, employment, entertainment - in fact almost all sections of everyday life. There are no longer any aspects of human life that are left untouched by this revolution in some form or another - whether directly or indirectly. The foundation for an e-society is being laid today.

\* This is the transcription of the Keynote Address delivered by Prof. V. S. Ramamurthy during the National Seminar on 'ICT and Gender' organized by the Gender Network on 9<sup>th</sup> September 2005 at the India Habitat Centre, New Delhi.

\*\* Secretary, Department of Science & Technology, New Delhi.

## New Opportunities

This revolution has opened up several new opportunities to countries like India. A few decades ago, large numbers of Indian students migrated to the West in search of better opportunities. In the last few years one finds more and more MNC's setting up offices all over the country and creating new jobs—in ICT and other fields. Students no longer feel the need to move out of the country, as they can find interesting job opportunities with competitive salaries right here at home. There is a complete change in the paradigm of job opportunities. Clearly things ARE changing – there is no doubt about this.

## Concerns

Along with the opportunities which have been opened up by ICT, there are also concerns. The first and foremost concern is that whether ICTs will make a difference in an individual's life or whether they will lead to a new divide – “the digital divide”, adding to the old rich-poor divide. Indeed, there are several problems in the developing world that may not allow reaping the full benefits of ICTs. The chief problem is one of unequal access. One, for a large section of the population whose yearly income is less than US \$200, ICTs are not affordable. Two, at present, there is no proper ICT connectivity in rural areas. Rural India consists of 700 million people living in 600,000 villages with village-centric economies and inadequate infrastructure, for example no regular supply of electricity. So, every individual cannot have equal access to this technology. And thirdly, there are multiple languages used for communication – more than 20 official languages and thousands of dialects without scripts. Language for communication is still a major hurdle.

Add to this the fact that a significant proportion of our population – nearly 30 per cent - is still illiterate. As of today,

only 3 per cent of the Indian population speaks English. What is more, at present most of the ICT content available is in English. The major challenge thus is to develop content in other Indian languages.

Although affordability and connectivity are the prime prerequisites for accessibility of ICT, they may not necessarily ensure that the benefits of ICT would flow to everybody, especially to our people in the rural areas. How can one ensure that ICT enters the life of such population? How can one ensure that the benefits that the urban population gets out of this technology will in some ways also reach the rural population; and how does one ensure that ICT addresses issues related to social equality? No doubt, we are faced with a number of challenges..

## Challenges before Us

In the present scenario, there are three major challenges that need to be immediately addressed:

- 1) The first challenge is to strategise connectivity to reach the last un-reached. ICT has to reach every villager irrespective of where he / she are located - near a town or deeper into the village. Moreover, it should be affordable – “affordable connectivity” is most important.
- 2) The second important challenge is to strategise Machine-User interaction in an environment of multiple languages, illiteracy and limited mobility.
- 3) The third challenge is to convert the “content receivers” into “content generators”.

If these challenges could be addressed, ICT is likely to benefit the entire population and will not lead to a digital divide. What have been our responses to address these challenges in our country to connect rural India?



## Responding to Challenges

Let us first discuss the issue of "affordable connectivity" in rural India. An innovative technology of Bharat Sanchar Nigam Limited (BSNL) has brought fibre connectivity to most talukas. Indian Institute of Technology (IIT), Chennai, has come up with a cost-effective technology to connect the rural India to the last mile. This technology – CorDECT Wireless in Local Loop – provides a telephone line and simultaneous internet connection (35/70 kbps) in a 30 km radius and can connect nearly 85 per cent of Indian villages. Start-up costs are also low. This has been demonstrated and implemented at some places. Costs are extremely competitive and sometimes even less than landline costs. This is one technology development which has led to better connectivity in village areas. We are aware that operator assisted telephone booths are no longer merely places to make long distance phone calls, but can become ICT booths as well. The operator is a local entrepreneur and many of these local entrepreneurs are women with education up to class 8–12. The variety of services offered through these ICT booths by local people is novel - from telephony and net info, voice / video mail, video conferencing, DTP, telemedicine, veterinary care, e-learning, sharing agriculture related information or e-agriculture, to matrimonial services and movies on demand (CD/DVD). Indeed, these various services are limited only by the imagination of the entrepreneur who operates the ICT booths. If these services are combined together, per unit service cost drastically comes down. In some places this has been tried out such as in villages covered by the M.S. Swaminathan Research Foundation, this experiment has been extremely successful. It has the ability to replace telephone booths with ICT booths with CorDECT connectivity. This is what really makes a difference and now the emphasis is on taking this technology to a very large number of villages. The M.S. Swaminathan Centres for the proposed "Vision 2007" programme effectively makes use of these technologies. The message is clear that last mile

connectivity is not an insurmountable problem. It can certainly be addressed. The solution may not come from other countries – it has to be developed locally here.

Next, let us discuss how one can overcome the language barrier. Is it possible that one speaks in Hindi and others listen in the language of their choice? We have not yet developed that capability – but the technology is around the corner. It is possible to build a front end infrastructure which can be operated by anybody. A hand held low cost device – the SIMPUTER - with multiple language interface is a reality now. It goes to the user instead of the user coming to the computer at the kiosk and uses open source software to minimize the costs. That means in the next few years we will see an opportunity – one can speak in any language of his / her choice – the other person will be able to listen in a language which he / she understands. This is something which is possible. So again technology offers the possibility of breaking barriers arising out of multiple languages in the rural environment.

Let us now consider the response to the third challenge, which is, converting the content receiver into a content producer. In a village, where the economy is village-centric, content cannot simply be fed into the village. What really matters is locally generated content and content that is locally relevant. If it is a fishing village, fishermen will possibly be interested in knowing about the sea surface conditions, say, whether they could venture out deep into the sea or whether the sea would be rough. Such information should be available. Some information may be required to be locally generated - like, what is the cost of fish in the local market. This has to originate from the villages and reach the villagers. Then he / she can hope to get the best price by taking the catch to an appropriate marketplace. Clearly ICT will reach the village people and benefit them when the content is locally generated and locally relevant.

## ICT and Gender: Social Constraints

Gender is primarily a social issue. And because it is a social issue, even if one addresses all the problems mentioned earlier and makes ICT available at the door-steps of every villager, it may still not be accessible to women because of social constraints that are village specific. Moreover, two adjacent villages may not have the same constraints. It is clear that the gender issue cannot be addressed in a top down manner – the solution has to begin bottom up, in other words, at a local level.

Village specific social constraints may keep women out of the ICT loop. First, women may not have time to go to an ICT kiosk. If an ICT kiosk is managed by a man, women may not like to go there. They may feel embarrassed to ask for help from strange men or discuss their specific problems with other women – related to health or home - when men are present. On the other hand, if the kiosk is managed by women, the men may not like to go there. There could even arise some strange situations. For example, there was a village in Rajasthan and one of the UNDP projects tried to provide water to a Rajasthan village using taps. It was found that the tap was broken everyday! Somebody tried to find out who did this. It turned out to be one of the women in the village! When asked why she was doing it – since it was meant to help women like her,— she replied that before tap-water became available, she used to walk everyday in a group to collect water. This was her social outing for the day. After bringing water through pipes to her village - her outing was gone! Even the concept of what a technology could do to the women concerned depends on the social constraints. Hence, any solution to a problem has to originate from the local level from the people themselves, in a bottom up and not top down manner.]

Even our traditional wisdom explains why women need to be educated. If we educate a man, we may empower an

individual. But if we educate a woman, she would empower the family; and through the family we empower the entire society. Rising female literacy correlates well with falling infant mortality, reduction in birthrate, and improvements in other social indicators of human development. Clearly it is imperative to reach out to the women first.

## Catching Them Young

There is one age group where gender division is less marked than in others - children. Gender differences are a minimum at this stage. Hence, one way is to catch them young - before the gender division sets in. More importantly, when children come across a new technology, chances are that they would grasp it quickly or pick it up faster – they are more receptive and not afraid of new or strange gadgets. It is the same both in urban and rural areas. Hence, developing student centric projects may go a long way - say, mapping the neighborhood to generate community data base that can be used for development purposes; and introducing modern technologies like GIS, GPS coupled with hand-held computers in rural schools.

In one such novel effort, a few schools in Uttaranchal were selected and the students were introduced to GIS, GPS, mapping. They were then told to go and map their neighborhood. After about two months they came up with a good looking map of their neighborhood. More importantly, they understood their own environment much better – they had never looked at their environment so carefully before. They understood their surroundings and started talking about what were the problems in their neighborhood – they started suggesting what the likely solutions could be. The problems and community issues identified ranged from seasonal streams, road connectivity in villages, improper garbage management, congestion in human habitation, and so on. These were the

issues that were addressed and discussed by the school children in the age group 10-12 years. With students as the agents of change, this project aims at creating a community that can generate its own locally specific and relevant content. If a professional organization was assigned the same task, it would have used the same methodology and technology the school children had used, but may not have come up with same results because of a lack of awareness of local issues. Surely, this has been a very gratifying experience for all of us.

Efforts are also on to bring other regions of the country under this project and bringing other technologies to study weather, make earthquake related observations, and so on. The message is clear - if one wants to address a local problem. The solution should emerge locally, and the children are the best agents of change.

### **DST Initiatives for Women**

DST initiatives for rural women emphasize on science and technology based skill development, employment generation, and entrepreneurship development through Rural Technology Parks. The basic idea is to enable women to earn more money and empower them through technology.

Then there are women who are qualified and trained in Science & Technology (S&T) – M.Sc, PhD or B.Tech – DST has specific programmes for them. They are reaching to the top. DST has a programme of giving scholarships to women who are technically trained – minimum master's degree or beyond – either to continue research or train them for self employment. Let us consider the simple case of Intellectual Property. Everybody talks about patenting. If a biotechnologist has an idea to patent – he / she will go to a lawyer. Lawyers cannot understand whether it is patentable idea or it is already patented. There is no way he can do that. A lawyer also cannot

employ a permanent fellow having the required domain knowledge to have the patent addressed. So he will go and source it out from somebody else. There are a few professionals who understand biotechnology as well as legal implications of patenting. One way is that the lawyer understands biotechnology or biotechnology specialist understands patenting! It is much easier for a biotechnology specialist to understand patenting, rather than converting a lawyer into a biotechnologist! Give them training in patenting – all aspects of patenting, prepare a panel – let it be known to the patent authority and depending on the requirement, one may choose and assign jobs to them on contractual basis. Women can take up such assignments. One can sit in one's own house, do the work and get paid. Certainly it is possible to do so.

Training and identification of women who have an aptitude to work for society related programmes, who have some experience, professional competence, and are willing to spend time in addressing the problems of the society, is yet another initiative. DST gives such women scholarships to get trained. So it is clearly a multi pronged approach which DST is attempting to do.

### **ICT – An Enabling Technology**

Finally I would like to state that ICT is an enabling technology. It can go hand in hand with some wealth-generating activity. This may in turn require skill development, employment generation, entrepreneurship, and generation of new demand. ICTs can help in each of these dimensions. Through these, the technology can make an impact on people's lives and livelihoods, as well as address social issues such as gender bias. A close cooperation between Government and non-Government organizations is needed to make this possible.

Thank You.

## Appendix II

### Proceedings of the National Seminar on **Information and Communication Technology Policies**

in the context of

### **Gender and Developmental Divides in India**

9 September 2005; India Habitat Centre, New Delhi

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The National Seminar on Information and Communication Technology (ICT) Policies in the context of Gender and Developmental Divides in India was convened on the 9<sup>th</sup> September 2005 under the 'Gender and ICT' module in Phase III of the MIMAP Gender Network Project (GNP) at the Institute of Social Studies Trust, New Delhi.

In her welcome address Prof. Swapna Mukhopadhyay, Project Director of the Gender Network Project, described the seminar as a multi-stakeholder gathering which sought to provide an interface between research and policy in the area of ICT and Gender. She extended a warm welcome to the participants who came from widely varied backgrounds, including NGO's and other development practitioners, researchers, gender specialists, technical experts in ICTs, scientists, senior bureaucrats and government officials, all of whom were involved in either ICTs per se, or in gender-based developmental issues, or in the interface of the two. The purpose of the seminar she said was to collectively address two basic questions:

One, should Technology Policies and Programmes be utilized to address overarching "social" problems like gender discrimination in society, and if so, how; and,

Two, is there enough evidence on the ground that the new Information and Communication Technologies (ICT's) may have already been changing the contours of the gender divide in Indian society,—creating new opportunities in some ways while exacerbating existing divisions in others—which may need to be recognized urgently, and acted upon, and if so, how.

In his Keynote Address Prof. V.S. Ramamurthy, Secretary in the Department of Science and Technology (DST), Government of India, talked about the opportunities presented by the ICT revolution and stressed the fact that the opportunities that ICT's bring in are not universal. For although the new technology opened up a huge potential for connecting people — including women from the remotest areas of the country — much of these opportunities cannot be utilized due to a range of social and economic constraints. Also, while educated women are increasingly making use of the flexible work opportunities made possible by the new technology, there still exist significant obstacles in the career path of women in the ICT industry.

In the Indian context, multiple factors such as lack of connectivity, paucity of locally relevant content, inadequacy of information available in local languages, prevalence of illiteracy, affordability of technologies etc. constrain access to, and use of ICTs, thereby creating a digital divide between the haves and have-nots. Prof Ramamurthy highlighted the fact that even within the so-called digital divide, there is a gender divide which further marginalizes women, since social factors often manifest themselves in gender-specific constraints in use

and access that are faced by women within the households. He elaborated on some strategies that the Department of Science and Technology could profitably deploy to tackle some of these divides. In particular he made the following suggestions:

- Technical problems such as connectivity as well as language problems already have technical solutions. Efforts should be directed at utilizing these in a cost-effective, affordable and financially sustainable manner.
- Locally relevant content is generated best within the local context, through identification of specific local needs. Gender-specific constraints faced by women should be tackled through induction of information culled from grass-roots experience.
- The solution to the problem of developing adequate and relevant content would necessarily have to be bottom-up, rather than top-down. Otherwise, policies perceived as beneficial from the outside might in fact have unforeseen negative consequences on the ground.
- At the macro level, distinction between different categories of women had to be made to suit specific kinds of requirements. These could range from generating income generation for rural women through the deployment of ICT's at one end to Fellowship programs designed for women with advanced training in science and technology who may be facing difficulties after having taken a break from research and/or employment due to domestic responsibilities.

### **Morning Session: Presentations by research institutions and NGOs.**

**Chair: Ms. Aruna Sundararajan**

The Inaugural Session was followed by nine presentations on on-going or recently concluded projects highlighting the

nature and extent of gender differences in the impact of developmental projects using ICT's within the specific contexts of these projects. They also suggested how more 'gender-aware' project designs could have produced more equitable project outcomes. Presentations were made by research institutions and NGO's from different parts of India and some neighboring countries. The following paragraphs provide the gist of these nine presentations.

### 1. **A Gender Impact Analysis of Project Akshaya in Kerala: Institute of Social Studies Trust (ISST), New Delhi.**

Dr. Rajib Nandi of ISST spoke about the Akshaya project, a well known community based initiative of the Kerala IT mission, designed by senior bureaucrats and professionals, with an objective of promoting e-literacy and e-entrepreneurship in the state. The project was piloted in Malappuram district of Kerala in 2002. ISST had carried out two questionnaire surveys, one each for Akshaya trainees and Akshaya entrepreneurs, and had supplemented the survey information with several key informant interviews and case studies, in order to assess whether, and if so, to what extent, this high profile and 'gender neutral' project has had any gender differentiated impact on the ground.

Dr. Nandi outlined the gender differences in the socio-economic profiles of Akshaya trainees and Akshaya entrepreneurs. He noted that while there was not much difference in the socio-economic profiles of men and women trainees, there was fairly pronounced perceptual differences between the two groups. The differences between men and women entrepreneurs on the other hand were quite pronounced in several ways. While both faced a range of common problems, women entrepreneurs had to grapple with a whole range of other constraints that arose out of the fact

that they happened to be women working within a male dominated patriarchal culture. So although the research team had encountered a high degree of enthusiasm among several women entrepreneurs when they had just started off in the venture, by the time they were interviewed a second or a third time along the line, most were found to be subdued and depressed for a variety of reasons, a lot of which had to do with the fact that they were women.

One of the problems that had a gendered root was a significantly higher degree of incidence of indebtedness among women entrepreneurs. This phenomenon could be traced to the fact that while men could finance much of their initial investment requirements through their savings, few women could do so because they did not have access to family resources. So they had to take large bank loans. Thus while finances was a major worry among many, for women entrepreneurs the pressure was much more intense on an average.

Apart from the cases where husbands were virtually running the show, most women who for one reason or another, had to, or wanted to, strike it on their own, were fighting a lone battle, often with low, and dwindling moral support from spouses and families. Many had to battle adverse criticism from relatives and from the community. Constraints on mobility after dark due to fear of personal safety and social stigma associated with 'women who stay out late', translated into lower working hours for all the women entrepreneurs. Domestic responsibilities led to late opening in the morning hours as well, thereby resulting in potential loss of business at both ends. Some women entrepreneurs also had to deal with uncooperative male officials and colleagues.

Prof. Swapna Mukhopadhyay observed that the gender-differentiated experiences of Akshaya entrepreneurs suggest that if greater gender-awareness was present in the designing

phase itself, and if 'gender neutrality' of impact was not assumed from the beginning, then with marginally extra efforts, the project could have yielded far better results.. Such efforts could have taken several forms. For example, the agency of Panchayat coordinators who were put in place to mobilize community support for the project could have been utilized, at no extra cost, to address some of the problems that were being commonly faced by women entrepreneurs qua women. Then again, a forum for airing gendered problems and chalking out solutions in association with Akshaya officials for addressing the special needs of women could have been easily institutionalized within the structure of the project at no extra cost. This could have been done, without cost, alongside regular monthly and bi-monthly meetings which were part and parcel of the project design, and which were in effect monopolized primarily by male entrepreneurs for discussing technical and financial problems commonly faced by all entrepreneurs. Also, greater coordination at the Panchayat level could not only have solved the crowding in problem, it could also have addressed women specific issues, not merely in women-specific projects such as Kudumbashree, but also in supposedly gender neutral projects such as Akshaya. None of these would have cost much effort or financial resources. All that was needed was the awareness that while some of the constraints faced by all entrepreneurs are common, in case of women, not only do these get compounded because of their being the 'second sex', and that there are other, often potentially more crippling constraints, that women have to face that men do not; and unless these are addressed, there is no level playing field.

This otherwise well designed project provides a case of a missed opportunity. By harnessing the enthusiasm of the women entrepreneurs, many of whom were very upbeat when they had joined the project initially; Akshaya could have been instrumental in producing role models for other women in the state.

## 2. Project 'Nabanna': Change Initiatives, Kolkata

Mr. Suryathirtha Ray shared the experiences of the Nabanna project that aimed at spreading ICT access and use among poor rural women in Northern 24 Parganas district of West Bengal. The project was strategised through computer training for women in exchange for information dissemination to their neighbors. Based on the experiences of this communication, policy suggestions on both logistical and research implementation were made.

The gendered constraints of access faced by the women in the locality were the relatively high illiteracy rates, leading to low cognitive levels as compared to men, time constraints imposed by work within the households and restrictions on mobility imposed by male family members. To overcome the logistical problems of mobility, Mr. Suryathirtha Ray suggested that a decentralized approach should be adopted in setting up small ICT centres that were close to women's homes and also that there should be a training programme for young boys which would facilitate greater access to their mothers. He observed that multi-media format of content would be a suitable way of dealing with the language barrier problem and the problem of low cognitive levels.

Mr. Ray said that it was difficult to engage the women in research projects over a long period of time. In order to sustain their interest and ensure a more holistic approach, he felt that it would be better to integrate the project with government development programmes.

He said that attempts were made to design the content in a manner that would make it relevant for women. This included designing modules to provide information on topics such as anemia, dowry etc... Mr. Ray opined that content creation itself is a complex process and gender sensitive content

creation should be delineated as pre-project work with adequate research inputs on the needs of women.

Sustainability was another important issue raised by him. His suggestion was that user fees for provision of ICT based services to prospective users has to be part of the strategy set for long term sustainability. He felt that there is indeed a scope for this since this is in line with the positive trend of women wanting to set up their own centres in response to the demand for such ICT enterprises such as DTP services, DTP training etc.

### 3. **The 'Hole-in-the-wall' (HIWEL) project : Hole-in-the-wall Education Ltd., Delhi**

Dr. Ritu Dangwal presented a quick overview of the Hole-in-the-wall project through an informative video clip. The 'Hole-in-the-wall' project, under the supervision of Dr Sugata Mitra, had targeted primary education for underprivileged children through the use of Minimally Invasive Education in the form of rugged learning stations/computers, which were equipped with specially designed software and located literally in several holes-in-the-wall in poor and disadvantaged localities to ensure unconditional access by all. The project started off initially in some Delhi slums and has now spread to several states in the country.

Ms. Leena De Chakravarty presented some of the key findings of the project. Initially the project was aimed at finding out if self-learning and skill development varied across socio-economic backgrounds. The unconditional access to the learning stations that had interactive content was with the objective of allowing self-organizing systems and collaborative peer learning to develop, simply through harnessing the natural curiosity of children to motivate exploration of the learning stations. Quite significantly, the project had found that no impact differentials existed among children, regardless of their

gender or socio-economic backgrounds. The success of this pilot study has led to replication across 40 sites in the country.

The aggregate findings suggest that the exploration, discovery and self-learning at learning stations motivated children at the individual level by developing their analytical skills and critical thinking, which in turn was transposed to the classroom when they went to school. The project has recorded many cases of drop-outs returning to school with a renewed interest in learning after the HITW exposure. Learning stations impacted as many as 300 children.

While the project had found no gender differences in the impact of HITW exposure, it was observed that in terms of knowledge flows, it was mostly the girls who became the connectors and leaders in enabling the multiplicative impacts on others.

### 4. **'Information Villages': M.S.Swaminathan Research Foundation (MSSRF), Chennai.**

Prof. S. Arunachalam of MSSRF opened his presentation by highlighting the need to emphasize people rather than ICT's, by looking at how ICT's can serve people in their specific contexts and needs, and how to reach the marginalised and include the excluded, such as women and girls. The 'Information Villages' project utilized a public commons approach whereby 'knowledge-centres' were made accessible to all, and livelihoods through various opportunities were created for people to help them overcome their impoverishment. The methodology to put this approach in operation was through facilitating the setting up of a platform for the entire community to voice their ideas on how best to utilize the centres, to articulate what specific kinds of information they required and finally to take a collective decision on how best the Foundation could operationalise these



ideas. In addition, there were village counsellors who gave counselling on various issues as and when required by the villagers. All kinds of technologies were used for this purpose.

Prof. Arunachalam said that apart from bridging the digital divide in this manner, the project had also addressed the issue of gender divide through the conscious attempt to draw in women into project activities from the very beginning. The success of this strategy was evident in many different ways: not least among them being the large proportion of women volunteers (70% of the total) in the project. Another indication of this was a sizeable number of women users of the knowledge centres. In some areas, women themselves have taken various initiatives on their own, such as publishing community newspapers.

In general, information were deployed for skill-building and capacity building, which could then be utilized in micro-enterprises, to set up Self-Help Groups, for provision of micro-credit facilities and collateral free loans. ICT's were being deployed to provide specific services with the help of volunteers, such as Telemedicine, agricultural extension services, organization of health camps, providing training in nutrition, disseminating information about organic farming and the like. There were training programmes specifically for women that were targeted especially to poor women. Prof. Arunachalam observed that this had increased their confidence levels quite significantly.

##### 5. 'Computer Literacy for Disadvantaged Children and Adolescents' (CLDCA) Project: Institute of Social Studies Trust (ISST), Delhi

Prof Swapna Mukhopadhyay introduced the CLDCA project being carried out by ISST under the 'Gender and ICT' research module of the Gender Network. The objective of the project is

to measure in psychometric terms, the benefits conferred on disadvantaged children and adolescents as a result of exposure to computers and to assess whether any gender differences in these impacts of exposure exist between boys and girls. The study was piloted in the ISST Community Centre located in East Delhi. The project is a co-operative venture, with the Computer Learning Centre of the India Habitat Centre and several Delhi-based NGO's operating in poor communities in different parts of the city as partners. Prof. Malavika Kapur, retired Professor of Clinical Psychology at the National Institute of Mental Health and Neuro Sciences (NIMHANS) at Bangalore, who has been working with the ISST research team, presented a summary of findings from this on-going project.

Prof. Kapur presented data from the pilot tests carried out on twelve children from the ISST Community Centre. She noted that results of the three psychometric tests carried out on changes in *attention span*, *creativity* and *self-esteem* of these children before and after the computer training, suggest significant improvements in two of the indicators : namely 'attention span' and 'creativity'. But no significant changes were observed in the indicators of 'self-esteem'. This was contrary to the general belief that computer exposure necessarily enhances self esteem.

Results from psychometric tests carried out on close to three hundred children, roughly divided into equal number of boys and girls, from different disadvantaged locations in Delhi, along with various socio-economic indicators, are being processed currently. Prof. Kapur presented some preliminary results emerging from the analysis of this data set. Such analysis also tends to reinforce the findings of the more detailed pilot test, in that it suggests that the maximum benefit through computer literacy was felt in the enhancement of the attention span and the ability to concentrate. The preliminary results do not show significant improvements in creativity and more

particularly, in self-esteem. A more detailed analysis would be needed for assessing the impact on these attributes. In any case these are attributes, she said, that are generally harder to assess.

The tentative conclusions presented were as follows:

- There is need to study the results of the psychometric tests within a multivariate setting, for there are several factors in the children's background that can impact the test results. Computer training could be one of the relevant factors but it is obviously only one among many. The same applies for interpreting the gender differentials in the test scores. This underlines the need for gender studies to have a multi-dimensional developmental focus.
- Data from the larger sample tend to indicate that the advantages acquired by the girls fade out, relatively speaking, as they grow older. It is known that boys are born biologically more vulnerable than girls, but as children grow older, this initial differential advantage for girl children shifts with age and the gender-differentiated social environment. A preliminary analysis of the data seems to reinforce this trend.
- The data also suggest that single interventions cannot impact all domains: computer literacy alone is not the panacea for all ills. There is a need for multiple interventions within a holistic set-up for effectively addressing the gender question.

#### **6. 'ICT and Gender in Vietnam': Institute of Economics. Hanoi, Vietnam**

Dr. Le Thuc Duc made a presentation on a study of 'ICT and Gender in Vietnam' which is being undertaken by the Institute of Economics in Hanoi under the 'ICT and Gender' module of the Gender Network research agenda. The study

has tried to assess if ICT has helped to narrow the gender gap in Vietnam by utilizing primary data obtained from surveys of ICT workers and households in Hanoi and Ho Chi Minh City, supplemented by secondary data from various national and international sources.

The ICT sector in Vietnam is relatively small in comparison to India but considering the revolutionary nature of ICT's Dr. Duc felt that the possibility of significant impacts across gender was high. He substantiated this possibility with an overview of the gender-differentiated outcomes in the ICT sector. In terms of education, girls were less likely than boys to choose science streams. Women employees were paid much less than men in the ICT sector, had shorter and more flexible terms of contract and faced lower chances of promotion. A greater proportion of women felt a sense of economic insecurity, in terms of the threat of being laid off without notice, than men. Considering work burden within households, women had greater overall work pressures than men, as they worked twice as much as men at domestic chores. Outside of education and employment, female usage of ICT's was quite significantly lower than male usage with only 15.8%, 12.3%, 9.4% women using mobiles, the internet and computers respectively as compared to the corresponding 57.1%, 33.8% and 20.4% by men.

Despite the obvious gender-differences in the ICT industry, Dr. Duc said that given the positive attitudes of women towards ICT's in his sample, Vietnamese women seem to have a bright future. A majority of parents took a positive view on education per se and technical/ICT education for their daughters. Almost 95% regarded ICT employment as providing good work opportunities for their daughters. Urban boys and girls displayed almost similar degrees of enthusiasm to ICT's and the uses of ICT's.

Dr. Duc concluded by saying that there was no support to the claim that the gender gap within the ICT sector had widened in Vietnam over time. In fact the present study shows that it is narrower now than it was a few years earlier, if data from previous studies are to be believed. However, if one leaves out the city women who have had a chance to be employed in the ICT sector, ICT has had no impact on women in general. There were very limited number of examples of ICT being used to help the poor and by implication the poverty reduction impacts of ICT's must be limited.

### **7. 'ICT and Gender in Sri Lanka': Centre for Women's Research (CENWOR) Colombo, Sri Lanka.**

Ms Leelangi Wanasundara of CENWOR made a presentation on the study being carried out in Sri Lanka as part of the 'ICT and Gender' module of the Gender Network research agenda.

The study was being carried out at three levels. Household surveys and case studies at the micro-level study were not yet completed but preliminary findings suggest that despite the development that has taken place, wide disparities between the two genders continue to exist. However, it was encouraging to observe that there was a basic level of awareness of computers, ICT's and their uses in both rural and urban areas, with no significant gender gaps.

In their analysis of sectoral level parameters, the CENWOR study has found fairly significant gender differences along various dimensions. University enrolment of women has increased over time, but it is still not on par with men. The gender differences are especially glaring in enrolment for science and technology subjects. The choices in education are reflected in employment profiles. Only 18% of all ICT professionals are women, who are mostly concentrated in software and teaching jobs with very few in technical areas or

decision making positions. Women prefer to work in the public sector despite lower salary and perks due to lack of adequate facilities like transport and child-care in the private sector and the double work burden created by high pressure career demands and domestic responsibility.

The macro level scenario in the ICT sector shows that the government has been trying to reach out to rural areas primarily through the establishment of Knowledge Centres which were assumed to be "gender neutral". The absence of gender awareness gets manifested in several cases of rejection of applications from women's groups with appropriate experience in favor of individual entrepreneurs. However a number of women's NGOs have been gradually moving into the field. There is an NGO initiative of taking Wi-Fi into certain villages, and the new technology is being used to address women specific issues. Despite this, there were gender-specific problems that emerge in implementation, which get manifested in choice of location for knowledge centres that are not conducive for women's participation. There are cases where women's access to these centres has been severely constrained within highly male dominated social dynamics of the village.

National policies in general made no specific allowances to women. These need to be re-formulated within an overall gender-equity framework. The policy suggestions she made in this regard were as follows:

- While government officials are open to suggestions, understanding and awareness on gender issues was low. Thus there was an urgent need for gender sensitization. In order to achieve some concrete results, strong advocacy was required.
- Schools needed to have career counseling for girls as these were among the primary sites where conventional socializing took place.

- Gender-Specific content development must proceed side by side the development of infrastructures in order to ensure continuity of demand.

### 8. 'ICT and Women's Work in Asia': Cecilia Ng, Malaysia.

Ms. Cecilia Ng, an independent consultant on issues of Gender, Technology and Development, presented an overview of various discourses and policy concerns regarding the implications of ICT's on women's work and empowerment in the context of globalization in Asia. She stated that there seemed to be agreement that the contexts of ICT driven globalization did not guarantee the reduction of either socio-economic inequities between countries and along various dimensions of identity such as regional, class, gender, caste, ethnicity etc or the skewed balance of power among various stakeholders.

Considering the increasing concentration of the power of ICT's in the hands of few big corporation from the North, insufficient policy interventions would lead to acceleration and a worsening of inequalities and the balance of power. There is evidence to show that the gap between the ICT literates and illiterates corresponds to gaps in society between better and less educated, between better and less paid, between urban and rural areas, between men and women. Hence the first policy concern should be methods of dismantling the control and ownership of big corporations over ICTs, in order to ensure greater equitable and democratic participation in decision-making and the enabling of women, particularly the disadvantaged. Cecilia Ng Choon opined that this was possible through a rights and non-discriminatory approach to development where excluded groups could be identified and trained to become equal partners in conceptualizing, designing and implementing ICT policies and hence agents of change and development.

The second area of concern, outlined by Ms Cecilia Ng Choon, was the methods of empowerment of women in the context of ICT and work. Feminist research of the eighties in this area pointed out that despite technological changes and advancement, unequal division of labour in both the productive and reproductive spheres have proved to be resilient, whereas the research of the nineties displayed how upgrading technology did not lead to any improvement of women's position in the technological occupational hierarchy and actually resulted in increased occupational segmentation. In contrast the recent research displays a certain optimism regarding the scope of empowerment of women in the workplace.

Ms Cecilia Ng gave an overview of many research studies in Asia to show a far more nuanced and complex picture and contested the 'feminization of labor' standpoint:

- In the Philippines, the nature and structure of ICTs and ICT work, particularly in the software industry required the presence of people with non-technical and multi-disciplinary background that was more conducive to the entry of women into originally male spaces on more empowered terms and prevents the feminization of labour through a spectrum of factors.
- The nature of work in the Indian IT industry meant a certain individualization of capacities that increased women's capabilities to take decisions, construct more spaces to enhance their agency. Ensuing economic empowerment meant a greater degree of negotiating power within the household.
- In the Malaysian context, there was a flatter management structure within the IT industry with the recognition of workers rights to a secure and safe working environment as well as important considerations to enhance social and gender equity in both rural and urban areas. Despite this

a majority of women were stuck at the lower end of the value-added chain with few opportunities for skill improvement and/or promotions.

- Research in the IT Enabled Services (ITES) sector show that the opportunities are a double-edged sword with increased opportunities and scope of empowerment on the one hand, and a reinforcement of femininity through explicit rewarding of the 'soft skills' of women on the other hand.

In conclusion, Ms Cecilia Ng Choon underscored that policies concerning women and work must take into account the increasing flexibility of labour in the ICT sectors that was reflected in greater casualization and contractualisation; because they implied newer forms of labour contracts that were not covered under existing legislation. This necessitates a review of various legislations with respect to the following questions,

- How can the various terms of different work situations and different work modalities be incorporated to ensure a fair and safe working environment for women and how can the negative market trends under globalization be countered? Such a review must involve the principal stakeholders namely workers and the management.
- Since women workers are most affected, how can they participate in the formulation of ICT policies that are integral to the advancement of the industry?
- Given that we are looking at a human resources fix rather than a technological fix, the laws must protect and enhance the rights of the workers themselves, protect and enhance the existing benefits of full time employment and particularly how do we protect those in home based locations of production, many of whom would be self-employed worker in low end jobs?
- How do we have policy and training programmes that build women's capacities so they can benefit from ICT's?

- Research has evidence that the longer hours put in by women at economically unsound workstations due to their position at the lower end, has adverse health and safety implications. Hence the safety and health dimension must be addressed.
- Finally, how do we ensure that the spread of ICT skills are expanded so that the number of ICT illiterates is reduced to a minimum? How does policy identify target groups in way that ICT knowledge and skills can be promoted in the spirit of continuing life-long education?

#### 9. "**Sectoral policies from a gender perspective**": IT-for-Change, Bangalore.

Ms. Mridula Swamy from IT-for-Change started her presentation with a quotation from Prof. Gita Sen which averred that the positioning of women, who are workers in both productive and reproductive spheres, make them most vulnerable when the two spheres are placed in contradiction to each other and benefit them most when the two spheres are better integrated. National ICT policies failed to adopt such an understanding or to concretely address women's developmental concerns.

Ms. Swamy said that IT departments have promoted IT and IT enabled services single-mindedly as an engine of growth, with the underlying assumption that market driven expansion of the ICT sector would be the most appropriate policy. Market-oriented policies focus on economic efficiency with the result that technology is seen operating in a 'sterile' environment without any consideration to the specific socio-political contexts it is situated in. That increased inefficiency and reduced costs will be extended to groups excluded thus far is seen as an inevitable outcome. Such primacy given to competition, efficiency and cost are at cross-purposes with developmental strategies aiming at universal access and

connectivity, enhancement of human capabilities and advancement of locally and culturally relevant content. Given women's critical position in both spheres and given that market-oriented policies generally fail to take into account particular needs in development, empowerment outcomes will be uncertain. There are studies which provide empirical evidence of this phenomenon.

The political context of areas related to ICT's such as security, privacy, regulation, right to information and IPR's also impact the manner in which ICT's reach the poor, particularly women. Taking the right to information as an example, Ms. Swamy emphasized that poor, rural, low-caste women with historically no access to information such as government records, documents and accounts, are incapacitated to question the government and demand basic entitlements. She welcomed the recent initiatives by government agencies, to computerize records and disseminate budget related information on the internet, as steps in the right direction but pointed out that the success of these initiatives relied upon the existence of strong legislative procedures that ensured citizens the right to information. Even the converse situation of the existence of legislative procedures alone is inadequate for greater accountability if citizens cannot rely on access through means such as ICT's.

Ms. Mridula Swamy also addressed the issue of mainstreaming ICT's into sectoral policies of health, education, governance etc which has led to various e-services that present an opportunity to overcome those structures and institutions that have traditionally prevented the poor from attaining basic human development. Mainstreaming ICT's into government services have indeed led to increased efficiency of services provided and reduced the cost, time and distance needed to avail of the services. However an analysis of these initiatives from a gender perspective fails to reveal how they have

impacted upon women in relation to men. The fundamental problem with ICT mainstreaming efforts is a lack of harmonization with previous gender mainstreaming efforts, implying a need for greater convergence between the two. This is needed in order to ensure that government services not only reach the poor in an efficient and affordable manner but also that they benefit both women and men equally. Such a "double mainstreaming" needs to be contextually relevant and locally defined, by keeping in mind both the socio-political-economic environment and the structure of unequal gender relations within which the new technologies are being integrated into, in order to result in effective and meaningful social change.

She concluded by saying that technology cannot be assumed to be gender neutral as technological changes are taking place in dialogue with, and within socio-political-economic contexts. Empowerment outcomes for women depend on how the risks and challenges thereby presented are addressed and how opportunities are claimed within the given context.

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During the Lunch Break that followed the presentations, children from the ISST Community Centre presented a street play, *The Girl Child*, for the seminar participants. As a mark of appreciation, on behalf of the audience, Prof. Arunachalam gave away some presents to the children at the end of the performance.

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**Afternoon session: Panel Discussion, Open Forum  
and Policy Issues**  
**Chair: Prof. Subbiah Arunachalam**

The afternoon session opened with a presentation by Dr. Vinay B. Kamble, Director, Vigyan Prasar and Advisor,

Department of Science and Technology, Government of India, on a description of the existing infrastructure and Programmes of Vigyan Prasar and how these could be made gender sensitive. This was followed by a Panel Discussion with Ms. Aruna Sundararajan, erstwhile IT Secretary in Kerala and presently with Global e-schools and Communities Initiatives, Dr. Arun Mehta, Managing Director, Indata Private Limited, Dr. S.R. Dass, Advisor, Department of Information Technology, Government of India, and Dr. Vinay B. Kamble, Director Vigyan Prasar. Prof. Subbiah Arunachalm of M.S. Swaminathan Research Foundation chaired the Session.

Taking off from where Prof. Ramamurthy in his Keynote Address had left, — whereby he had underlined the enormous potential of the new technology to connect people across the country in innovative and interactive ways, — Dr. Kamble spoke about the potential of utilizing the wide-ranging technology-based infrastructure that the government already had in operation for addressing the issue of gender bias in society and suggested different ways in which this can be done through the existing programmes of Vigyan Prasar, one of the largest autonomous agencies under the Department of Science and Technology dedicated to the promotion and popularization of science across the country. He outlined the various instruments and interactive programmes reaching all corners of the country that can be garnered to address the problem of the secondary status accorded to women in Indian society.

Dr. Kamble observed that this is all about changing mindsets, and admitted that changing mindsets is not an easy task. His own experience in promoting scientific temper in people, he said, had been fraught with frustration. He said that in the case of changing people's mindset with respect to gender discrimination, the scientific community and government officials will need help from those who are more aware of these issues. The main concern therefore is to get adequate inputs for designing programmes that will be truly effective.

The panel discussion on policy issues started with Ms. Aruna Sundararajan's presentation. Ms. Sundararajan observed that in order to tackle the gender questions, it was necessary to have a nuanced view, for there were both positive and negative trends that need to be taken into account. On the one hand ICTs have been seen to be associated with alienation, exclusion and social conflict. On the other, they are potentially highly adaptable, and perhaps the least inherently gender insensitive of all technologies. With intelligent handling, they offer an enormous potential for leapfrogging social barriers. Properly utilized, they provide opportunities for women's empowerment in all kinds of ways.

With regard to policies, she strongly held the view that access to technology was a question of entitlement: that everybody, especially those from the marginalized sections of society, had a right to access to new technologies such as ICT's. Affirmative action was needed to correct the already existing societal imbalances. She observed that in Government Committees and Commissions on ICT4D Programmes, there was always a sizeable representation of industry, but hardly any representation of gender interests. In the hundred odd recommendations advanced by the National ICT Task Force, while there were recommendations covering access, content, education, privacy and security issues, not one recommendation had mentioned the need for affirmative action to counter gender-based inequalities. This, she said, was a sorry state of affairs on which action was urgently needed.

Dr. Arun Mehta was in agreement with Ms. Aruna Sundararajan. He observed that like women, the other group that was completely absent from official reckoning in matters relating ICTs were the disabled. Corrective action was urgently needed on both fronts, he said. Dr. Mehta also had some interesting observations to make on women's relatively low participation in high end ICT sector jobs. He argued that this

was not due to women's inferior abilities, because there were many women who had led from the front in the development of the sector in earlier phases of the growth of ICT. He argued that the low participation was due to women's own preferences, given the long and irregular hours of work that top end ICT jobs tend to demand. Thus the ICT sector was not a sector closed to women but rather one that women had vacated.

Dr. S.R. Dass, Advisor in the Ministry of Information Technology, however, said that despite the evidence presented in the morning, he would continue to hold the view that ICT's are indeed 'gender neutral'. This is because the technology was there for anybody who might want to use it, independent of their sex. He felt that if women were lagging behind ICT use compared to men, it was because of lack of adequate motivation and initiative by women. Educated and trained women should come forward to use the new technology. If they did not, they did so out of their free will. Dr. Dass added that social issues like 'gender' are issues that are best left to other departments of the government that are geared to addressing to such issues because the underlying reasons for women's backwardness are socio-economic in nature and not technology oriented. He maintained that financial and other kinds of assistance by the government on increased use of ICT by women were neither advisable nor sustainable, and that gender neutrality was not on the agenda of the Department of Science and Technology. Nevertheless if women came forward with good proposals and initiatives, the Department will be willing to consider them.

Dr. Dass's views evoked several counter arguments and comments from the other Panelists as well as from the floor. Ms. Aruna Sundararajan, one of the Panelists and also the erstwhile Secretary of IT in the state of Kerala which had launched several ICT4D projects in recent years, felt that the statement 'technology is gender neutral' was a vacuous proposition, for like all technologies, ICT's per se did not

discriminate between genders. It was the uses and impact of ICT's that one should be looking at, for in the current context, these are far more relevant and meaningful concepts. She pointed out that since the forces that controlled the production and dissemination of technologies were not going to use to subvert their own power bases, they were not going to be concerned with issues such as equitable distribution or human development. Hence the central question to be asked is "Who controls the production, distribution and dissemination of technologies and how does one go about enlarging the spaces of engagement of women with the production, dissemination and usage of ICT's?" ICTs are important she said, because they are the driving motor of globalization: continuously transforming the social and economic landscape of the nation.

Prof Subbiah Arunachalam, who chaired the panel, highlighted the main points that had been brought up in both the morning and afternoon sessions up to that point, by demarcating between points of agreement and points that could be further debated upon.

More or less everyone was agreed upon the following:

- Need to create better access to technology, its affordability and ensure greater use through locally relevant content that was in local language and through greater and more equal participation by recipients themselves.
- Need to focus on women-relevant applications while using ICT's for development to ensure that benefits are equally distributed between men and women.
- Need to have stronger legal provision on issues such as privacy, security on the one hand and ensuring transparency, wider access through efficient procedures on the other hand
- Need to have affirmative action in areas such as education, employment and policy-making to ensure equitable



participation across gender and affirmative policies to ensure quality of services, education and employment from the ICT sector.

The points that engendered further debate were:

- The role of the state: Should the role of the government be a catalytic one of providing only the initial impetus/ investment to mobilize other stakeholders to carry on or should the government be involved in a far more substantial way.
- Whether the lower number of women in the ICT sector was a result of bias/discrimination or out of the preferences of women themselves?

With respect to the last point, Prof Arunachalam countered Dr. Arun Mehta's argument that women had vacated the profession due to a lack of interest in the field by pointing out the existence of evidence to the contrary. There have been young women taking up high technology-jobs in the ICT sector in China and in some of the former Soviet Union countries and there was no reason why Indian girls shouldn't pursue high technology careers in the present day. Prof Arunachalam then proceeded to open the floor for discussions.

Several participants argued against the views presented by Dr. Dass. It was pointed out by some participants that peoples' lives are not compartmentalized in line with Government Departments. Social problems leave their mark in virtually all facets of human existence. Gender bias was one of the major social scourges that continued to plague Indian society. Scientists and officials as responsible members of society needed to acknowledge the problem and be open to possibilities of innovative ways of countering the scourge, to the extent possible, within their own spheres of activity.

It was noted that by dint of its enormous reach and connectivity, the new technology had the potential to address social issues like gender; and that this could be done with virtually no additional costs by using the already existing official ICT infrastructure in innovative ways as Dr. Kamble's presentation has clearly indicated. It was felt that much more than any financial commitments, what was sorely needed was an open mind and creative ways of thinking on how best to utilize the enormous scope that the existing official infrastructure and programmes provided in for addressing pervasive social problems. This could be done with creative ways by bringing together the complementary skills, knowledge and expertise of both official and non-official agencies.

Prof Arunachalam suggested that Mission 2007 which is based on a loose alliance of multiple stakeholders can provide a viable model for integrating different skills needed for the job. This is especially true for channelising ground level insights of NGOs and research institutions into the making of innovative programmes on gender that could use the government infrastructure.

Ms. Cecilia Ng presented a summary of policy recommendations that emerged from the day long deliberations. In her presentation, she highlighted the need for genderization the gender sensitisation of ICT projects and development of a holistic conceptual framework to address gender and other social divides. The possibility of utilizing existing institutions, mechanisms and ICT infrastructure in addressing gender divides was also discussed.

Prof. Arunachalam reiterated the need for coordinated efforts involving multiple stakeholders in order to effectively address gender based issues in ICTs. Dr. Arun Mehta suggested that disability should be added with other manifestations of social inequality such as caste, class, ethnicity and gender in

designing ICT4D projects. Ms. Sundararajan stressed the importance of ensuring adequate representation women's interests in the official bodies geared to ICT4D policies and programmes.

The meeting ended with a Vote of Thanks.

## Appendix III

### List of Participants

## A National Seminar on Information Communication Technology Policies

in the context of  
**Gender and Developmental Divides in India**

Magnolia Conference Hall, India Habitat Centre, Lodi Road,  
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September 9, 2005

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