
mujer y desarrollo

The new information technologies and women: essential reflections

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policies within ECLAC and sectoral ministries"

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Summary

Although in Latin America and the Caribbean there is growing concern to take into account the issue of gender in public policies, this process is still embryonic and fragmented in the case of economic and technological policies. The Women and Development Unit of ECLAC is therefore implementing the project "Institutionalization of gender policies within ECLAC and sectoral ministries". The objective of this project is to strengthen technical policies, strategies, tools and capacities, both within ECLAC and in selected countries of the region, in order to encourage equity between men and women in the process and benefits of development, especially with regard to economic and labour policies.

One of the activities of the project, organized by the Women and Development Unit together with the International Trade Division of ECLAC and the Centre for Women's Studies and Social Gender Relations of the University of São Paulo, was a meeting of experts on "Globalization, technological change and gender equity" in the city of São Paulo, Brazil, on 5 and 6 November 2001. The purpose of the meeting was to discuss the most relevant aspects of the opportunities and restrictions imposed by the processes of globalization and technological change, with the aim of proposing areas for research, as well as an agenda of public policies that would help to achieve equity.

This document was presented as a background study for the discussion at the meeting of experts. It is clear from the text that the new technologies are taking us into a dizzy time of new exclusions, and that in addition to being a material reality they are also a discursive product with effects on institutions, public policies and individuals. The study reviews an extensive amount of theoretical literature, as well as most of the research concerning the inclusion and relationship of women in connection with the new information technologies and skills.

This review identifies the major obstacle to reinforcing the potential positive impacts of the new technologies as the lack of information on how they, and especially computers, can help policies, and also individual women, to achieve their goals. It is also shown that we are dealing with two disconnected concepts: the information society and the information economy, and the gender perspective is presented as a means of linking them.

As for the impact on social and gender equity, and the current digital divide, according to this document research is needed on more than access alone. There is patently a need for policies to regulate and democratize the new information and knowledge technologies, and it is important to analyze the collective imaginary that is being constructed around them and the different forms of subjectivity that the Internet is encouraging, within a perspective of the future and of changes in social relations.

I. Introductory points

Technological revolution, information revolution, digital age, information society, information economy; all of these concepts have installed themselves at great speed and with surprising ease in the broadest range of discourse and areas of society, generating the usual phenomenon of familiarity and "ordinariness", which is a condition and effect of the processes of reaching a consensus in a specific socio-symbolic order.

Although many people do not have a clear understanding of these concepts, their scope, the differences between them, and even less of the impact that they are having and are likely to have in the future, these concepts have managed to acquire a huge amount of symbolic and imaginary power in representing "the great epoch-making change", the emergence of a new phase in civilization and in the possibilities of the human species. They may be said to be occupying the space left by the great narrative goals of modernity, recreating, almost like a return to something repressed, the aspirations of unlimited progress, the value of reason incarnated in science and technology, and the ideal of universalism, equality and even justice.

The majority of its supporters, and also detractors, fail to escape from this all-embracing attitude. In all cases, a profound and hitherto unheard-of change is claimed to be occurring at all levels of what we understand as reality, and technological progress is playing a central role. It is agreed that the new information technologies are producing accelerated changes in the forms of production, the labour market, consumer habits, education, the economy, politics, health care, spirituality, entertainment and both social and intimate relationships.

There are positive visions, some of them even openly triumphant, that emphasize the democratic potential and liberating virtues of the Internet. They invest it with the capacity to meet the long-held and frustrated desire to achieve broad-based and active citizens' participation, facilitate political mobility, give a voice to marginal groups, strengthen civil society through NGOs and ensure enhanced levels of transparency, efficiency and representativeness of governments by linking them electronically with society. Communication is making a huge contribution to the development of a global consciousness, by exposing individuals to different cultures and ways of life, and it provides a space for experimenting with connections and identities and the creation of utopias.

As at any time of technological change, there is no shortage of those who denounce its dangers and negative impact, to a more or less extreme degree. According to these critics, it will only serve to increase the consumer society, generate unemployment, increase social control over our private life, and produce cultural homogenisation and discrimination. The most hostile voices even claim that it alienates us with trivial games and thus prevents us from perceiving and reacting to the real problems of society, the issues that are really important in this new century: poverty, inequality, the huge concentration of economic power, corruption, violence, and the deterioration of human connections.

According to Paul Virilio, socialization takes place through language, and the first form of loving is through words. This social need is threatened by information technologies. He also questions the ability of the Internet to encourage citizens' participation, highlighting the negative effects of the speed at which information is disseminated and consumed. The tyranny of real-time communication tends to replace the citizen's thinking with a conditioned reflex.¹

There are certainly nuances within the two main trends referred to. In either case, however, the Internet functions as a symbol of society's future, or even "the future".²

It would seem that those who manage to occupy a space, however minimal, in this virtual world, will manage by associative logic to enter the social arena and by being included, will at least have the possibility of joining the path leading to the future. Those who do not do so can only be expected to act as guardians of civilizing values that are in danger of extinction, or as discarded and disposable outsiders.

However, as Schuler says (2000), although the Internet is a platform for change, it is not really known yet what type of changes it will bring. Although its development and expansion have certainly been very rapid, it has not been accompanied by sufficient studies or reflection that allow us to understand fully what is occurring in the relationship between this technology, the individuals that use it, those who do not and social change.

There are many discourses that over-simplify this link, moving towards a reductionist determinism of a technological or sociocultural nature.³ Neither view recognizes any active role for the users or even the designers of equipment and systems, and technology is assigned an omnipotent role in today's world.

¹ Paul Virilio, *Cibermundo, la política del peor*. Madrid, Ediciones Cátedra, 1997.

² The role of symbolizing the future has been shifting from one technology to another. Technological changes certainly allow individuals to project on them their own fears and hopes with regard to the future.

³ The former, inheritors of traditional scientific rationalism, conceive technology as a product of processes of scientific research, that develop in a way that is relatively autonomous of social, economic and political forces. Their understanding is that these products are introduced into society with significant impacts, both positive and negative. The opposite position claims the existence of a cultural or social determinism in scientific production, the socially constructed nature of technological products, their close link with historical and social circumstances and their interconnection with power relations.

This position is well reflected in an influential journal on the social effects of the electronic world. *Wired* uses as an epigraph the famous quotation of Marshall McLuhan (1967 and 1991), "The medium is the message", in order to state that the medium or process of our time —electronic technology— is reforming and restructuring our patterns of social interdependence and all aspects of our personal lives. It is forcing us to reconsider and reevaluate practically every thought, every action and every institution that we had taken for granted. Education, government, family, neighbourhood, work, and relationships with others are changing dramatically.⁴

Other thinkers, following the ideas of Anthony Giddens on the reflective nature of social life, in which the structure of actions is created and recreated by the same actions that make it up, are inclined to evaluate this technology using more complex and flexible categories.

Hakken (1999), for example, proposes the Technology-Actor-Network theory in order to describe the processes that are occurring in information technology and society. The human and technological element (hardware/software) is thus combined, forming a network that connects all actions. In this network, the distinction between humans and machines is less important than differentiating what are called actants and actors. The former are simply indifferent to informatics, or consume it in a passive manner, while the latter are capable of developing cooperative strategies and participating in various ways and at different levels within this network in order to transform it.

What are the possibilities of the network in relation to each of these positions? According to Schuler, 1.5% of web sites were commercial at the beginning of the 1990s, and by 2000 more than 60% had an economic purpose. This can be summed up by the very eloquent phrase: "interactivity is another name for shopping".⁵

The infrastructure of the future may concentrate on entertainment, and on the kinds of entertainment that produce the greatest profit such as sex, violence, and special effects, and give little attention to services to educate, inspire, or help communities to connect with one other and take joint action.

In the field of citizen's participation, the evidence from countries with established democracies, especially in the first years of the Internet, do not encourage excessive optimism, at least not in the sense of hoping that masses of people will automatically be transformed into social and political activists. The Web reaches those who are already aware and committed, and strengthens their capacities, but it does not easily reach people who are not accessible for other forms of political communication.⁶

The assumption of the Internet's broad circulation in connection with its leading or privileged role in the knowledge society has to be questioned. For the moment, generally speaking, it seems more reasonable to say that it transmits information to a greater degree than knowledge, encouraging a culture of data rather than of reflection or innovation. It has been compared to an electronic refuse dump, noisy and invasive, where it is not easy to find the pearls of intelligent and useful information which certainly do exist and should be there in much greater quantities.

It is well known that the benefits of this technology are unfairly distributed. The concept of the digital divide, which makes a distinction between technology-poor and technology-rich, reflects the initial inequalities that are profound, require a complex solution and depend on a number of factors. The latter include the structure of opportunities related to public and private initiatives in each country in relation to the availability of and universality of technological

⁴ *Wired*, 3.01, 1995.

⁵ Christine Tamblyno quoted by Krista Scott: *Girls need modems*. Master's thesis, New York University, 1998.

⁶ Norris Pipa: "The Worldwide Digital Divide: Information Poverty, the Internet and Development", a paper presented at the Annual Meeting of the Political Studies Association of the UK, April 2000.

education, the investment in science and technology, the costs of services and the regulation of telecommunications. There are also cultural attitudes regarding the use of computers and the information circulating in the network. Nor can we ignore the importance of a knowledge of the English language. A study of one billion web pages found that 87% of them are in English.⁷ There are also the economic and educational resources of individuals for managing information science. Lastly, but not less important, this technology brings obstacles that prevent individuals from all social groups from establishing a friendly, secure and above all, meaningful connection in accordance with their problems, needs and expectations.

All of the above leads us to agree with the suggestions of Kramarae (1993) and Postman (1998) regarding the need to maintain a cautious level of optimism about the Internet and its future potential.

Postman takes a path of vigilance and reflective criticism: technology should never become something too familiar. By keeping it at a distance, seeing it as something different, wonderful and threatening, we can make sure that it occupies an appropriate place in the world. In the author's opinion, it is not a matter of being in favour or against it but rather of maintaining the discussion of ideas, if the real purpose is to protect its innovative potential.⁸

This constitutes the guiding spirit of this document. We intend to consider some of the various aspects of this complex phenomenon of the relationship between gender and the Internet, concentrating on a description of the issues and on the theoretical and political debates that are emerging, the information base that is accumulating, current strategies and those that are considered relevant for the future.

⁷ See www.inktomi.com.

⁸ Tomás Maldonado, *Crítica de la Razón Informática*, Paidós, Buenos Aires, 1998.

II. Internet users in Latin America: how many are women and who are they?

By the end of 1995 there were approximately nine million Internet users throughout the world. By 2000 there were 350 million. Conservative estimates indicate that by 2005-2007, the total number of users will be at least 2 billion.⁹

Although this population of internauts is known to cover only one third of the planet, the penetration rate, at least in the developed countries, is extremely high (between 25% and 30%). The difference with the rest of the world is also enormous, however, as in the poor countries the rate is less than 3%.

This confirms that the digital divide continues to exist, although it is constantly changing. Sectors that were previously not connected are being added very rapidly, especially minority groups in the developed countries, such as the Afro-American and Latin populations of the United States.

The information available on the numbers of Internet users in Latin America is uneven and shows differences depending on the source and methodology used. While *Interfase*, a Uruguayan consultancy service, counted 10 million internauts in 1990, *Júpiter Communication* reports about 9 million for the same year. According to the latter, the growth index of network users in the countries of

⁹ M. Castells, "Internet y la sociedad red", 2001. See www.iigov.org/documentos/?p=6_0065.

Central America and South America is the highest in the world, even higher than in Europe and in some Asian countries.

The Latin American countries with the highest number of users in 1999 included Mexico, Argentina, Brazil, Chile and Colombia (table 1).

Although these data seem striking, it should be taken into account that only 1.8% of the total population of the Region used the Internet in 1999.¹⁰

For 2003 it is estimated that Latin America will have about 30 million internauts, which represents a growth rate of close to an annual 41%. Again, if we take into account the total population of the region, this high estimate amounts to only 6.8%.¹¹

Table 1
INTERNET USERS IN LATIN AMERICA PER THOUSAND INHABITANTS
(1994-2000)

	1994	1995	1996	1997	2000
Mexico	0.25	0.51	1.25	3.20	19.90
Argentina	0.13	0.53	1.23	2.64	26.12
Brazil	0.018	0.44	1.78	5.23	30.66
Chile	0.75	2.17	4.42	10.68	54.14
Colombia	0.11	0.21	0.88	2.32	17.13
Peru	0.024	0.12	0.74	1.91	16.84
Venezuela	0.088	0.19	0.44	1.72	23.01
World	3.18	6.03	10.28	16.91	53.01

Source: Internet Industry Almanac. Egil Juliussen and Karen Petska-Juliussen, March 1998.

The most recent estimates in the United States show that the number of Internet users as 92 million¹² and they reflect the significant progress made by women. While in 1999 they represented 46% of all users, in 2000 they accounted for 50.4%, and according to the forecasts, by 2002 would far outnumber the men.¹³ It may be assumed that this trend will be repeated in other countries, as is already the case in England, Germany, Australia and Canada.

For reference purposes, some information follows on the profile of women users, their patterns of web use, and the relationship of North American women to the advertising disseminated by this medium. According to an online survey directed at women (Women.com), 70% had a positive opinion of the Internet, could not imagine what their current life would be like without it, and above all valued the fact that it simplified their lives and helped them to save time. The survey data suggest the following profile for the average North American woman user:

- They are married women, aged about 30 years and with a high income.
- Over 50% make purchases online (especially clothes, books, CDs, travel) and prefer this medium to any other for finding product information.

¹⁰ A study by the StarMedia portal on the profile of the typical Latin American user showed that the latter has an average age of 29. In addition, 76% are employed and 83% have a credit card, which would indicate a medium to high income level. More than 70% have been connected to the network for about 12 months and spend about 9.7 hours per week online. Another study confirms some of these data and supplements the information with the statement that 51% are men aged between 15 and 39; they are connected for at least one hour per day; they have a high income level (about 60% have a family income higher than 20 times the minimum salary) and they intend to buy products through the Internet.

¹¹ Data Corp claims that the total amount of computer equipment in the region is less than the amount in Finland alone.

¹² Survey conducted by Commerce Net and Media Research.

¹³ According to Jupiter, in 2000 the proportion of women already exceeded that of men.

- Almost 90% use the Web to find information and make decisions concerning issues of health and financial choices.
- More than half have access to the Internet at work and also spend an average of nine hours per week online from their homes.

One piece of information that is very revealing is that almost one third of those interviewed claimed that, if they had to choose, they would prefer a computer to a telephone. More than one half use the Internet for their work, but also to find information on educational options and professional development. Interestingly, almost one half found their employment through the Internet.

Another survey of the behaviour of women online¹⁴ shows that the group that expanded the most from 1999 to 2000 are adolescents aged between 12 and 17 (by about 125%). They are followed by women aged over 55 and girls of 11 and 12 years of age.

In general, they tend to focus their interest on practical issues: they do not spend much time navigating around different sites but return to those that help them to save time and money and solve problems in the most efficient manner. In this respect, they are very different from men, who spend more time downloading software and are more interested in the technology for the sake of the technology itself, and in sites related to sex and sport.

Differentiating by age groups, the study indicates that the sites most often consulted by women aged 24 to 35 are those that offer information, advice and resources relating to child care, motherhood and health. These women are also interested in careers or education outside the home.¹⁵

Women aged 25 to 34 years seek pages about child care. Girls aged 11 and 12 visit sites relating to television, music and school issues. From 12 to 17, they are interested in fashion, shopping, and also in music.

The only age group that has slightly decreased its participation in the Internet is that of women aged 18 to 24 years. According to the research, these women spend more hours studying and when they navigate the Web they concentrate on sites that sell textbooks or university-related products.

Women aged between 35 and 40 years select pages related to vitamins, medicines, dietary supplements, pet care, food products, cosmetics, chocolates and also family and community issues. A group that has increased significantly is that of women aged between 45 and 54 years (about 53% in 2000). They are interested in shopping for clothes and shoes, hobbies, recreation, gardening, travel, and the care of the elderly. Women aged over 55 have also noticeably increased their participation (by 110% in 2000). They are mainly concerned with issues of genealogy, health, entertainment and humour.

Apparently, commercial sites for the general public are the most popular, but there are others aimed specifically at women which are becoming increasingly popular. Examples are ClubMom.com, Women.com, Oxigen.com, Women'sWire.com. Some of these, including Oxigen.com, disseminate progressive ideas on the different roles of women in society and include feminist images and information.

¹⁴ Carried out by Media Metrics and Jupiter Communication, It's a women's world wild web. Women's online behaviour patterns across age groups and life stages, August 2000.

¹⁵ The information from other countries is very similar. In England women mainly visit sites that sell virtual greetings cards, clothing or handbags. The same happens in France, and in Sweden, sites that sell books and travel are added to the list. In Italy, women are leading the technological revolution, mainly those in the south of the country, who have found in the Internet answers to their concern about the quality of life and family issues. This last piece of information was part of a survey presented in *Intel 2001*, the international electronics journal that was launched at the Milan Fair (a note in the newspaper *La Repubblica*, 2001).

As to whether these characteristics are the same for Latin (Spanish and Latin American) women, the following information emerges from the survey carried out by *Mujeres Latinas en Internet* (Latin Women on the Internet) in January 2000:

- They are mainly women aged from 22 to 35 years, with higher education.
- There are equal numbers of married and single women.
- On average, they spend five hours a week on the Internet, more than half of the women connect from their home and have one year of Internet experience.
- Most of them say they navigate for entertainment and only on a secondary basis for their work.

Despite the growth of the Internet in the industrialized world and its growing penetration in the developing countries, it is clear that only certain groups of women have access to this tool and it remains to be seen, at least in proper depth, to what extent or in what way Internet use will improve their social position, opportunities for employment and participation in social, political and cultural issues.¹⁶

Another relevant and critical point is the way in which the penetration of new technologies in the economy and the forms of production and labour affect working women as a whole, as well as women's working conditions in information services companies.¹⁷

The majority of analyses and proposals in this field consider the positive aspects and opportunities that new technologies offer for women's working and personal lives, for example the benefits of teleworking, flexible working conditions that are more compatible with family life, and also the opening of new opportunities for employment and education. At the other extreme there is the harm caused by jobs lost because of computerization, which affects women with low qualifications, the concentration of women in low-grade jobs as in the case of the electronics maquila industries, or in lower-level administrative technical jobs of the same companies, pressures due to working hours that are long or are invasive of private or family life, health problems, and other issues.

Another aspect of research, of particular interest both for theoretical aspects and for its practical and political implications, is the understanding of women's experiences with the Internet. The question that arises is to what extent their interactions reproduce the same kind of gender patterns that circulate in the off-line world. Another option would be to assume that, on the contrary, this new technology and/or the historical framework of which it is part contains the potential to reverse, or at least to call into question, categories of gender, especially at the level of communication.

There follows below an overview of research findings concerning such issues.

¹⁶ Although some research has been carried out, to which we will later refer, it is certain that these subjects have not been analyzed to a significant degree, especially in Latin America.

¹⁷ An excellent and recently published paper on this issue is by Carla Freeman: *High Tech and High Heels in the Global Economy. Women, Work and Pink Collar Identities in the Caribbean*, Duke University Press, 2000. Although its observations are limited to Barbados, it provides important keys for understanding the living and working conditions of women in this industry and how questions of gender, class and culture are related. An earlier paper by Pilar Escario and Inés Alberdi is: *El Impacto de las Nuevas tecnologías en la Formación y el Trabajo de las Mujeres*, published by the *Instituto de la Mujer*, Spain, 1989.

III. Gender trails in virtual space: assumptions and realities

As of the end of the 1980s, and once the initial optimism generated by the expansion of the Internet and the initial increase in the number of women users had passed away, the detection and analysis of gender codes in virtual space came to occupy a position of priority on the research agenda of a handful of researchers in this field. Using various theoretical and methodological approaches, the majority of papers have studied just a few aspects of this phenomenon: the differences between men and women in their styles of communication and in the construction and presentation of their own image, their preferences in using the various tools offered by this communication network, and, as a special case, the images and values transmitted by video games and in the way in which they affect the technological skills of boys and girls.

Before presenting the most relevant findings, however, it should be noted that these papers are generally based on two opposing approaches with regard to the opportunities and consequences that this new scenario brings for women, as well as the role that they may or should assume within it.

On the one hand, there are papers that presuppose that online communication, in view of its intrinsic characteristics (greater degree of horizontality, less control, and especially the invisibility of the physical body) is more egalitarian than face-to-face communication, and makes it easier for women and other marginalized groups to express themselves in view of the softening of social barriers that persist in the real world.

On the other hand, there are those who claim that online interaction does not differ greatly from what occurs in society, and that in fact it is a reflection of society. They claim that the non-visibility of bodies and the potential provided by information technologies for anonymous interaction, hiding a gender identity or choosing another one, does not prevent users from revealing their gender in an involuntary and unconscious manner, without any visual or auditory clues.

Those who hold this view have exhaustively demonstrated that men dominate communication, introduce the most topics, and ignore or trivialize those introduced by women, and that they are much more numerous and influential than women in mixed spaces (chat rooms).¹⁸ They also tend to be more aggressive, and to use tactics of intimidation and sexual harassment towards women or to those who identify themselves as such. Their linguistic behaviour online recreates what happens off line: they are the ones who begin and end the discussions in mixed groups, express their opinions as if they were proven facts, can be authoritarian and use vulgar language—including insults—and in general confront the opinions of the other interlocutors, making a show of defiance, humour, and sarcasm.¹⁹

Dale Spender demonstrated that during a two-day period in which women sent more messages than usual to a mixed mailing list, the men expressed annoyance and some threatened to leave the group, accusing the women of controlling the discussion.²⁰ These facts agree with the observations made by this same researcher in 1989, who recorded that women were perceived as dominant when they spoke more than 30% of the time during a conversation.

For their part, women tend to send more personal messages, to attenuate and justify their statements, to apologize, show gratitude or appreciation and be considerate of their interlocutors and express their support, agreement or respect.²¹ They are more disturbed than men by violations of the rules: some women leave the discussion forum when this occurs, and others express their displeasure.

Courtesy is one of the characteristic features of the messages sent by women and in exclusively female forums or groups, there is an agreement to maintain a respectful environment.²² In general, women's online communities establish rules for participation that help everyone to participate in a balanced way.²³ Although this attitude is valued and valuable, it may also lead, as shown in a recent study, to a situation where women avoid raising controversial issues.²⁴

¹⁸ Susan Herring; "Gender and participation in computer-mediated linguistic discourse", Washington D.C., *ERIC Clearinghouse on Languages and Linguistics*, Document No. ED345552, 1992 and "Gender and democracy in computer-mediated communication", *Electronic Journal of Communication* 3(2), 1993, <http://www.cpsr.org/cpsr/gender/herring/txt>.

¹⁹ S. Herring: op. cit. and "Two variants of an electronic message schema" in S. Herring (ed.): *Computer-Mediated Communication: Linguistic, Social and Cross-Cultural Perspectives*, Amsterdam, John Benjamins Publishing Co., 1996; C. Kramarae and J. Taylor, C. Kramarae and M. Ebben (eds.): *Women, Information Technology, and Scholarship*, Urbana, IL, Center for Advanced Study, 1993; V. Savicki: "Gender language style and group composition in Internet discussion groups", *Journal of Computer-Mediated Communication* 2(3), 1996; L. Sutton: "Using Usenet: Gender, power and silence in electronic discourse", presented at the *20th Annual Meeting of the Berkeley Linguistics Society*, Berkeley, Berkeley Linguistics Society, 1994.

²⁰ Dale Spender: *Nattering on the Net: Women, power and cyberspace*, Melbourne, Australia, Spinifex, 1995.

²¹ K. Hall, "Cyberfeminism" in S. Herring (ed.), op. cit., 1996; S. Herring, op. cit., 1993 and "Posting in a different voice: Gender and ethics in computer-mediated communication" in C. Ess (ed.), *Philosophical Perspectives on Computer-Mediated Communication*, Albany, SUNY Press, 1996b; V. Savicki et al., op. cit., 1996.

²² K. Hall: op. cit., 1996; S. Herring: op. cit., 1996b.

²³ L. Colin-Jarvis: "Discriminatory messages and gendered power relations in on line discussions groups", paper presented at the annual meeting of the *National Communication Association*, Chicago, IL., 1997; M. Ebben: *Women on the Net: An Exploratory Study of Gender Dynamics on the socwomen Computer Network*, unpublished doctoral dissertation, University of Illinois at Urbana Champaign, 1994; E. Reid: *Cultural Formations in Text-Based Virtual Realities*, Master's Thesis, University of Melbourne, Australia, 1994, <http://www.ee.mu.oz.au/papers/emr/index.html>.

²⁴ June Lennie: "Empowering women in assessing an interactive community-based planning system: Towards an action-oriented feminist framework for theory, research and analysis", unpublished dissertation, Queensland, Faculty of Business, University of Technology, 1994.

These studies show that women participate more actively in spaces where the rules are controlled by a person acting as a moderator or facilitator, who has the responsibility of placing limits on the content of messages, if they are insulting or offensive.

The same is shown by studies of interaction in virtual classrooms. The female students participate more actively—in some cases even more than the men—when there is a monitor in charge of the class, even if the monitor is a man.²⁵ This presence seems to reassure them that the climate of interaction will be respectful, free from threats of harassment, and that they will be protected from the men's constant interruptions or attempts to monopolize the conversations.

This need for reassurance should not be interpreted as a weakness on their part, but as a sign of the failure of self-regulation of Internet exchanges to make equitable participation a reality. As has been seen, when they are left to their own devices, certain individuals who are more assertive, or even more aggressive, occupy the space. According to the studies, these are mainly men. But we do not discard the possibility that this is rather a traditionally "masculine" style of communication, which some women may also take on by affinity or as a tactic to make themselves heard.

This assertive, imposing style tends to discourage the participation of many women in mixed interactions, while their concern for courtesy, or for complying with the rules of exchange, is perceived by men as a lack of spontaneity²⁶ or much worse, as a restriction of the freedom of expression.²⁷

These features seem to confirm the net differences in the values and modalities of communication among men and women, which operate in virtual space as a limitation for joint interaction, which is a very debatable concept.

Other studies, however, add nuances to these statements, taking into account the type of group. It has been verified that minority sectors in an online community generally modify their behaviour by assimilating it to that of the majority. For example, women tend to act in a more aggressive or authoritative way in an online group that consists mainly of men; and men are less authoritative and offensive in groups where women predominate, while this is not the case in groups controlled by their gender peers.²⁸ This suggests that the more homogenous the composition of the group, the greater its influence on the norms that regulate communication.

It has been demonstrated thus far that gender identity predicts certain online behaviours. Although we do not believe that these differences can be generalized and especially not used to prove absolute differences between the sexes, everything appears to indicate that they reflect frequent trends when all users are taken into account in certain contexts. In this sense, they are useful not only from the analytical point of view but also for reflecting on educational, institutional and political strategies that understand the equality of opportunities of men and women in the Internet as a process that goes far beyond mere access to a computer and its tools.

One of the network phenomena that has increased the most in the last few years is chat rooms. There are very interesting papers on this subject that focus on gender relations. In view of their particular dynamics, the chat rooms are more anonymous than the asynchronous groups, and

²⁵ S. Herring and C. Nix: "Is "serious chat" an oxymoron? Academic vs. social uses of Internet Relay Chat", paper presented at *The American Association of Applied Linguistics*, Orlando, FL, March 1997; S. Herring: "Ideologies of language on the Internet: The case of *free speech*", paper presented at *6th International Pragmatics Conference*, Reims, France, 21 July 1998.

²⁶ S. Herring: op. cit., 1996a.

²⁷ W. Grossman: *Net.wars*, New York, New York University Press, 1997, <http://www.nyupress.org/netwars/>; S. Herring: "The rhetorical dynamics of gender harassment on line", *The Information Society* 15(3). *Special issue on The Rhetorics of Gender in Computer-Mediated Communication*, ed. by L.J. Gurak, 1999.

²⁸ N. Baym: "Agreements and disagreements in a computer-mediated discussion", *Research on Language and Social Interaction* 29(4), 1996; S. Herring, op. cit., 1996b.

even encourage the participants to use pseudonyms.²⁹ For Danet (1998), these aliases function as masks that are an invitation for experimenting with identity in a playful and carnival-type manner, which may free users from the traditional dual nature of gender.

The information available indicates that women and men participate fairly equally in chat rooms, in terms of both the quantity of messages and their size.³⁰ Studies by Bruckman (1993) and Herring & Nix (1997) similarly show that participants who identify themselves with a feminine alias usually receive a greater number of replies.

This does not mean, however, that gender is invisible or irrelevant, especially in recreational chat rooms. Usually, after a time, questions are asked about the sex, age and geographical situation of the participants. There is also a gender element in the contents of the messages, the use of pronouns in the third person to describe their actions and the choice of alias.³¹

A study of discourse in the chat rooms carried out by Cherny³² in 1994 showed that feminine persons use vocabulary referring to affective situations such as hugging, affection, and icons of smiles and laughter; while masculine persons tend to use more violent words (for example "kill") and aggressive or insulting references, especially when they are directed at other men, and sexual references with the women. The latter reported choosing neutral pseudonyms in order to avoid sexual attention and harassment, while men who had chosen feminine pseudonyms had done so precisely in order to attract requests and interactions with a sexual content.³³

The very interesting paper by Amy Bruckman (1993) analyzes MUDs (software that creates virtual reality environments for multiple users, whose original purpose was adventure games, although recently they have been used in educational applications and in creating scientific communities). This author suggests, on the basis of a lot of research in this area, that feminine persons created during the game by participants of both genders, exhibit sexual attributes and behaviours and thus receive more attention from the group and particularly from masculine persons; also that they were offered more assistance for resolving technological problems. "The constant assumption that women need help can be damaging to a women's sense of self esteem and competence (...) Male characters often expect sexual favors in return for technical assistance". Bruckman, however, recommends these games, and has even created some for educational purposes, as they are a laboratory for experiencing the awarenesses and experiences that are the result of assuming different gender identities or no identity. Obviously, this depends on the games being accompanied by some form of activity or stimulus to encourage such reflection. They would be especially useful for schools and universities.

A fascinating initiative in this connection is the Turing Game, a game created by the Georgia Institute of Technology for understanding identity issues online. The game consists of a group of users pretending to belong to a particular gender and having to prove it before an audience. The rest of the participants have to try to discover the impostors by asking them questions and analyzing their replies.

In this general framework, one of the growing phenomena on the Internet are groups consisting only of women, while those exclusive to men are an exception. These feminine

²⁹ B. Danet, L. Ruedenberg-Wright y Rosenbaum-Tamari: "Hmmm... Where's that smoke coming from?: Writing, play and performance on internet relay chat" in *Journal of Computer-Mediated Communication* 2:4, 1997.

³⁰ S. Herring and C. Nix: op. cit., 1997; Amy Bruckman: "Gender swapping on the Internet", paper presented at INET '93, Reston, VA, The Internet Society, 1993, <http://www.media.mit.edu/pub/MediaMOO/papers.gender-swapping>.

³¹ S. Herring: "Virtual gender performances", Conference held at Texas A&M University, 25 September 1998b.

³² L. Cherny: "Gender differences in text-based virtual reality" in M. Bucholtz, A. Liang, L. Sutton and C. Hines (eds.): *Cultural Performances: Proceedings of the Third Berkeley Women and Language Conference*, Berkeley, Berkeley Women and Language Group, 1994.

³³ A. Bruckman: op. cit., 1993; S. Herring: op. cit., 1998b.

communities have very different aims and modes of functioning. We can find everything from commercial sites to encourage consumption, advice on services and/or interaction on topics defined as of feminine interest (health, family, art, shows, and in some cases social problems), to sites created by small or large women's organizations, universities, educational institutions or professional associations, as well as undertakings that are less formal and in some cases extremely creative.

With regard to the latter, it is worth mentioning a much quoted study in the field of literature. This is the work of Krista Scott (1998) on the visual and discourse content of alternative electronic publications produced by women and self-managed women's groups (e-zines). Particular reference is made to three examples that deal with issues of identity, activism and feminist politics: *Brillo*, which disseminates a more sophisticated and complex vision of feminist approaches and debates; and *Girlrights*, which aims to produce a more visceral level of consciousness and *Riot Grrrl*-style politics rather than academic theoretical analysis. Her intention was to review in what way the most widely disseminated theories on cyberspace and in particular cyberfeminism, are related to or appropriate to the verbal/textual and visual/iconographic content of those e-zines. More specifically, she attempts to show what type of messages women transmit in these spaces, in order to define on that basis future areas of research in relation to their online experiences and possibilities. As a complement to this discourse analysis, she conducted a number of online interviews with the women who created the electronic publications in order to find out their motives for doing so and their opinions with regard to cyberculture in general.

These experiments can be interpreted as forms of cultural resistance of women feminists online. They are characterized by experimentation with language, the selection of marginal issues, a provocative aesthetic and the intent to demonstrate the importance of women taking control of technology and its tools. Recreating the message of Virginia Woolf, they show the political need for women to have "a room of [their] own" (in this case a virtual room) in order to create culture. A space of one's own on the Web has the potential not only for disseminating ideas, but also for motivating women to create and disseminate them to the rest of the internauts, creating political and ethical aesthetics and proposals to confront hegemonies.

As Scott says, in addition to having gained a space to speak, women are using it as a political tool to demythologize the world of computers and information technologies and their symbolic systems. These initiatives are, for the moment, a minority issue and only known by an elite of educated, and in many cases already convinced, women. but they may inspire other similar searches, which are probably more attractive for young women.

Another aspect that has attracted research attention are the forms in which women and men present their self-image on the net. Taking as a theoretical basis the ideas of Goffman (1959), on the presentation of the self, the researchers Jill Arnold and Hugh Miller (1999 and 2000) analyzed the personal Web pages created by subjects of both sexes in institutional and commercial contexts, such as universities and consultancies, where women usually have more difficulty in gaining authority, credibility and status.

The study shows significant differences according to gender. The men's pages, especially of men who had achieved a high professional level, aimed to show their competencies and promote their knowledge on the basis of the institutional position reached, without much effort to show the history of their credentials or incorporate personal issues. The implicit message that was sent out could be summarized as "trust me, I'm an academic". In contrast, women's personal pages are more descriptive, with a complete listing of academic honours and degrees, with a more "friendly" style and also alluding to personal issues. Their implicit message could be read as "OK —well this is me— and this is what I've done".

There is also a difference in the visual presentation: many of the women's Web pages use images traditionally associated with the feminine such as flowers. Men's pages tend to use technical images, such as computers. The explanation may be that women in positions with a certain level of power or prestige tend to overact or exaggerate traditionally feminine characteristics (showing themselves as good, reliable and serious people) in order to be accepted, to convince others of their merits and to justify their position or to avoid possible attacks or competitive situations. This does not imply devaluing these features, but does call into question to what extent they are personal choices or inadvertent conditionings of gender.

The data presented seems to confirm the view of those who claim that, despite the battle being fought for access, women have not made much progress in leaving any trails on the information highway other than those traditionally expected. We are however facing a new and changing phenomenon and the studies available do not manage to cover nuances and processes that may be germinating and/or expressed in a fragmentary way, although we will say in their favour that they at least place an alarm signal for the "how" and "why" of the use of this technology. It is clear that women's interest in it is growing and it is therefore important to determine what new challenges must be faced and what measures taken in order to achieve a more advantageous "occupation" of this territory.

IV. Seductions and alienation in video games. The first steps in technological education

Electronic games for video or computer systems have become a very popular item among children and adolescents.³⁴ Some play a moderate amount, and others spend hours glued to the screen. Some teachers and parents see such games as valuable resources for learning about new technologies and for gradually acquiring a series of skills that will have a favourable effect on subsequent computer use. They even see possibilities for learning other skills, such as how to approach problems and resolve them rapidly. Others are concerned about the addictive behaviours that these games promote, isolation with respect to peer interaction and the continuous exposure to violent situations.

What is certain is that by their very structure the messages of video games penetrate almost without resistance into the minds of the children, although that does not mean that they directly affect children's behaviour. Generally such games are not used in schools. As in the case of television, video clips and other cultural products that are attractive to youth, they are not welcome in the majority of classrooms. There are however some educators who suggest it would be appropriate to use these objects of popular culture in school

³⁴ E. Provenzo: *Video Kids: Making Sense of Nintendo*, Cambridge, MA, Harvard University Press, 1991.

environments, and break down the walls that for centuries have separated the school from other socializing mechanisms.³⁵

Such use, however, must be assumed with responsibility, and be accompanied by educational interventions that stimulate the students to learn to decodify messages and discuss them and, in essence, to consider them as a commercial product that arbitrarily represents a particular vision of the world, to which there do exist alternatives.

A review of the research on these games shows that one of their key characteristics is indeed aggression, especially from violent male figures, which appear much more frequently than even on television.³⁶ In the majority of cases, women are either invisible, or are victims or aggressors. The same occurs with the scenes on the box covers, where most of the characters are men, many with aggressive or dominant characteristics.

In a situation that is semiotically marked in terms of the difference and opposition between men and women, being visible or invisible, dominant or dominated, privileged or excluded, powerful or weak, there are enormous implications for the structure of subjectivity and the perception of the place that each individual occupies in the world. This is why these "details" of a cultural product that is so widespread among children and young people are so important.

Apparently, girls' preferences and opinions on video games are different to those of boys. It is not that they entirely reject the violent games, and some even ask for them; but in general they consider them boring, too repetitive and lacking in an elaborate story or subject. Their favourite games are those based on adventures or stories where there are relationships and a plot. Some companies are offering alternatives oriented to the market of young and adolescent girls, but these are not their main priority.³⁷ The reality is that the video games market continues to be mainly directed at males, as a result of market studies that show that the more violent a game is the more sales increase. The culture of the Barbie doll has constructed a stereotyped gender picture which includes multimedia cultural texts, images and objects. The world of the video game offers more or less the same for boys and young men.

In that connection, video games of the Barbie type and in particular those for clothing design, have become the paradigm for the girl's electronic toy as far as adults are concerned and also in terms of child demand. Justine Cassell and Henry Jenkins (1998) show that although they offer a diversity of artistic stimuli, their level of interactivity is very limited. Traditional clothing can be designed (skirts, wedding dresses), but there is no encouragement for imagining less conventional attire such as clothing for a woman mechanic or police officer.

It is also known that girls tend to perceive computers as a tool for achieving a specific aim, while boys consider them as toys for recreation. They seem to feel comfortable or enthusiastic about experimenting and pushing back the technological boundaries and entering one violent game after another. Jones (1986) suggests that the greater use of computers by boys is related to the fact that computers are perceived as "belonging to the male domains of mathematics, science, electronics and machinery".

³⁵ J. Fiske: *Understanding Television*, London, Routledge, 1987 and *Understanding Popular Culture*, Boston, Unwin Hyman, 1989; C. Leggo: *Increasing Teleliteracy: Responsive and Responsible Television Viewing*, unpublished paper, Department of Language Education, University of British Columbia, Vancouver, BC., 1993.

³⁶ C. Braun and J. Giroux: "Arcade Video games: Proxemic, Cognitive and Content Analyses" in *Journal of Leisure Research*, 21 (2), 1989; E. Provenzo, op. cit.

³⁷ One initiative that is especially attractive because of its view of the world of girls and the quality and variety provided is Girltech.

One of the most complete studies on girls' interest in and ways of using electronic games, carried out in the University of British Columbia,³⁸ shows that they are more interested in computer games than in video games. Considering the latter as not productive, they do not give them so much time. Also, they prefer games that concentrate on characters and their relationships and, in mixed environments, they are more timid or less competent in using them, than when they are alone or with other girls. The boys take over these tools and do not easily give others a turn, which intimidates or upsets the girls, but they find it difficult to fight for their space, except by asking adults for help.

How can these patterns be changed? The attempts to create computer games for girls raises other concerns: what are the educational and social consequences of offering different games according to gender? Does this not reinforce inequality and validate exclusive ways of thinking, feeling and acting?

One of the paths that this leads to is the consideration of complex ethical questions relating to possible regulations for the entertainment or educational products that are offered to girls and boys and young people. As yet, progress in the debate on this issue is certainly insufficient and further evaluation and analysis are needed.

In particular, more studies are needed on the experiences of boys, and their likes and dislikes, and, in general, more attention should be given to considering the diversity of subjects and groups that are overlooked when we use a general category such as girls, boys or young people.

Lastly, video games can be a field for fascinating experiments to question gender stereotypes and other forms of discrimination, or to develop an understanding of social and political questions. Interesting progress has also been made in using them to teach boys and girls about prevention and appropriate action in relation to health problems.³⁹

The creation of video games oriented specifically to girls or to both sexes from a non-sexist perspective, in Spanish and with sensitivity for Latin American cultures, could be an excellent project for groups of women involved in technological, educational and recreational questions.

³⁸ K. Inkpen, R. Uptis, M. Klawe, J. Lawry, A. Anderson, M. Ndunda, K. Sedighian, S. Leroux, and D. Hsu: "We have never-forgetful flowers in our garden: 'Girls' responses to electronic games" in *Journal of Computers in Mathematics and Science Teaching*, 13 (4), Department of Computer Science and Department of Math and Science Education, University of British Columbia, Vancouver, 1994, pp. 83-403.

³⁹ The University Medical Centre of Stanford created a video game for children with diabetes that had surprising results and a commercial company produced another for asthmatic children called "Bronky the Bronchiasaurus". In both cases the children are taught how to prevent and manage these illnesses.

V. The Internet and something more: approaches to cyberculture

According to Manuel Castells, the Internet now constitutes the fabric of our lives. It is not the future. It is the present. The Internet is a medium for everything, it interacts with the whole of society and, in fact, although it is such a recent phenomenon, it is the societal form.

Castells (2001) is pointing to an obvious fact and a challenge. The fact is that the Internet is much more than, or in fact something different from, a set of machines, instruments, cables, servers, skills, procedures and practices that are used to disseminate information, communicate, entertain, participate, buy and sell, satisfy various desires and fantasies, educate and be educated. It includes the ways of relating, symbolic and imaginary representations, the values used to provide references in our current life and to imagine or project possible and desirable futures.

This position is different from the deterministic view according to which technology, and more basically computers, establish social relations. In contrast, it claims that there is an interweaving such that neither one can be understood without the other. It leads us to the challenge of describing and extending the understanding of what is known as cyberculture and, in this framework, to consider how much progress has been made in deciphering its gender codes and consequently, what strategies women are using to leave their mark on this territory.

One of the first authors to deal with cyberculture was David Silver.⁴⁰ In his paper he recognizes the difficulty of containing this phenomenon in a definition and offers us a provisional approach in the following terms: "...a collection of cultures and cultural products that exist on and/or are made possible by the Internet, along with the stories told about these cultures and cultural products..."⁴¹

He claims that cyberculture is very broad as it consists of a diverse set of online social interactions, including email, mailing lists, chat rooms, newsgroups, and Web sites. It is also profound in the sense that even the simplest interactions such as an email are part of complex communication practices. As in real life, all kinds of people participate: idiots, experts, idealists and impostors, and there are different spaces, like a parliament, a playground, a shopping mall, a backyard. It is in a state of continuous and rapid flux and it is difficult to anticipate how it will develop over the next few years.

David Poster (1997) provides a number of questions that we would have to deal with in order to understand cyberculture: (1) What is Internet culture? (2) How does the Internet affect our understanding of what a community experience is? What type of community is experienced on the Internet? (3) What can be said about the psychology of the virtual person? (4) What can communication in this medium become? Especially, in terms of the effects on reading, writing and relationships between individuals and groups; (5) What is the political dimension of the Internet?

Although all of these aspects are essential for an understanding of how this complex phenomenon operates, there is more theoretical agreement with the definition of cyberculture given by Heidi J. Figueroa Sarriera (1997): this term refers to ways of life, forms of construction of the self and the other, as well as the forms in which political and economic dimensions flow transversally in the spiral of domination and resistance within this new and elusive scenario also known as cyberspace.⁴²

Indeed, this approach opens up the field of view in order to warn that, through an interaction controlled by technology, individuals, goods, material, symbolic and cultural products and wishes navigate and seek, meet, avoid, submit to and conquer each other; merging the user with the machine until another techno-virtual reality is reached which in turn spreads and connects with everyday life and transforms our representations of reality. This is why cyberculture cannot be restricted to the adventures of the interonauts.

This study has flourished in the last half of the 1990s as shown by many papers published both in the mass media and in academic circles, and conferences held all over the world. Initially, we find newspaper articles that are descriptive and informative for a general public. Here there predominates the use of metaphors such as "frontier" and "highway", and there is a division between those who idealize the Internet and those who hold critical views. The former claim that cyberspace is the new frontier of civilization, an optimal opportunity for developing businesses in the global economy, encouraging democratic participation and promoting social equality. The latter⁴³ in contrast, claim that it may be a danger to education, and may promote political and economic alienation and social fragmentation. Some adherents to the latter view even urge that the

⁴⁰ David Silver: "Looking Backwards, Looking Forward: Cyberculture Studies 1990-2000" in David Gauntlett (ed.): *Web studies: Rewiring Media Studies for the Digital Age*, Oxford University Press, 2000.

⁴¹ The last fragment of this statement is particularly striking. Indeed, there are many narratives about the Internet, about its power, influence, what happens there and what we would like to happen there, which invest it with meanings that in turn impact on the connections that we have with it and perhaps stimulate the imagination of the technicians involved in innovation.

⁴² Already a classic on the subject of the emerging culture of cyberspace is the anthology by Michael Benedikt (ed.): *Cyberspace. First Steps*, Massachusetts-London, The MIT Press, 1992.

⁴³ S. Birkerts, *The Gutenberg Elegies: The Fate of Reading in an Electronic Age*, Winchester, MA, Faber and Faber, 1994; K. Sale, *Rebels Against the Future: The Luddites and Their War on the Industrial Revolution. Lessons for the Computer Age*, Reading, MA, Addison-Wesley Publishing Company, 1995; C. Stoll, *Silicon Snake Oil: Second Thoughts on the Information Highway*, New York, Doubleday, 1995.

Internet be abandoned, as "life in the real world is far more interesting....far richer than anything you'll ever find on the computer screen".⁴⁴

Subsequently, the analysis of virtual communities (their special characteristics, their differences and similarities with face-to-face interaction) and online identities came to be the favourite topics of the academic world. These papers remain mainly descriptive, explaining phenomena from a binary logic and conserving the metaphor of the frontier. An optimistic, emancipatory and creative vision of this new space predominates.⁴⁵

Already in the last few years, papers have emerged that are more complex from the theoretical point of view and are interdisciplinary in nature, with the focus on relationships between subjects, society and information, in particular, on online interactions and linguistic styles.⁴⁶ There are also activist and academic productions on virtual community networks which have been created around the world and are in a process of constant expansion.⁴⁷

Feminist research or research in the field of gender studies is currently acquiring a greater presence by dealing with the same phenomena but from the view point of gender differences or by introducing new questions that deal with the need to explore the relationship of cyberculture to the patriarchal or male-centred culture and consider the social and identity effects that derive from the use and appropriation of this socio-symbolic field.⁴⁸

⁴⁴ C. Stoll, op. cit., 1995.

⁴⁵ Howard Rheingold, *The virtual community. Homesteading in the electronic frontier*, New York, Addison-Wesley, 2000 and subsequently, Sherry Turkle, *Life on the Screen: Identity in the Age of the Internet*, New York, Simon & Schuster, 1995. Both are outstanding figures in this area.

⁴⁶ N.K. Baym: "From practice to culture on usenet" in S.L. Star (ed.) *The Cultures of Computing*, Oxford, Blackwell Publishers, 1995a; N.K. Baym: "The emergence of community in computer-mediated communication" in S.G. Jones (ed.) *CyberSociety: Computer-Mediated Communication and Community*, Thousand Oaks, CA, Sage Publications, 1995b; N.K. Baym: "Interpreting soap operas and creating community: Inside a computer-mediated fan club" in S. Kiesler (ed.) *Culture of the Internet*, Mahwah, NJ, Lawrence Erlbaum Associates Publishers, 1997; S. Correl, "The ethnography of an electronic bar: The lesbian café", *Journal of Contemporary Ethnography* 24:3, 1995; M.L. McLaughlin et al.: "Virtual community in a telepresence environment" in S. Jones (ed.): *Virtual Culture: Identity and Communication in Cybersociety*, London, Sage Publications, 1997; L.A. Collins-Jarvis: "Gender representation in an electronic city hall: Female adoption of Santa Monica's PEN system", *Journal of Broadcasting & Electronic Media*, 37:1, 1993; D. Silver: "Margins in the wires: Looking for race, gender, and sexuality in the Blacksburg electronic village", in B.E. Kolko, L. Nakamura and G.B. Rodman (eds.) *Race in Cyberspace: Politics, Identity and Cyberspace*, New York, Routledge, 133-150, 2000.

⁴⁷ The most famous was the *Seattle Community Network (SCN)*, in Seattle, Washington. S. Cislser: "Community computer networks: Building electronic greenbelts", 1993, <http://bcn.boulder.co.us/community/resources/greenbelts.txt>; A.M. Cohill and A.L. Kavanaugh (eds.), *Community Networks: Lessons from Blacksburg*, Virginia, Norwood, MA, Artech House, Inc., 1997; J. Shmitz: "Structural relations, electronic media, and social change: The public electronic network and the homeless" in S. Jones (ed.), op. cit., 1997; D. Schuler: "Community networks: Building a new participatory medium" in *Communications of the ACM*, 37:1, 39-51, 1994; D. Schuler: *New Community Networks: Wired for Change*, Reading, MA, Addison-Wesley Publishing Co., 1996; D. Silver: "Localizing the global village: Lessons from the Blacksburg electronic village" in R. Browne y M. Fishwick (eds.): *The Global Village: Dead or Alive?*, Bowling Green, OH, Popular Press, 1999; D. Silver: *Parameters and priorities: The formation of community in the Blacksburg electronic village*, unpublished master's thesis, Department of American Studies, University of Maryland, 1996.

⁴⁸ L. Cherny and E.R. Weise (eds.), *Wired Women: Gender and New Realities in Cyberspace*, Seattle, Seal Press, 1996; M. Consalvo: "Cash cows hit the web: Gender and communications technology" in *Journal of Communication Inquiry*, 21:1, 1997; D. Dietrich: "(Re)-Fashioning the techno-erotic woman: Gender and textuality in the cybercultural matrix" in S. Jones (ed.): op. cit., 1997; M. Ebben and C. Kramarae: "Women and information technologies: Creating a cyberspace of our own" in H.J. Taylor, C. Kramarae and M. Ebben (eds): op. cit., 1993; K. Hall, op. cit., 1996.

VI. Cyberspace and cyberculture in a gender hue

The term cyberspace was created by William Gibson in his novel *Neuromancer* (1984). He defines it as a consensual hallucination that is experienced on a daily basis by billions of computer users; a graphic representation of information that flows from every computer to the human system.⁴⁹

Although cyberspace is usually represented in terms of space, it is not a place or a thing. It consists of a set of electronic synapses that exchange millions of bits of information across telephone or fibre optic lines connected by computer networks. It is not inside the machines, nor is it in the tissue or network constructed by its interconnections: it is an intangible territory to which access is gained through tangible media.

This territory has its own formal and informal rules and, like any cultural mechanism, is intimately linked to various power relationships. It also participates in the creation and reproduction of values, "standardizes" certain life styles, generates expectations and constructs new social imaginaries and orders. Various narratives are developed around this concept, anxieties are projected, myths are constructed and utopias are pursued.

⁴⁹ This definition expands the original idea of Ivan Sutherland that referred to an electronic apparatus that provided information in a multidirectional manner in an interactive context. Sutherland was one of the pioneers of computer graphics and he is also credited with having developed virtual reality systems.

The studies of gender codes in cyberspace and in the cyberculture that has been building up are one of the most striking chapters in the feminist production of recent years, especially, those that have been identified as cyberfeminism. These studies, influenced by distant currents of post-modern thought and especially by current debates on identity, subject/self and gender, are also "energized" by the real and mythical power of informatics. They display a significant refinement of the theoretical categories and an imaginative boldness that contrasts with a certain stagnation into which the "politically correct" proposals of the women's movement had fallen in this and other areas.

But before referring to those studies, reference shall be made to other work that also analyzes cyberculture although from more conventional perspectives. In this way we can establish the coordinates of current theoretical and political discussion in relation to cyberculture and gender.

The different currents range from those with a totally negative or pessimistic view as to the possibilities that cyberspace offers to women, to those who see it as a utopian alternative for emancipation. The former emphasize that it is yet another product of a patriarchal or male-centred culture which excludes women or insults and devalues them. The evidence for this is in pornography, the exhibition of women as sex objects, specific practices of sexual harassment directed at women and a method of confrontational interaction, as well as male domination in discourse, ranging from the choice and treatment of issues to sexist language.⁵⁰

According to Susan Herring,⁵¹ a key proponent of this view, women and men have different and partially incompatible value systems, which are manifest in their ways of interpreting reality, in their behaviour and in their assessment of others' online behaviour. As we have seen, her studies seem to demonstrate these different gender modalities in network participation and interaction. This leads her to suggest that women create their own spaces online in order to express themselves freely and to enjoy communication, thereby avoiding the harassment and disparagement to which they are exposed in mixed groups.

One of the strongest criticisms of this position is that such observations are excessively generalized and do not take into account the group of women who do not follow the pattern of "feminine" conduct, which may be many more than the author believes. Nor is any proof offered that women-only spaces achieve as satisfactory an interaction as is expected or desired. Lastly, this separatist position does not provide a strategy for women to participate affirmatively and creatively in mixed groups, nor for them to have a more consistent presence in the various proceedings and processes that structure the network.

In any case, and on the basis of this debate, greater care should be taken to reflect on the most effective strategies for women for participating and expressing themselves on the Internet: are women-only groups the best forums or only the most comfortable or feasible in a first stage of empowerment?⁵² What can be done to mixed groups to make them non-sexist or more woman-"friendly"?

⁵⁰ From another angle Tania Modleski has shown how men find in the new technologies a response to an ancestral desire to have children by themselves, replacing women by computers, which is a contemporary version of the myth of Pygmalion and Galatea. This male imaginary can be seen in the film *Weird Science*, where three teenage boys design their ideal woman on a computer, and discuss the size of her breasts. Modleski quoted by Rosi Braidotti: "Cyberfeminism with a difference", http://www.let.uu.nl/womens_studies/roshi/cyberfem.htm

⁵¹ See several of Susan Herring's papers: "Gender and democracy in computer-mediated communication" in R. Kling (ed.) *Computerization and Controversy: Value Conflicts and Social Choices*, San Diego, Academic Press, 1996; "Posting in a different voice: Gender and ethics in CMC" in C. Ess (ed.), op. cit. 1996a; op. cit., 1996b.

⁵² For example, computer experts created the Berkeley Mac Women, a women-only group, which according to its members, is the most comfortable environment for them to formulate questions with freedom or make connections with other women in this field, escaping from the isolation or tokenism of being one of the few women in the computer laboratories or companies.

Other researchers start from the assumption that although cyberspace is not neutral with regard to the gender codes and hierarchies that exist in society, nor is it as totally biased or monolithic as has been suggested. As the body, which is where gender manifests, is not revealed, cyberspace offers greater freedom of expression of the self and facilitates interactive communication.⁵³

This current is opposed to the concept of network "victims"⁵⁴ being applied to women and rejects the formation of feminine ghettos. Participation in mixed online forums should be encouraged, as they are more egalitarian and allow women more possibilities for expression than do face-to-face meetings, where men usually speak louder, take more time, and exploit their advantages of greater physical size and a deeper voice.

One very interesting contribution along these lines emerges from the papers of Laura Miller on the dominant metaphors in the cyberspace imaginary and the power it exerts on the relationships that people establish with it. These metaphors are descriptive of the supposed characteristics of cyberspace and are also prescriptive of attitudes and behaviours; they express fears, desires and fantasies.

Thus, in *Language, Technology, Gender and Power*, she considers how military and religious images dominate the information culture and, consequently, exclude women and "feminine" narratives.⁵⁵ In particular, she questions the metaphor of a "virtual frontier" as it evokes the conquest of the "North American far west", where only the strongest, the hardest and most aggressive can survive.⁵⁶

If this and other founding metaphors of cyberculture are accepted, women would have to be included in this wild place in order to play the role that they have had in other historical circumstances: to accompany the men, and be concerned about emotional issues, morale and survival. This would obviously produce another metaphor: women as good, compassionate and morally superior beings, responsible for exerting a civilizing influence on a hostile and lawless territory, another image of cyberspace that is circulating.

Miller also points out that the image of the frontier as a site of unlimited possibilities and few social controls—a myth that has been deeply internalized in the North American psyche—makes it appear that this space is available for all those who are testing their capacity and will-power, thus hiding the knots of power that make it up and especially the "imperialist" control of this technology on the part of the developed western countries. Her position therefore supports the active but also critical inclusion of women in this area, and especially encourages them to intervene in order to redefine the rules and narratives.

⁵³ Laura Miller: "Women and children first: Gender and the settling of the electronic frontier" en J. Brook and I.A. Boal (eds.): *Resisting the Virtual Life: The Culture and Politics of Information*, San Francisco, City Lights, 1995, pp. 49-57.

⁵⁴ For some post-modern theoreticians, communication by computers brought the promise of transforming the traditional concepts of gender and identity. Basing themselves in many cases on the ideas of Judith Butler, on how the category of woman is produced and conditioned by the same power structures as those with which emancipation is thought and acted out, while at the same time it maintains a fluid and complex nature, these currents claim that virtual space could not be a reflection of an identity that is fixed beforehand but a site where the category of woman is questioned and created, an arena for reformulating the category of gender. J. Butler: *Gender Trouble: Feminism and The Subversion of Identity*, London, Routledge, 1990.

⁵⁵ Fiona Wilson claims that "[metaphor] can be seen as an essential medium through which reality is constructed... It is a basic structural form of experience through which human beings engage, organize, and understand their world." F. Wilson: *Organisational Behaviour and Gender*, McGraw Hill Book, 1995.

⁵⁶ Paul Edwards points out that the discourse of dominion and competence is installed in the development of computer programmes: they are presented as a supposedly "hard ...dangerous ... harsh ... a real man's job. P. Edwards: "The army and the microworld: computers and the politics of gender identity", *Signs* 16, Autumn 1990, pp. 102-27.

A third group of papers supports an assumption that is widespread in the analyses of these technocultural phenomena: cyberspace is an anarchic and democratic territory that offers many previously unknown opportunities to marginal groups, including women, to express themselves and participate actively in social and political issues.

This idea is influenced by the works of Howard Rheingold (2000), one of the greatest defenders of the Internet as a space that promotes the spirit of cooperation and the creation of a truly democratic discourse and practice. This belief arises, in part, from its supposed ubiquity and the relatively unconditioned and uncensored form in which individuals, at least those who have access to this technology, can send messages on any subject to all the different types of active forums.

Rheingold was confident that the network could resist the centralized control of large corporations and governments and achieve a more community-based and horizontal structure, like a grass-roots democracy, in which individuals would gain greater understanding of social issues and citizens could be more connected to the political processes and feel themselves involved in decision-making. In other words, it would be the medium that would open the way to a version of direct or participatory democracy, or as Maldonado (1998) says, an electronic republic, or an electronic agora according to Grossman.⁵⁷

This utopian position has been generally questioned,⁵⁸ on the grounds that it is wishful thinking; that it is based on an incorrect perception of reality if it claims that technological systems are autonomous and immune to the economic, political and social power structures that in reality are responsible for their very existence and dissemination.

A large number of theoretical and mainly practical or political studies have been carried out by women's groups, some of them concerned with feminism or gender studies, which validate, many times inadvertently, this utopian position. They make claims, without too much proof, for the democratic and emancipatory potential of the network and the enormous benefits that it could bring to women in terms of disseminating information on their political views and initiatives, establishing alliances at the local, regional and global level, organizing themselves, conducting advocacy actions, helping other women to gain access to this tool and to join the struggle.

It is clear that definite progress has been made with regard to the number of women who use this technology, and in the appearance of pages, forums, electronic networks and services aimed at awareness-raising and support, offering a space for their political views and ensuring that their rights are observed. Although these are very valuable experiences, we cannot forget that these niches are a minority in the volume of information that circulates in the network and that it is not certain which women have access, who is producing and who is consuming this information, that is, how democratic they are and what differential impacts they have on other forms of feminine organization with similar aims. These are issues that must be analyzed in order to define the most effective long-term strategies, and we shall return to them later.

Lastly, there are productions that take place in the context of what is known as cyberfeminism or rather cyberfeminisms, in order to respect the internal trends. It should first be emphasized that the founders themselves consider cyberfeminism to be a fluid, open concept. It is not defined by any consensus of those who consider themselves part of it.⁵⁹ It is presented as a theoretical and political search that begins by recognizing that computers and cyberspace are

⁵⁷ L.K. Grossman: *The Electronic Republic*, Penguin, New York 1995. Other names have been coined, such as teledemocracy, wired democracy, video democracy or electronic democracy to refer to a virtual scenario in which the citizens participate in the selection processes for their representatives and/or public decisions. It is thought that in this way a more active participation of the population can be achieved and that greater efficiency will be gained in the management of public administration.

⁵⁸ Doug Shuler: *Computer Professionals and the Next Culture of Democracy*, The Evergreen State College, mimeo, 2001.

⁵⁹ Faith Wilding and Critical Art Ensemble: "Notes On The Political Condition Of Cyberfeminism", <http://Mailer.Fsu.Edu>.

inevitable components of our social landscape. Instead of calling it evil or questioning its existence, they propose working with and on it on the basis of a paradigm change that redefines both the notion of gender and the concept of technology.

Its concern is to explore the interrelations between gender, the body, sexuality, culture and technology, encouraging experimentation with the latter for confrontation and change. There is thus involvement in various technological worlds: recording CD-ROMs, creating web sites, electronic communities, artificial intelligence, etc., although still in a nomadic, spontaneous and anarchic manner.

For Plant (1997), and for the Cyberfeminist Manifesto of VNS Matrix,⁶⁰ two pioneering voices, the strategy of cyberfeminism is to form an alliance or connection between women and technology in order to investigate and decipher the narratives of domination and control inscribed in the technological culture, and to experience the potential of cyberspace for creating other social formations, other forms of identity and other ways of engaging in politics.

The common assumption is that cyberspace makes it possible to develop the self in and from various positions of the subject, showing it as a multigeneric entity, polymorphous, fragmentary and evading all regulatory restrictions.⁶¹ It would thus be a privileged environment for imagining and acting out a much more complex, sophisticated and radical feminist policy than those previously encountered.

One of the most influential representatives of this perspective is the psychiatrist and "guru" of informatics Sherry Turkle (1995), who theorizes about relationships between cyberspace and the construction and development of subjectivities⁶² in post-modernity. In her book "Life on the Screen: Identity in the Age of the Internet", she claims that computers are not a new tool of modernity. They do not have the same logic as previous tools (utility, analysis, abstraction, rationality); they are a post-modern object, part of a culture of simulation. Online communications allow us to play with multiple identities or subjective positions and the same logical structure of technological processes opens up a path for reflection on how identity is constructed and also on the process of thinking itself.⁶³

For example, the Windows environment is a powerful metaphor for understanding the formation of identities in general, the identity of gender in particular and the way of functioning of thought in post-modernity. "The development of windows for computer interfaces was a technical innovation motivated by the desire to get people working more efficiently by cycling through different applications. But in the daily practice of many computer users, windows have become a powerful metaphor for thinking about the self as a multiple distributed system."

In other words, both identity and thought can be conceived of as multiple "windows". No one would be better or more correct, individuals would open them in relation to others, according to circumstances and knowing that the same process is occurring in other people. "The Internet has become a significant social laboratory for experimenting with the constructions and reconstructions of self that characterize post-modern life. In its virtual reality, we self-fashion and self-create".

⁶⁰ VNS Matrix: <http://www.dvara.net/HK/bitch/asp>.

⁶¹ The subject of the "fragmentation of self" has been studied by many contemporary intellectuals, most of them being part of post-modernism, post-structuralism and psychoanalysis. For example, Gergen claims that it is not possible to speak of an authentic Self but of a multiplicity of positions of the self. Gergen: *The Saturated Self*, 1999.

⁶² Turkle considers that "we come to see ourselves differently as we catch sight of our images in the mirror of the machine".

⁶³ For Turkle, the modern concept of information technologies is lineal, rational, and based on fundamental and universal truths. In this case it would not be more than another "meta-narrative" about how science and technology function for the development of societies and human progress.

Turkle's position is very provocative, especially when she suggests that the self or identity can only be fully expressed online. This "libertarian" exaltation of intra- and inter-subjective diversity has a voluntary and idealist bias, however, as it does not take into account that there are margins of freedom for expression and thought, and that there are identity and cultural crystallizations that cannot be broken by navigation of the net alone.

Another critical line of thought with great impact on the relationship between the self and technologies is that of the feminist Donna Haraway (1997). Her voice was one of the first in the presentation of a concept that has been extensively used: that of cyborg. For Haraway, with the expansion and interdependence of both communication technologies and biotechnology, we have converted ourselves in our biological body into cyborgs, that is, into entities that combine physical and cognitive elements of both humans and machines.⁶⁴

The term cyborg does not only refer to the "reality" of the impact of technology on human bodies and minds, but is also presented as an ironic political myth for the feminist theory that serves to remind us that both in social reality and fiction, the concept of humanity and of subject, elaborated by modernity, has been replaced by another where the human is interdependent and in close familiarity with the animal and with machines.

Haraway roundly asserts that the new technological culture assumes a break with the old dualisms of western thought (mind/body; self/other; masculine/feminine; reality/appearance; truth/illusion, sex/gender). It would thus be inappropriate to refer to our biological existence as being opposed to a technological existence.

We have been turned into hybrids, into beings in which the biological and technological components are so profoundly related that there is no possibility of dividing them. This is why she believes that the explosion of new technologies brings not only new forms of subjectivity, but also, and this is the most provocative aspect, a "new flesh".

The body has stopped being "natural" as it used to be thought. We maintain it on the basis of agro-technologically developed foods; we submit it to sophisticated medical procedures such as transplants, even of artefacts; we keep it healthy—or damage it—with pharmaceutical products; we dress it with technologically designed clothing that serves as an extension of it. The body is being transformed into a high-yield machine where technology acts in association with other disciplines: medicine, sport, nutrition, clothing, etc.⁶⁵

In the final years of the millennium, nothing relating to the body can be taken for granted. Human tissue can now contain dracon, silicon and metal tissues. This crucible of technocultures has significantly reconfigured the body in such a way that it is already impossible for us to know what human means. The very constitution of the body has become uncertain, the code or programme of humanity has been broken and is being reinvented and marketed.

The cyborg also manifests in the interfaces that connect the user with the computer (instruments that recognize the human voice, the use of the finger tips to move various tools, etc.). All of these changes are an enormous challenge with regard to what we understand as real, the body, even the differences between the sexes as the biological and gender substratum, as cultural

⁶⁴ We find close examples of cyborgs in films such as *Robocop* or *Artificial Intelligence*, or more distant ones such as *The Six Million dollar man* or *The Bionic Woman*. These are fictional descriptions that illustrate the concept.

⁶⁵ And while this horrifies us, it also fascinates us: technology has got under our skin. What is the next step? Theoreticians such as Levy claim that the next step in human evolution will be "a race of cyborgs or super computers": a kind of "cybor-ethny". It is impossible not to associate these theories with a pre-existing imaginary of a future where the new race rebels against its creators and tries to annihilate them. Films such as *The Matrix* and *Terminator* describe this type of prophecy of a future dominated by machines. Both films express a profound fear in the human psyche, the fear that the prophecy whispered to us by Mary Shelley through her novel *Frankenstein*, will come true.

attributes. "Nothing conduces more to the obtaining of an uncensored knowledge of reality than a previous accustoming of ourselves to entertain doubts, especially about corporeal things".⁶⁶

Returning to Haraway, the concept of cyborg is not formulated uniquely as a metaphor in the game of identity, but also as a paradigm for feminist action. "My cyborg myth is about transgressed boundaries, potent fusions, and dangerous possibilities which progressive people might explore as one part of needed political work".⁶⁷

This is a call for radical political action that would liberate the women's movement from the search for similarity and unity among them or from affirmation of their own individuality in order to celebrate diversity, both among women and within the individual subjectivity of each woman.

In what way would this politics be expressed? Its favourite, or perhaps only area, is cultural resistance, the invitation to produce counter-narratives in which we are not afraid to recognize ourselves as "hybrid" beings, in which we show acceptance of and enjoy our partial identities and differing points of view.

Another key element of "cyborg politics" is networks. Interestingly, this does not refer only to networks or relationships with other persons, but also to a form of recognizing ourselves and acting in the network, that is, thinking of ourselves as a set of cognitive, pulsating, social networks, that exchange information over the millions of links that make up our world. This posture takes us far from the "modern" idea that we are individual and indivisible persons, individual consumers or citizens who in a secondary manner interact with others, so that we can conceive of ourselves as a mesh that is constantly fed from the information that circulates in the virtual tissue and in turn contributes to it by creating affinities.

The strongly utopian and sophisticated position of Haraway has been crucial for producing a different imaginary of cyberspace; opposed to the usual representations: the frontier, the Promethean hero-self, the community of philosopher-citizens. Instead of these monumentalist and rationalist myths, there is the opportunity to think about oneself and to act by accepting the contradictions, the multiple identifications and paradoxes inherent in gender identity and experiencing, in cyberspace, mechanisms of rebellion and resistance to the new social global order.

On the other hand, this position has weak points such as being excessively relativistic and in particular, its political proposal is not convincing. How can these cyborg explorers agree on some collective action in order to have an influence on virtual space?

It should be recalled that cyberspace is only a small part of this technological world, and that hardware and software production are key elements, as well as the institutions that train the designers of the products and those who use and market them. Proposals are needed to influence those persons. There is also the risk of denying the enormous differences in opportunities and living conditions among women cyborgs, and thus their way of relating to the computer, and the culture associated with it. As Marisa Belausteguigoitia Rius states in ironic form:

"But the cyborg is not generally the person sitting in front of the computer, half-machine, half-subject, wondering about the 'power to see from below.' The cyborg is the 'other,' flipping hamburgers and talking the 'cyborg speech' of McDonalds".⁶⁸

Haraway certainly warns of the risks and limitations of her utopian vision and does not forget that the communication enterprises have global control of the virtual world—which means the New Global Order Inc.— but beyond this recognition it is not clear how to relate radical

⁶⁶ Critical Art Ensemble: op. cit.

⁶⁷ This issue has been extensively discussed in the last 15 years by authors from different countries. See T. Maldonado: op. cit.

⁶⁸ Marisa Belausteguigoitia Ruis: "Crossing borders: from crystal slippers to tennis shoes" on Wendy Harcourt: women@internet: *Creating New Cultures in Cyberspace*, London, Zed Books, 1999.

symbolic searches in the hands of an elite of women, with struggles for specific power over the information "means of production". This is not a new discussion, but has emerged again with force over the last few years and in the present author's opinion deserves a more open or less prejudiced and polarized approach than has previously been the case. Combined strategies could be brought into play in order to act on the different orders of social reality and on its interrelation with technology. It is very possible that the tension between resistance, appropriation and resignifying will be the most effective strategy for women over the next few years.

Another influential voice, and in various points critical of Haraway, is that of Rosi Braidotti, who is opposed to the triumphalist and utopian vision of the possibilities of total and unlimited reconstruction of identity and gender, in and through cyberspace.

In the first place it is important not to forget the persistent gender and class gap in women's access to computers; in the use that they make of them; and in the training and knowledge that they have of the Internet and other new technologies. There is also their lack of inclusion in programme design and development, their low level of participation in technological disciplines in general and the inequalities that exist between those who live in developed countries and those in poor countries. She is particularly concerned about the persistence of pornography and violent and humiliating images of and for women, that circulate through the new technologies, and especially programmes that allow virtual rape and death. They are indicators of the existence of a patriarchal power linked to powerful commercial interests.

Despite the fact that some defenders of the Internet and cyber artists promise that the new technologies will liberate women from gender restrictions and encourage the spread of diversity, Braidotti claims that this is not only unrealistic but also undesirable. In this she is referring to the dangers of contemporary forms of "disembodiment" that accompany the new technologies. Unlike Haraway, she considers that the central issue of the discussion about cyberspace consists of questioning the old myth of transcendence of the body, which the new technologies are recreating. The allegory of "disembodiment",⁶⁹ of the insignificance of the body, in fact, tends in her opinion, to reproduce the patriarchal model that idealizes masculinity as an abstraction, while it essentializes—and thus devalues—the feminine or women conceived as incarnate subjects in the materiality of their bodies.

All of the above leads her to emphasize the theoretical and political importance of asserting the difference between the sexes, obviously questioning their social asymmetry and inequality, but without that implying renouncing the sexual difference.

She asserts the empowering effects of a political and theoretical practice referred to as "as if" and which would consist of implementing strategies for mimesis of the feminine; acting as if confirming stereotyped feminine images, but in fact parodying them. This parody, fed by intentional humour, demonstrates women's active capacity to subvert the dominant gender codes and at the same time preserves them from seeking emancipation through assimilation to the masculine model. "Irony and self-humour are important elements of this project and they are necessary for its success ... cyber-feminism needs to cultivate a culture of joy and affirmation ... if only to make sure that the joy-sticks of the cyberspace cowboys will not reproduce univocal phallicity under the mask of multiplicity".

⁶⁹ Anne Balsam warns of the consequences for the social imaginary and for individual experiences of the idea that the conjunction between bodies and technologies is an extraordinary solution to relieve all past sufferings. By presenting new hopes for the reconstruction of the body, it suggests physical immortality, and thus may repress our consciousness of the new limitations and threats to which the material body is exposed in this technological world. It should be recalled that the new technologies may offer hope for diseases and limitations, but they also re-write the body from new standards, boundaries and risks. A. Balsamo: *Technologies of the Gendered Body: Reading Cyborg Women*; Durham and London, Duke University Press, 1996.

The pages of the so-called *cibergrrrls*, artistic productions with and on the body, narratives that use the gynaecological speculum⁷⁰ as a metaphor for "opening" secret and unknown territories of femininity, and the use of humour, are challenging manifestations for planning "decolonizing" incursions into virtual territory. These searches may be found in the net as experiments with entertaining and provocative images and messages, for example, *geekgirl*, *cybergrrrl*, *nerdgrrl*.

Although these contributions warn us of the power of discourse in the constitution of the social, in the production of hierarchical and dominant relations, and encourage us to recover or give new meaning to the famous 1968 slogan "power to imagination", this time through the creative use of information technologies, they fail to respond to other concerns regarding how to confront the materiality of the technological order, its close alliance with the interests of transnational capitalism and the forms of control and discipline that it exerts. As Maldonado says (1998), it may be that the network has eliminated the emblematic figures of the Orwellian Big Brother, the inspector of the Panopticon and the spider, metaphors that allude to centrality, indivisibility and personalization of the mechanisms of social control, but this does not tell us that all kinds of information flow through its mesh, from all places and under equal conditions.

Should we set ourselves this goal? Is it feasible? What role are women playing in this, especially in Latin America? We shall return to these points in the final section.

⁷⁰ Here note the influence of the work of the philosopher and psychoanalyst Luce Irigaray: *Speculum de l'autre femme*, Paris. Les Editions de Minuit, 1974.

VII. Potential and limitations of education for computer literacy

Whenever there is a debate on how to overcome the obstacles and inequalities that women have to face to gain full access and participation in the opportunities offered by information and knowledge technologies, it is inevitable that education emerges as a strategic priority.

This "umbrella" proposal, however, which usually produces an immediate consensus, covers many different visions of the characteristics and objectives to be adopted by educational activities related to the new information technologies, while explaining little about which of these technologies should be tackled and in what way.

The assumption is that these tools are indicators of a qualitative change in the forms of information, communication, work, production and participation in a new society and that those who do not have access to them will remain unfailingly excluded from this technological era, turning into a race of pariahs or relics of a world that has been definitively superseded. Thus any attempt to democratize access of the most underdeveloped sectors to computers is usually considered most laudable and thus governments, enterprises, international organizations and social organizations of varying ideological positions line up behind any such proposal in an uncritical manner, with few exceptions.⁷¹

⁷¹ This group does not include the apocalyptic voices that denounce the harm that technology causes to morals, children's minds, and cultures.

It is clear that not all of these sectors pursue the same interests in the "universal" dissemination of informatics. Substantial differences are also to be expected in the discourses and above all, in specific practices in the field of computer education or literacy or in computing.

Some "surrealist" phenomena have been observed in some Latin American countries, such as the mass government purchase and installation of computers in public schools, many of which had no electricity or telephone line. This is quite apart from the scarcity or non-existence of teachers with the minimum skill levels required for using computers and providing some level of training to their students.

The proliferation of private schools that offer computer courses, many of which are situated in areas that are poor and have high school drop-out rates, and promise for modest fees to provide young people, many of whom are almost illiterate, with the means to obtain better employment, is another grotesque example of this policy.

Indeed we believe that many educational proposals are based on and support a *fetishization of the computer*. The presence of computing in schools, libraries and community centres is shown as a sign of modernity and a promise of access to a better life for all. Explicitly or implicitly, there is an attempt to prove that knowledge and skills with basic computer resources is a passport to ensuring employment, improving income levels and belonging to the set of young people that are moving successfully towards the future. This belief, naïve or irresponsible, denies the reality of the living conditions and future opportunities of many young people.

These courses may increase the consumer market for the left-overs of technological innovation and expose young generations to new forms of social discipline, but it is very doubtful that access in itself will manage "to empower them" in any area of their lives. This recalls the point made by Neil Postman in "The End of Education" with regard to the new gods that are proposed by the educational system, including the cult of technology.⁷²

No denial is intended in any way of the need to generate educational proposals, both in the formal and in the informal system, for bringing information science to persons of all ages and social conditions, but there should be a critical review of the narratives within which they are made and offered, mainly by making this same technology into a subject for analysis, interrogation and interpellation.⁷³ The proposals should be based on actual experiences, in order to try to overcome stereotyped patterns and obstacles that degrade the learning process for both genders.

First, the educational experiences of girls in formal school settings shall be considered. The main purpose is to initiate reflection on what the students learn about themselves while they learn to use the computer, and what they are acquiring in this apparently only technical process in terms of other competencies, attitudes, expectations and relationships with boys and with adults of both sexes in positions of authority.

⁷² Neil Postman: *The End of Education: Redefining the Value of School*, EUMO- Octaedro Barcelona, 1999. Thodoro Roscak also claims that, like any cult, it has the intention of achieving an unreflecting devotion and reverence. People feel disposed to believe that we are all sharing in a new information age, which turns computers into the modern equivalent of what relics of the cross were in the age of true faith: symbols of salvation. T. Roszak: *The Cult of Information: The Folklore of Computers and the True Art of Thinking*, New York, Pantheon, 1986.

⁷³ This does not refer to very sophisticated questions, but to very simple but stimulating questions and thoughts, which could be expressed in the courses and would help to overcome people's fear and also their fascination with informatics. In order to thus reveal the social regulations and power relationships that are intrinsic in any human product and to understand what uses can be given to it and imagine what uses it could have that would make life more liveable. This path has also been followed with different results in the area of media education for critical consumption of the Media.

A large number of studies show similar results in terms of the impact of the group dynamic in the classroom, the type of software and the interventions of the teachers, on the ways in which the girls manage to learn about computing.⁷⁴ These studies agree on the following:

- The teachers give more attention, time and encouragement for computer use to boys.⁷⁵
- There are disputes between girls and boys over access to the machines, the choice of games, programmes or navigating topics; the boys generally win.
- The girls are more nervous about having to manage the computers in the presence of other persons, especially if they are boys. This is related to the pressures exerted by the boys, who are usually dismissive of the girls, ridicule them and try to dominate the equipment by demonstrating greater competence or even by physical force.
- Even when girls can use the computer for an equal amount of time and have equal ability, it is notable, as shown in one Canadian study,⁷⁶ that the image of the computer expert continues to be male. In this research, five hundred secondary students (male and female) were asked to draw an expert and almost all of them drew a man. When they were asked to draw someone who had difficulties in learning how to use the computer, they drew a woman. This suggests that, despite the fact that very basic aspects of access are tending to become more egalitarian, the social image is not changing, nor possibly the self-image, which may influence the different valuation given to one's own competence.
- Usually, in computer laboratories the men establish the rules and the general atmosphere. Lynda Davis⁷⁷ describes it as follows: during the day, the laboratories are full of students shouting to each other and hurling insults with explicit sexual content as an expression of camaraderie. Women do not use these terms among themselves or with their male fellow students. They tend to use nicknames.
- It has also been shown that students send pornographic messages quite frequently to the girls and that they often display them on the walls of the laboratories. Despite the fact that the teachers and female pupils in some institutions object to such behaviour and in some cases have proposed establishing codes to avoid sexual harassment or that more women be taken on as teachers, these educational issues have not met with specific responses in North American faculties.⁷⁸
- On this subject perhaps the most complete study was the one realized by the American Association of University Women in 1998.⁷⁹ Its main conclusions were the following:

⁷⁴ Corina Koch: *Is Equal Computer Time Fair For Girls? A Computer Culture in a Grade 7/8 Classroom*, Faculty of Education, Queen's University, 1995 and K. Inkpen, Uptis, et al.: op. cit., 1994.

⁷⁵ This agrees with findings from several years ago in other curricular areas. For example, in Spender's pioneering book, in which is claimed that teachers give 75-80% of class time to the boys, which means that the girls receive only 15-25% of the teaching time. D. Spender: *Invisible women: The schooling scandal*, Great Britain, Redwood Burn, 1982.

⁷⁶ M. Brysson & S. De Castells: "Telling stories out of school: modernist, critical and postmodern "true" stories about educational computing" in H. Bromley & M. Apple (eds.): *Education/Technology/Power: educational computing as a social practice*, Albany NY, University of New York Press, 1998.

⁷⁷ Classroom observers say that the men usually make jokes relating hardware to the penis, presenting the machines as extensions of themselves.

⁷⁸ It should also be noted that there are women who refuse the possible measures for regulating sexual harassment, defending freedom of expression and relying on their own tactics to deal with harassment or aggression.

⁷⁹ AAUW Educational Foundation Commission on Technology, Gender, and Teacher Education: *Tech-Savvy: Educating girls in the new computer age*, Washington, 2000.

- (1) In relation to computers, girls reject violent messages and images, the repetitive and boring nature of video games and do not like classes oriented to learning basic skills for operating machines. They expect something more entertaining and more related to their lives and interests.
- (2) Women teachers participating in this study (in the first few years of secondary education) criticise educational software, school authorities' expectations concerning the goals that should be reached, the lack of professional training of teachers and the lack of ongoing technical assistance.
- (3) Girls continue to be a minority in computer laboratories and clubs and take less courses in this area at secondary school.

This study questions the rather devaluing concept of "computerphobic" that has been applied to women in recent years, and interprets the reactions of girls as a manifestation of conscious or unconscious resistance to the dominant cyberculture, or a defence derived from the disappointment of young people with regard to expectations of personal and work achievements or satisfaction in this area.

With regard to these questions, Sofia and Millar remind us that the computer, as a cultural artefact, in its real and fictitious form, has been represented in many discourses as being part of a love relationship between the man and the machine, which can stimulate the masculine "technophilia" which, in turn, is taken as something normal, or rather, as the norm. Whoever departs from this is labelled as "technophobic", especially women.⁸⁰

The technical language used by PCs also reflects their military origins and macho presentations. For example, the UNIX system asks users if they want to "kill" files or messages, DOS asks if one wishes to abort an attempt or operation and www servers inform users of fatal errors. It is thus not strange that the computer is associated emotionally and culturally with men and that therefore a large number of women have to adapt to this culture although they do not like it.

This brings us to reconsider to what point the current technological culture represents or responds to the needs and sensitivities of students and thus, how and what would have to be modified in this area in particular to make it "friendly" to women or non-sexist.

Nor should all the limitations of female or male teachers in this field be interpreted as a lack of training that has to be resolved by providing more training in informatics without changing the culture on which it is based. If their opinions are listened to impartially, guidelines may be found for the design of educational materials, a means of integrating the teaching of computing into the school curriculum and pedagogical strategies that bring personal, social and educational meaning to this new tool.

Another look at this problem indicates the importance of avoiding a rush to "technologicism" where the medium, that is the tool, is transformed into an end in itself. On the contrary, the training for management of this technology should simultaneously favour the development of analytical and critical capacities: the producing culture and its social consequences, the skills for defining problems and the strategies for resolving them through the selective use of the information provided. Also the students should acquire the awareness and resources to feel and act as full and conscious citizens of the information society.

⁸⁰ Z. Sofia: "The mythic machine: gendered irrationalities and computer culture" in H. Bromley and M. Apple (eds.), op. cit., 1993 and M.S. Miller: *Cracking the Gender Code: who rules the wired world?*, Toronto, Second Story Press, 1998.

In the face of the evidence found in the study mentioned previously, the relevant committee suggests two lines of action to be followed, which obviously may be complementary:

- (1) Stimulate the access of women to computing-related careers and also intervene in the form and content offered in the courses.
- (2) To try to make modifications to the computer culture, so that women's concerns, ideas and needs are taken into account. For this, it is proposed to strengthen networks and associations of technology professionals in which women have a higher participation rate.

The specific recommendations in the educational field were:

- (1) Include computer training throughout the school curriculum, in an integrated manner in all areas or disciplines.
- (2) Redefine what is understood by computer education.
- (3) Respect the different "entry points" of the students (through art, design, mathematics, etc.).
- (4) Change the public image of computing and the expert to "she", so that it corresponds to reality and not to the traditional stereotype: the solitary, antisocial and sedentary "nerd".
- (5) Educate teachers to have a broader vision, with the ability to design a curriculum that is comprehensive and offers different styles of teaching and motivation.
- (6) Initiate a debate on equity (gender, race, ethnicity, class) with authorities in educational materials, parents, computer and software industry representatives.
- (7) Educate students on the impact of technology on the future of work.
- (8) Revise and modify educational software and computer games to eradicate gender biases.
- (9) Support the educational and professional path of women in this field (by creating clubs, summer schools, mentor programmes, etc.).

The pedagogical question seems to be vital in this area. In this connection Cheri Kramarae (1993) specifically suggests the need to develop new teaching methods that favour much more interaction and participation instead of concentrating on the acquisition of technical skills.

Sherry Turkle (1995) goes one step further when she roundly claims that women have been socialized to process information in a non-linear, associative manner, in relation to concrete issues, and uses the concept of "bricolage" to characterize this feminine mode. She considers that this style is not represented in the rationalist, linear and abstract thinking that characterizes programming, which may act as an obstacle for women to make use of this tool. It also implies a cognitive wealth that has been neglected, which could in fact benefit systems and processes.

Although this statement has a debatable side, in view of its excessive generalization and the mutual exclusion between genders, it introduces an important point, although it is not new in other aspects of women's education or non-sexist education. We refer to the need to transcend the strategies for including women in fields of knowledge or institutional practices based on the masculine model (white, powerful, heterosexual). When this occurs all that is achieved is what Charlotte Bush defined as the "add and stir" phenomenon, which leaves the disciplinary or institutional structure unchanged. In other words, women's concepts, interests and skills may not be

added effectively after the men have established the "architecture" of the equipment, the tools and the procedures for use.⁸¹

This leads us to highlight an experiment that is precisely attempting to take a leap with regard to the more conventional activities in this field. It is a pioneering and innovative proposal of the Programme of the United States National Science Foundation. It consists of the creation of a Center for Children and Technology that tries to stimulate the skills and especially the imagination of girls so that they get involved in the creation of technology instead of being satisfied with only using it. A space has thus been created where technological answers are sought to everyday problems, and in this process the girls have the advice of technology designers and engineers.

Another striking initiative is that of the Women, Information Technology and Scholarship Group of the University of Illinois at Urbana-Champaign. Through workshops in schools and universities they evaluate new educational softwares from the point of view of sexism and identify patterns of interaction for this purpose. They have also published a book to be used in institutions whose central message is that the new information technologies will be really new if women's skills are identified, recognized and valued as innovation and progress.

Lastly, and as an example in Latin America, we shall mention the *Programa Piloteando Futuros: lo/as jóvenes se preparan para la ciudadanía, la empleabilidad y el liderazgo*, coordinated by the Women's Studies Centre (CEM), with the support of PROLEAD-IDB, which was carried out in Argentina, Uruguay, Chile and Paraguay through the fourteen NGOs for women and/or young people. Its purpose was to strengthen the technical capacities, exchange and the community projection of executive NGOs in order to put into practice innovative formative projects directed at young people of both genders, preferably from poor sectors.

The majority of these institutions offered young people training in information science, but with special attention to this knowledge being linked in a harmonious and programmed manner, with a stimulus for developing motivations and skills for the active exercise of their citizens' rights, including their rights to act as informed, critical and purposeful citizens in the net. Efforts were also made to ensure that through the use of the computer, young people expanded their work opportunities and competencies and at the same time there was encouragement of leadership in social initiatives and the internalization of the values of equity and solidarity among the genders.

More than 500 young people from the four countries participated in this experiment. The results are very encouraging and a set of "good practices" have been identified at the institutional, pedagogical and strategic level that could be repeated in other circumstances.⁸²

⁸¹ As Mitch Kapor says (co-founder of the *Electronic Frontier Foundation*) "architecture is politics". This refers to the fact that the social effects of computers and information networks are very conditioned by their design or architecture. He reminds us that these technologies were created for military or business institutions and thus their design is related to those purposes and influences what people do and say in these networks. M. Kapor and J.P. Barlow: *Across the electronic frontier*, 1990, <http://www-art.cfa.cmu.edu/www-wilding/notes.html>

⁸² *Piloteando Futuros: los/as jóvenes se preparan para la empleabilidad, la ciudadanía y el liderazgo*. CEM, 2001.

VIII. Progress and highlights

When the progress made with regard to the Internet by Latin American women and, in particular, by the various organizations that act in favour of their rights and their participation in society, the first that is emphasized is a significant imbalance between practical actions and the evaluation and research.

Two exceptions should be mentioned. First, a study carried out by INSTRAW on access to and use of information science in a sample of 133 organizations devoted to the advancement of women in 23 countries of Latin America and the Caribbean. Their main conclusion is very eloquent: these organizations live in a mansion but only use a few of the rooms. In fact, 90% of the organizations have at least one computer, 17% between 6 and 10, 79% have email accounts; more than 95% received basic training in the use of computer tools; but 98% refer to using mail, only 48% use electronic lists and 53% the Web. Other tools such as electronic forums, conferences, chat rooms, are practically not used and only 15% have a web page. Another interesting study was carried out by the APC Women's Network which systematized the lessons learned in 8 years of work at the global level supporting women's organizations and participating actively in the most relevant international meetings held since the 1990s.⁸³

The article by Burch and Leon (2000) emphasizes the progress made by women's non-governmental organizations with regard to access to information and knowledge technologies (IKTs) and their use for advocacy and communication measures, but they warn of the

⁸³ Networking for Change. The APCWNSP's First 8 Years, APCWomen's Networking Support Programme, Philippines, December 2000. See also: Putting Beijing Online Women Working in ICT.

need to establish new goals, such as participation in negotiations on national legislations and in debates on state intervention in Internet regulation, and on the need to be aware of the immense power of the information and communication industries; all of which would indicate the advisability of forming alliances with the various sectors working towards a greater democratization of IKTs.

A panorama of the relationship that Latin American women's NGOs are establishing with the Internet during the last decade shows a proliferation of initiatives (creation of institutional web pages, mailing lists for the dissemination of information and/or interaction with regard to some specific topic, some forums for debate, etc.) which have very little connection with each other, except in those networks which have the specific task of creating and interconnecting different nodes (especially the APC network).

According to a study that is underway on these products,⁸⁴ it may be observed that in general, their intention is limited to disseminating information on news, activities, resources, problems, campaigns and other activities undertaken at the national, regional or international level. There is also the objective of linking or, more precisely, providing references about what is happening with women and their organizations in Latin America with the proposals of international organizations, essentially the United Nations system. Beyond the relevance of this information, it gives the impression that the proposal fulfils the purpose of legitimizing or enhancing what women are doing in the Region. In very few cases is there information on the issues and even less on the progress of women in other developing regions. When this does occur, the information is presented without context and almost without a link to the central themes, and appears more as an "exotic" extra⁸⁵ within a list of items offered rather than as content that adds meaning or knowledge.

As previously mentioned, the attempts to become "global" are not easy and even less the attempts to practice "glocalization".⁸⁶ Despite this, there are good prospects for further efforts in this direction, as long as we maintain epistemological and policy vigilance with regard to the siren songs and/or the usual apocalyptic impressions, in the stages of the emergence of another historical phase.

Another characteristic which is observed is that, although some of these forums try to cover as broadly as possible the experiences and achievements of groups of women in all countries of the Region, and also follow a criterion of equity, this "politically correct" posture makes it difficult to distinguish within the set of news items, the issues that are the most important or broadest in scope or power.⁸⁷ There are not usually controversies over an issue, or references to conflicts within the "feminist community"; the image that appears is a vast internal homogeneity and harmony, a broad group of women aligned around a common struggle.

Other characteristics include the repetition of the same information on different sites, a lack of continuity of many of them, the scarce presence of other social issues or groups or forums concerned with social, cultural or political questions not directly linked to gender and the use of very simple technologies.

⁸⁴ This is an analysis of the discourse of institutional webs and mailing lists of women's organizations that was begun in August 2001 from the *UNESCO Chair on Women, Science and Technology* based in FLACSO, Argentina.

⁸⁵ This recalls the metaphor of *delicatessen* that Belausteguigoitia Rius uses to illustrate how the network may be similar to one of those sophisticated businesses, in which all world products can be seen and purchased, including different persons and cultures that are shown as exotic and special. In this case, the reference is to black women, but it can be applied in other cases. This is very far from the illusion of diversity and multiculturalism that is claimed. Belausteguigoitia Rius: op. cit.

⁸⁶ We refer here to the need to understand the different issues by highlighting localization in the global and the effects of globalization on the local.

⁸⁷ It may be claimed that all actions have relevant aspects and that it is the user who has to choose and reach their own conclusion. In this case, however, one should also ask to what point this trend to a lack of differentiation is not continuing by other means one of the obstacles that feminism has faced in past times. The supposedly "horizontal" characteristics of the network help to justify this practice.

The use of the Internet to bring people into campaigns for the defence of women's rights, for advocacy and intervention in decisions concerning gender equity policies seem to be for the moment the undertakings that galvanize the most participation from women and receive the greatest valuation and expectations.

As has already been said, this practical richness is not accompanied by sufficient studies that demonstrate how women are linked to the Internet in the countries of Latin America and the Caribbean. Reliable studies would have to be carried out, and continually updated, differentiated by sex and linked to other variables such as age, economic circumstances, residency, education etc., on access, availability and hardware and software costs, local online resources (web sites, electronic lists, etc.) in each country of the Region.

A question should also be asked about the effects of the results of using this technology, both in the lives of individual women and in changes in their collective consciousness as a gender, what they would like the Internet to provide in personal, professional and political aspects and how they think this could be achieved. The studies of "reception", that is on the processes of appropriation and resignification of the messages with which they are connected, would be a significant contribution both for the theory and for the development of media and political strategies.

Other necessary contributions are concerned with the identification of the concepts relating to gender and the technology of the designers of technological innovations, teachers in this area and in other sectors responsible for marketing.

There could be great strategic significance and utility in an analysis of current national and international legislation and the discussions that are taking place with regard to regulation.

Little is known about the experiments carried out, their strong points and the obstacles faced, in short, what in this particular field are the "best practices" that could be transferred or adapted to different situations. It would be very useful to have a multimedia database on cases or success stories.

Without claiming to exhaust the list of research priorities we would suggest some other necessary areas:

- An analytical comparison of curricula and the results of the training courses currently available in informatics and the courses that already include a gender focus.
- Sociological, linguistic, cultural and psychological research on women's relationship with IKTs, for example, methods of use, frequencies, content preferences, aesthetics, extension of networks, patterns of interaction, satisfaction, and others.
- Consideration of how gender patterns are expressed and are reinforced or changed with the new technologies in specific cultural contexts.
- The working conditions of women and men in informatics enterprises.
- Social images of IKTs and the gender imaginary.
- Effects of IKTs, human development, building citizenship and political participation.

One INSTRAW recommendation is particularly valuable, but still awaiting implementation: to establish a regional observatory that collects and processes in a systematic manner information on the relationship of women and IKTs through statistical data, opinion studies, surveys, observation of web sites, in order to monitor the development of the sector and analyze the changes that affect the situation of women. Of course the lack of basic data that has been referred to is not exclusive to those who are working with and about women. According to Castells (2001), although it so important, the Internet is so new that we do not know much about it. In this situation, when

there is a phenomenon of great social, cultural, political and economic relevance but little is known about it, all kinds of myths and extreme attitudes are generated. Castells is referring to the prejudices against it that are still emerging, but the author believes that we can also make this claim for the expressions of intent or the conclusions that are drawn with regard to its positive effects for women's progress.

There is no doubt that the Internet has the potential for many more people than at any other time in history to have access to up-to-date sources of information, to facilitate exchanges, circulate ideas and connect to issues and groups that are geographically distant; it also helps them to organize themselves and initiate projects in collaboration, in a decentralized form, both at the economic level and at the social, cultural and political levels. It also opens up a path to, and also an illusion about, creating more democratic forms of relating and managing public affairs.

The latter, however, is not a product of technology, but is rather part of a context of enormous crises and changes in the traditional organizations of political representation and is made stronger by the emergence of new social actors and isolated or sectoral demands, which find a means of expression in the Internet that may be easier or less costly than direct mobilization. (Nor should it be disregarded that the use of the net creates the soothing sensation that there are many more supporters of a cause than when the meeting takes place in the real space of a city).

There is a vast distance between the potential referred to above and a situation with full participation of Latin American women in the Internet, even recognizing its general limitations. This has been understood by some pioneering organizations in this field such as ALAI or the Women's Networks Support Programme of the Association for Progressive Communication (APC),⁸⁸ which have been making serious efforts and achieving specific results⁸⁹ in attaining objectives that can be summarized as follows:

- To increase the access of women, and especially the most disadvantaged, to resources (financial and technological) and especially to IKTs.
- To broaden and encourage training and technical assistance opportunities through programmes that include a gender perspective and campaigns to increase awareness of and encourage them to enter technical careers.
- To promote the equitable participation of women in decision-making at the international and national level, in connection with the use of communication infrastructure, and computer access to the networks.
- To encourage the empowerment of organizations and their networks through the use of electronic networks.
- To request the participation of international organizations in the international distribution of cyberspace, with special attention for the needs and rights of the less technologically developed regions and of women.

⁸⁸ There are other international networks and organizations that are working with similar aims, in which Latin American experts participate. Among these we shall mention *Women on the Net* (WON) created by the *Society for International Development* (SID) with the support of UNESCO. Also the Working Group of the *Once and Future Action Network* (OFAN); the GAINS project of INSTRAW; a new project on *Women Leaders in Technology* of the OAS Foundation for the Americas and other initiatives which, if they do not specialize in women, include the gender focus among their priorities.

⁸⁹ One turning point has been the work carried out by the APC Women's Network at the Conferences on Women, since the one held in Beijing (1995) and the Network's active participation in developing the proposals relating to technology in the Beijing Platform.

- To urge governments to ensure that national legislation relating to computer networks includes the right to democratic access for women and citizens to electronic networks. The same applies to international legislation and policies in this area.⁹⁰

These objectives are valid, but they should be accompanied by other actions to strengthen them. For example, a research agenda should be developed that would make it possible to obtain the basic data to support the theory and orient future plans and policies. Some issues have already been mentioned that should be included, although surely others could be added in accordance with local circumstances and resources.

The dialogue should also be further extended to sectors that have a large quota of power such as the companies that produce technological tools and use them for marketing.⁹¹ It has already been demonstrated in other technological and cultural areas such as television or school books, that calling them evil and establishing a tense and accusatory relationship with "them" does not lead anywhere.

Encouraging and especially supporting women who study and work in the production of new technologies is a path that promises good results and in our experience the women, especially young women, are grateful.⁹²

Another aspect to consider is how to intervene in decisions and regulations regarding the circulation and selection of intellectual production on the net. We are already seeing a growing dissemination of journals or even books published only in electronic form, encyclopaedias and other reference materials in CD-ROM, and all of this will bring a significant change in the concept of academic knowledge, of a library, and of which productions are legitimate and valuable for an educated public and which are not.

As Dale Spender said in 1991, women's knowledge is more at risk now than at any other time in history. If the articles, books, journals produced by them are left in their old format they may be entirely excluded from the construction of culture and science.

From what we have seen, when we reflect on the present and the future of women in and on the Internet, there are issues that remain pending and new efforts will be required in the next few years. The most obvious is to achieve access for groups of women that have been left out for economic, cultural or geographical reasons. It cannot be assumed, however, that the use of basic tools on old equipment will be the solution for closing the digital divide. On the contrary, while the access gaps are getting smaller, new gaps are being created: between those who have sufficient cultural capital to distinguish and use the abundant and not always relevant information that circulates on the Internet and those who only consume it passively or are manipulated by it. Other divisions are also being generated between producers and consumers of contents; between those who excel in the use of tools and "fast" data management and use of the keyboard and those who are "slow"; between those who are becoming increasingly competent in the consumer culture and

⁹⁰ In the last few years, regional and international organizations of the United Nations system have been concentrating on issues relating to women and science and technology, which indicates an increasing visibility of this issue on the agendas of women's organizations and institutions concerned with development, rights, education and science. For example, the Gender Working Group of the United Nations, a special group within UNIFEM, in addition to the *UNESCO Chair on Women, Science and Technology in Latin America*.

⁹¹ Castells claims that the industry that supplies Internet contents as well as Internet technology is concentrated in the main metropolitan areas of the major countries of the world.

⁹² One example of this attitude was the Intergenerational Dialogue of Women in Science and Technology that we carried out as a complementary activity of the UNESCO Regional Forum on Women Science and Technology, Bariloche, 1998. Young women from different countries in the Region, recent graduates or students of these subjects met, first on their own and then with experienced researchers to reflect on and discuss their experiences in predominantly masculine fields, ways of combining their professional and personal plans and their visions of the role of science and technology in Latin America.

those who live the frustration of induced expectations, and lastly, between those who are fluent in the dominant Internet language and those who have to go through the "backyards".⁹³

In our view, all of these issues should be considered on a systematic basis. Although each individual project with women and IKTs should define its priorities, such prioritizing does not mean granting exclusivity to an issue and/or postponing indefinitely other topics without which this particular issue changes in meaning and value.

Lastly, even in adverse contexts such as the situation in Latin America, it is possible and desirable to recreate the creative and playful capacity of women in their relationship with the Internet.

We need to create other narratives and metaphors, to think about this link outside of the logic of productivity or the duty to be a citizen, or at least not only in those terms. It is a matter of giving women the opportunity to articulate their own imaginary and play at inventing and at inventing themselves.

⁹³ According to Castells the current challenge in the face of the volume of information that circulates on the net is to know where it is, how to look for it, how to process it, how to transform it into specific knowledge for what is needed. This capacity for learning to learn and know-how is distributed unequally in society. This where, empirically speaking, the digital divide is situated at this time. M. Castells, *op. cit.*

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