

TECHNOLOGIES OF INFORMATION AND COMMUNICATION: USE OF THE INTERNET IN RURAL SOCIOLOGY

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Abstract:

The communication here presented has the objective of examining the use of the Internet in a specific area of knowledge – Family Production and Environment - based on informational social theory. The following concepts are examined: the concept of network and reflection of knowledge which will emerge in the analysis; the articulation between the cultural, epistemological, social e political dimensions involved in the question of family production; and the virtual space of the internet itself. We will explore the possibilities and limits of the Internet as technology that allows new standards of knowledge construction.

Keywords: Family Production; Rural Sociology; Internet; Technologies of Information; Informational theory; Internet; Net Society

Introduction

The present communication has the objective of analyzing the Internet's utilization in a specific area of knowledge – Family production and environment, based on informational theory, discussed by the following authors: Castells, Giddens, Lévy, Rosnay and Boaventura Santos. We will situate family production, in the area of rural sociology, based on the production, transmission and traffic of information and culture on the internet. Thus, the use of informational and communication technologies, with internet support, are considered an efficient structure of communication. It is efficient for the circulation of information and debates based on a list of members for discussions and a *home page*.

The project, entitled “*Family production and environment on the internet*” of the Brazilian National Research Institute – EMBRAPA –developed a “Family production interest group – GIPAF – and a “Family Production home page” as well: www.cria.org.br/gip/gipaf One of its objectives is the improvement of information on this theme, based on specific investigations.

The following concepts are examined: the concept of network and flexibility of knowledge which will emerge in the analysis; the articulation between the cultural, epistemological, social e political dimensions involved in the question of family production; and the virtual space of the internet itself. We will explore the possibilities and limits of the Internet as technology that allows, in thesis, new standards of knowledge construction.

We will begin from some initial suppositions in order to organize our reflections on the utilization of specific technology in a particular area of knowledge.

Looking at the rapid diffusion of technologies of information in the last two decades, in the productive, academic, services, health and education areas, the suppositions are: What are the implications from an epistemological point of view, that is, from the production of knowledge of technology use? Which are the limits and possibilities of using the new technology from a social perspective? How are we to understand the paradox between integration and individualization involved in the interaction between individual and new technology? How about the question of property rights on the Internet?

I

The diffusion of modern technology in many fields is a recent phenomenon, possible because of the technological paradigm revolution based on microelectronics, which has permitted theoreticians to examine an “informational society or a network society”: Castells (1997), asserts that development is based on the mechanized flow of information, what makes it possible to theorize about an informational society or a network society.¹

Castells examines the social-contemporary transformations on several levels, nevertheless, the starting point is the technological paradigm transformation based on informational technologies. For Castells (1996), it is not a post-industrial, post-modern or a programmed society, but an informational society, in which the development/productivity source resides in a creative and efficient incorporation of informational technologies in the production processes of the global economy.

Another author who examines the informational society concept is Rosnay (2000), for whom it can be observed as a cultural jump, a level crossing from the established paradigm to comprehend the industrial society to a new paradigm that reflects the diversity, complexity, systemic and non linear thought culture. The old model in is not capable of explaining cyberspace characteristics (economic, social, cultural and material space). Therefore, it introduces another concept, the “informational ecosystem”, what means that today’s society is not organized as a power pyramid. It is organized as a net, in which states and big institutions live together in an environment of co-operation/competition.

Going back to the Castells analysis, this author uses as a starting point, the technological paradigm transformations in the informational technology revolution because of its capacity to penetrate every aspect of life in society. It analyses technology in its interaction with contemporary society and culture. Between technology and society there is no deterministic relation, but there is dialectical interaction, for authors like Fernand Braudel.

The technological paradigm transformation - based on technologies associated with telematic diffusion - causes a transformation in the material base of society. Concomitantly, this technological process occurs in many ambits of society: 1 – International economy; 2 – Business; 3 – Work relations; 4 – State; 5 – Dual city; 6 – Organized crime; 7 – Gender relations (family, sexuality and personality/identity). From the point of view of these imposed reflections epistemological changes are generated based on the use of new technology in many fields of knowledge.

What is specific to informational development is knowledge of the vehicle itself, as the principal productive source. “Informacionalism” is oriented to technological development. It is oriented to knowledge accumulation and to elevated degrees of complexity in processing information. That characteristic allows a productive and economic network organization.

The Internet is an efficient and productive organization, which works in real time in any part of the globe, in which the dynamic is dictated by the technological effects of the knowledge and by the knowledge itself. As such it can be expected to reach elevated degrees of complexity in the information process.

The functions of the network include knowledge transmission, process, storage, circulation and related information in the net mode, what is shaped by a series of links. Using this base diversified actors apply new interactive instruments which multiply each others’ powers and efficacy” (Rosnay, 218). The network makes possible the transformation of knowledge, in other words, knowledge develops within patterns of increasing complexity. The Internet articulates innumerable topics linked within and among themselves, which can be consulted.

¹ The starting point to theorize Castells’s network society is the post-industrial society theory, developed at the beginning of the 70’s by Daniel Bell (1973) e Alain Touraine (1971).

Family Production and Environmental issues are thus linked to agrarian reform, as noted by Carlos Salinas is pertinent:

El elemento central de nuestra teoría -dice- es la noción de temas que se "entrecruzan" en muchas direcciones y con muchas dimensiones temáticas que sirven de travesías. El tratamiento de un tópico irregular y complejo no puede limitarse a una sola dirección sin mermar el potencial de transferencia (...) La información llamada a ser utilizada de muchas maneras distintas tiene que ser impartida de distintas maneras" (Salinas, WWW.librobinario/com/witt/html)²

The present theoretical reflection on network society is linked to empirical case described in this paper. The Internet use is related to a specific area of knowledge³: family production and environment, discussed institutionally by a group of researchers of the National Center for Technological Research on Computing⁴: GIPAF. This research group developed a *Home Page* (HP). It encloses systematic information and knowledge on the topic, thematic sessions, a discussion group, and forum for discussion with experts and services rendered.⁵ In agreement with the Project (1999):

The Interest Group in Research (GIP) for Family Production is a project to contribute to the discussion, looking at the constant interaction of those interested through the Home Page that will include information on Family Production, thematic concepts, agriculture, agro industry, environment, agrarian questions, services and other things – and organize a forum to deal with these themes.

The GIP for Family Production intends, too, to provide information as to the program of research in the area, with ongoing or concluded projects. Also, the GIP intends to provide survey and census data, to work as a communication vehicle of publication, to divulge events and news and to construct a bibliography of references, researchers and institutions. All the members of GIP, independently of their institutions or geographical placement, will be able to contribute information filling out interactive applications or sending e-mails that, depending on the case, will be analyzed and selected by an editor."

Although it has been considered one of Brazil's mainstays of production, as much in relation to the volume of food and fiber production as because of its important social character, family production has been relegated to the background by public policies. Recently some sectors are considering family production from a different point of view. Investigations have been conducted as much to diagnose the present situation as to update its numbers for a possible

² There are several ways of understanding the Internet. What is here emphasized is the articulation among many themes, meanings articulated within a network. Barthes, apud Casalegno present the following definition: "On the Internet, the 'hypertext' is a compound text for word or image blocks, connected electronically. Barthes uses such terms as connection, linkages, network. The network conveys a galaxy of meanings but not a meaning structure. There is no starting point, but reversibility."

³ The concept of knowledge is based on institutionalized and scientific learning as well as folk wisdom, the learning process developed, for example, by fishing communities. See Ruben , 1995.

⁴ The reseachers of the project Gipaf are: Carlos A. Meira (Embrapa Informática Agropecuária – Campinas, SP); Fenelon N. Neto (Embrapa Agroindústria de Alimentos); Fernando A. LOurenço (IFCH – UNICAMP); Gilberto Nicolela (Embrapa Meio Ambiente – Jaguariúna, SP); João Carlos Canuto (FEPAGRO, RS); João F. Marques (Embrapa Meio Ambiente – Jaguariúna, SP); Miguel Angelo da Silveira (Embrapa Meio Ambiente – Jaguariúna, SP); Sérgio Vilela (Embrapa Meio Norte – Teresina, PI). -

⁵ Concepts (conceptual discussions of family production), Agro industry (relations between family production and industrial processing), Environmental sustainability, administrative forms for family production, Agrarian Questions (land problems, social movements, agrarian reform) and History (family production evolution in different regions – session in construction). The information items are: people, services and institutional register, bibliography and articles for download.

investment by specific public policies. Examples include projects in the areas of rural sociology, anthropology, and agrarian geography, beside economic and agronomic studies. Within the governmental plan, are the FAO/INCRA projects.

The present agrarian configuration of Brazil includes the expansion of settlements and the growth of demand for new possibilities for agrarian reform. A new governmental program, Pronaf – National Program for the Strengthening of Family Production is an attempt to attend the sector's requirements, recognizing the importance of the discussion of this kind of producer. It's important not only for production, but for the environment, too. Nevertheless, it is valuable to remember that basic discussions concerning the social questions and regional differences still deserve some attention from the researchers as well as from the public policies makers.

Embrapa began, in 1997, with CNPMA – National Center for Environment Research, and some of its researchers, a specific project for family production, initiating the GIPAF site. For three years the GIPAF has been publishing systematically, news linked to this class and leading a discussion group in which inscribed people from many sectors of agriculture can exchange ideas, information and to debate many topics of family production. The necessity to come back to a more systematic debate, integrating people and organizations around the debates in technical production, market strategy and public policies, one of the *home page's* base topics.

In this sphere of action, two deficiencies were found: on one side the lack of basic information; on the other side, the inexistence of a discussion group or forum for debates, to find and gather people around the same discussion. These would be, then, the two bases to be worked in the development of a vehicle that could collect, organize, handle and make available technical information. The new informational technologies, especially the World Wide Web, the *www*, were seen as the best tools for an increase in the information interchange.

The importance of discussing themes linked to family production and environment is justified by this class of producers, its size and relevance in the Brazilian and international scene, as well as the interdisciplinary concern of these themes.

The experience of thematic discussion groups that use the Internet as a means of interacting has now become common. It points out increasing concern and satisfactory results between the members and others who want to consult this information. The Internet offers a notable volume of information for users very fast, what makes possible debate optimization and the interaction between the debaters and the source. Debates on line, investigations and discussions between Brazilian and international researchers on themes in common can be handled with more speed and adequacy. It promotes a colossal quantity of information democratically organized and supplied.

The academic-scientific objectives of the GIPAF are to:

- increment areas of information that have not been implemented on this area yet;
- contribute to the themes proposed by the editors;
- to identify publishers interested in the information;
- to maintain the home page;
- to identify the profile of those who visit the page;
- to investigate new links (national and international);
- to organize debates through forum discussions;
- to file and update bibliography of the many areas pertaining to family production (books, articles, theses);
- to offer an electronic application form;
- to promote comments/reviews of articles, books, papers and theses;

- to suggest articles and papers published in the area;
- to identify and make contact with authors;
- to organize interviews with institutions and people;
- to organize and maintain updated a list of the projects of NGO's relatives to the theme;
- to exchange experience (academic, institutional and of private companies);
- to maintain updated an international bibliography;
- to make data tables available to users;
- to suggest and to stimulate events relevant to the area ;
- to identify participants for debates and to make comments on the themes.

The items listed above are available in Gipaf, on the internet. It promotes the interchange between researchers, institutions and producers and access to important information that refers to family production. Moreover, Gipaf has the resources that make possible the information exchange by e-mail. Discussion list, researchers and institutions catalogue relevant bibliography on the themes, published projects, research products, ongoing research projects and events, among other items. Among Gipaf's contributions, an important one is to introduce discussions of academic-scientific character, developing topics connected to family production and environment from national and international investigations and seeking to undertake discussions on the themes.

Very different users visit the home page as well as the discussion list annexed to it. It has a monthly access of about 1600 people. The search for documents is done, first of all, based on the collected material, such as scientific articles, books, newspapers and others, available for printing.

The methodological procedure for a documental search is as follows:

1 – Search, read, analyzes and selects relevant information:

The selection and handling of relevant information are done based on material to be obtained on the internet. The product is systematized, filed as soon as possible and displayed on the *home page*. It is expected that it identify topics for further thematic sessions and information items.

2 – Bibliography list:

The bibliographic references are based on the material provided by the different thematic session editors.

3 – Relevant articles for the theme, for *download*:

Themes are identified by the thematic sessions editors.

4 – List of national and international *links*:

This list is supplemented by the work explained in 1 above.

5 – People and institutions registered:

6 – Important events and services calendar:

II

Gipaf provides an evaluative questionnaire to be accessed by the home page users. It is provided to identify them by their profile and main interests in looking for a *site* associated with family production. Analysis of the questionnaire yields information to improve services and serve the wishes of the page users. Questions are included about access to the thematic sessions; concepts, projects, events, publications, bibliography, numbers of family producers, link, discussion groups as well as the users' evaluation of the sessions.

The research results, provided by the page's administration, have had great user response. The suggested themes were chosen from the evaluative questionnaire, suggested by people who access the list:

Genetically modified plants
 Rural development
 Agricultural markets
 Technical assistance
 Ecological tourism
 Garbage recycling
 Social questions
 Credit systems
 Producer organizations
 (co-operatives/associations)
 Technology creation
 Marketing
 Rural communication
 Social movements
 Rural economy (jobs)

Wood production
 Livestock raising
 Government policies/Pronaf
 Environment
 Political and educational systems
 Women's labor
 Rural youth programs
 Part time farming
 Alternative energy sources
 Sustainable rural development
 Rural ethics and citizenship
 Workmanship
 Rural extension
 Market contracts

In the Discussion Forum, that has already promoted debates on Family Production and Genetically Modified Organisms, the most requested topics, yet to be debated are:

Organic and biodynamic agriculture
 Family Production in transition - Agroecology
 Rural policies for family production
 Producer Organizations
 Subsistence income
 Pronaf

Gender questions
 Agrarian law
 Part time farming
 Family production and agroindustry
 Family production and education
 Rural migration

The most expressed aspects pointed out by the users⁶, regarding the discussions of family production are:

The Family Production home page contributes to the strengthening of family agriculture; gives rise to polemic questions; speeds up the flow of information; promotes ideas, knowledge and experience exchange; seeks problem resolution; makes the discussion of family production possible among several sectors of the society, even those who are not directly participating in the debate; makes research results possible for many professionals; stimulates debate among those in education; publishes research results; socializes the information; promotes a dialogue among regions and researches; updates news about family production and helps the producers in their daily activities.

In addition to these aspects, it is pointed out, the importance of maintaining a debate forum about family production offers alternatives to improve research development in many regions. The home page works as a way to remove doubt that the users may have about family production and to get knowledge of the rural area.

The page's continuation is of fundamental importance. It is an opportunity to continue interacting and seeking solutions that could help the small producer. Moreover, the sessions and the Family Production Bibliography have contributed to the recycling of researchers' knowledge as well as for other professionals. The page is seen, too, as a means to make people think about an alternative project of sustainable development for the country.

Final Considerations

The theoretical supposition is that the Internet changes the diffusion and production conditions of knowledge. The Internet user is exposed to new ideas and debates. There is a knowledge circulation and a two way flow of information (among creators/authors) and ideas

⁶ The users of the forum of discussion are from many areas, as sociology, agronomy, agriculture research, and many others.

on the Internet. It opens new possibilities to build a “collective” knowledge. These new possibilities permit discussion and reflection of contemporary questions.

For Giddens who theorizes contemporary society, we are living in a society in which modernity is transformed and social interaction is no longer guided by tradition, but by reflective knowledge.⁷ The reflexivity allows that outside agents take part in knowledge production in many fields of society. The opportunity to change the social structure, thus, exists. Additionally, there is the possibility of the new technology extending its domain over current logic as suggested by the habermasian formulations⁸.

According to Santos (1995 and 1999), we are living in a time of transition from a modernity paradigm to one of post-modernism, in which the modernity paradigm exhaustion occurs due to an excess of accomplished promises and low index of human emancipation. For the author it is about epistemological crises involving science (natural and social) and social crises caused by the society model, based on the modernity perspective.

The modernity paradigm retains us in a mega-snare: the transformation of emancipatory into regulatory energies. Thus the necessity of examining discontinuity and paradigm and sub paradigm changes (Santos, 1995,p.93).

The emancipatory promises, identified by the modernity perspective, are made possible by new epistemological paradigm and new social model, in which the fusion between scientific and common sense knowledge have the function of building alternatives and possibilities for emancipation. As explained by Santos (1995, 283), they will have the function of building configurations for a new paradigm: a paradigm of prudent knowledge for a good life:

The results from the convergence of epistemological and social dynamics are the visibility of important problems as well as the urgency of finding a solution. We understand that we are going into a paradigmatic period of transition on both epistemological (from modern science to post modern knowledge) and social aspects (from a capitalist society to another social form that may be better).

What is important from the social point of view is to know whether new informational technology will make possible the democratization and collective production of knowledge and if there is a possibility of social structural change. This is a topic that has been considered on our home page, concerning family production. Is there interest in alternatives for small producers in Brazil?

The project, Family Production and Environment, of GIPAF, on the Internet, intends to stimulate discussion since family production is important for food production and as the

⁷ The reflexivity concept in this paper comes from Giddens' perspective (1990). According to formulations developed by this author, reflexivity is “the relation between sociology and its objects – the human being's actions in modern times, that occur mediated by specialized systems within sociological or economic areas of knowledge. For Giddens (1990 and 1997), reflexivity occurs by a “ double hermeneutic”. The first agent of interpretation is the social and the second is a specialized system. Thus, in late modernity more people are able to access sociological concepts as an hermeneutic method for reflection which may change the social structure. (Lash, 1997, p.142).

⁸ For Habermas (1987), society is a system and world of life. The system is constituted of two subsystems: the economic and political systems. The economic subsystem is predominant in the logic of systematic integration and instrumental action coordinated by power, property and money. The political subsystem involves instrumental action coordinated by the power mechanism). In the world of life the logic of communicative action predominates, in which the mechanism of action coordination is the *inter-subjectivity*, involving forms of free communication, of domination and of power.

It is important to emphasize the analytical distinction, respecting that the subsystems influence the means by which we live, which change communication. On the other hand free communication forms of the political and economic subsystems may exist.

social component of Brazil's rural area. Family production and social reproduction permit access to land for families, who plant food. To call attention to this reality debates, events, discussion groups, articles, books and theses are some of the means used by Gipaf. We believe that the program is achieving its goals. Topics such as agrarian questions, sustainable rural development, agro ecology, agro industry, food security are examined. The discussion forum, with an increasing number of members from several areas, provides space for discussion of pertinent questions on family production.

Gipaf maintains a vast register of newspapers, academic-scientific articles, theses and books available for download. It is possible for researchers to access a rich bibliography of family production and environment. It is one of the pioneering pages on family production and environmental themes. The project has promoted extensive contact among several institutions (national and international) on family production. It promotes profound debate by the processing of material in the area and the information change among researchers. It also promotes knowledge on the technical instruments for maintaining the home page.

During this period the home page has gained a new visual form and has incremented some new items. It has new bibliographic references, new links (national and international) and an Image Gallery of Family Production. The site also has a new register of People and Institutions and an evaluative questionnaire.

The empirical case presented in this paper demonstrate the possibilities and limits of using information technologies in Brazil. The innovationness of this model includes:

1. The network incorporates large numbers of organizations and individuals. It is more than a single diffusion point of knowledge and information. According to Rosnay, in the informational society, knowledge is not shaped according to the pyramid-like form. It is shaped according to the network form. Information doesn't circulate in a network. It comes from the scientific knowledge of the academy and is fed by thematic editors who are members of the discussion forum. We believe that the information technologies will stimulate the constitution of a new knowledge standard that will alter the interaction among the scientific knowledge, governmental knowledge and local knowledge.
2. The interaction will take place in real time, even if that interaction is occurring among students, researchers, professors and Non Governmental Organizations (NGO). However the number of family farmers that access the internet is small, we expect that this number will increase, so as to include them in the debate and present possibilities for life improvement and the subsequent elaboration of more effective public policies.

The internet was developed as a public institution. Its content is maintained by thematic editors and the discussion forum members, the authors included are: universities, governmental institutions and NGOs. In this process family farmers are outsiders and are excluded. To include them in the Brazilian case it is necessary to provide a substructural improvement which depends on public policy (production, development and education), and the social movement dynamic.

Nevertheless, the empirical case shows that information technologies will not change the social relations of the Brazilian society. The configurations of power present a structural problem and control of the content of material transmitted. However the internet stimulates discussion of the agrarian question among researches, professors and NGOs.

The internet is increasingly important for family farmers. It provides a link between scientific and local knowledge. The local knowledge has reflective potencial (as family farmers reflect on their conditions). Using the interaction between the scientific knowledge and local knowledge the farmer can change his conditions. Presently, information technologie is in the service of the corporations and the financial system. The ideal would be achieved if information technologie was in the service of the population in general.

References

- BELL, D. **O advento da sociedade pós-industrial: um ensaio de previsão social.** São Paulo: Cultrix.
- BECK, U.; GIDDENS, A.; LASH, S. **Modernização reflexiva. Política, tradição e estética na ordem social moderna.** São Paulo: Unesp, 1997, 264p.
- CASALEGNO, F. Para navegar no século XXI. IN: MARTINS, F. M. e SILVA, J. M. (Orgs). **Para Navegar no Século XXI.** Porto Alegre, EDIPUCRS, 2000, p.288-289.
- CASTELLS, M. **La era de la información. Economía, sociedad y cultura.** Vol1. Madrid: Alianza Editorial, 1997, 564p.
- FAO/INCRA – **Diretrizes de política agrária e desenvolvimento sustentável.** Versão resumida do Relatório Final do Projeto UTF/BRA/036, nov. de 1994.
- HABERMAS, J. **Teoria de la acción comunicativa.** Madri: Taurus, 1987. 2v
- LEVY, P. A revolução contemporânea em matéria de comunicação. IN: MARTINS, F. M. e SILVA, J. M. (Orgs). **Para Navegar no Século XXI.** Porto Alegre, EDIPUCRS, 2000, p. 195-216.
- ROSNAY, J. O salto do milênio. IN: MARTINS, F. M. e SILVA, J. M. (Orgs). **Para Navegar no Século XXI.** Porto Alegre, EDIPUCRS, 2000, p.217-294.
- RUBEN, G. O “tio materno” e a antropologia quebequense. IN: OLIVEIRA, R. C. de e RUBEN, G. (Orgs.). **Estilos de Antropologia.** Campinas: UNICAMP, 1995, p 121-138.
- SANTOS, B. de S. **Introdução a uma ciência pós-moderna.** Rio de Janeiro: Graal, 1989.
- _____. Um discurso sobre as ciências na transição para uma ciência pós-moderna. **Estudos Avançados,** São Paulo.
- _____. **Pela mão de Alice. O social e o político na pós-modernidade.** São Paulo: Cortez, 1995.
- TOURAINÉ, A. **La sociedad pós-industrial.** Barcelona: Ediciones Ariel, 1971.