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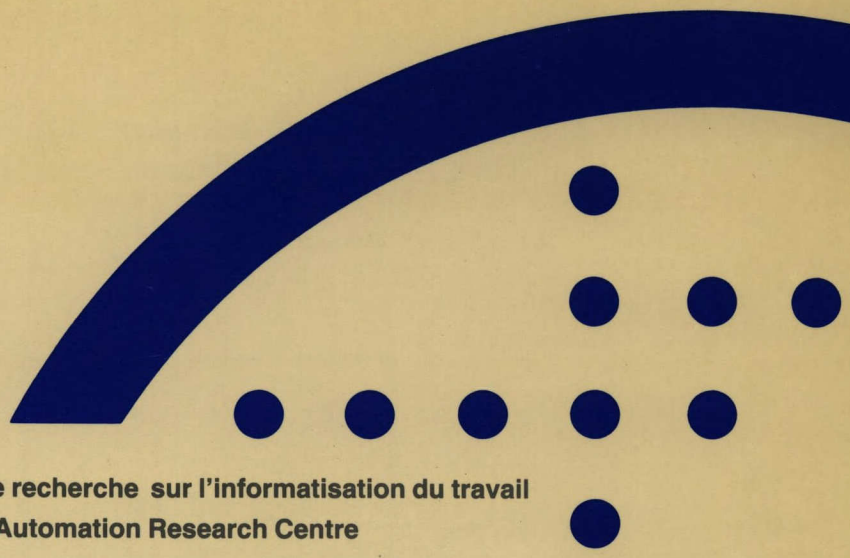

Le Centre canadien de recherche sur l'informatisation du travail
Canadian Workplace Automation Research Centre

COWS AND BYTES

Reference Document

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Department of Communications of Canada
Canadian Workplace Automation Research Centre
(CWARC)

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Introduction

Cows and Bytes is an ethnographic documentary video illustrating the complex phenomena surrounding technological and organizational change in agriculture. It was produced as part of the preliminary research for "Workplace Automation" (working title), a joint research project and production of the Canadian Workplace Automation Research Centre (CWARC) and the National Film Board of Canada (NFB), during the course of fieldwork research for the CWARC project "Farm Automation and Dynamics of the Family Business".

The background given in this reference material should be helpful in interpreting the ethnographic content of the film when it is shown for educational and informational purposes.

Farming and Technological Change : Background

Over the last decade, the use of microcomputers has spread to every sector of social activity. Although originally found mainly in offices, they now play a major role in production in many fields. In the last few years, rapid transformations in management and production methods have been seen in the agricultural sector, at least partly due to the introduction of computers and robotics. Until just recently, farming was said to have gone through three main "revolutions":

mechanization, the genetic "revolution", and computerization. But now there is a fourth revolution in progress : new information and communication technologies (NICTs) integrate management techniques, agronomic knowledge, biotechnological applications, and automation and robotics. For example, computers can now be used to improve land and livestock management, and in dairy farming, they can be combined with automatic feeding cars, putting agronomic knowledge and advances in food technology to work feeding livestock.

Quebec farms have not just undergone technical changes in work procedures; the agricultural sector has changed in many ways in recent years. In the dairy sector, for example, only 14,000 businesses now remain of the 80,000 operating in 1961. Over the last 20 years, the number of livestock has dropped by a third, farms have increased in size by half, and average yield per cow has also increased by 50% (Parent, 1993). At the same time, forms of farm organization and ownership have begun to change significantly. The traditional family farm (i.e., having a single owner, and run jointly by a family) is increasingly giving way to a variety of forms of family or multifamily co-ownership. (Debailleul and Gouin, 1988; Hamel, 1989; Parent, 1993).

Technological, social, and economic change : contrary to the popular belief that rural environment and stagnation go hand in hand, the modern farm is in a state of flux, swept by the major currents of our society. Farms are changing, and the women and men who work on them must change their ways of understanding their work environment to account for the new realities of agricultural work. The survival of their business - of the entire industry, in fact - is at stake.

Everywhere they are being used, NICTs are altering people's relationships to their jobs, to their co-workers, to knowledge : in short, they are contributing to the transformation of human and organizational culture. How are agricultural producers integrating these changes? What visions of work and life, what plans, hopes, dreams, and values are emerging on the new computerized farm? **Cows and Bytes** attempts to provide some answers to these questions by describing the experience of a family of agricultural producers in eastern Quebec.

Changes on the Farm : A Case in Point

The Pettigrews, like many other Quebec farm families, were faced with the challenge of integrating technological change into their work, along with the organizational and social changes that this process entails. The Pettigrews run the Côte d'Or farm in Isle Verte, Rivière du Loup County. Like a growing number of Quebec farms, the Côte d'Or is an incorporated business, co-owned by the parents and their two oldest sons. Production is fairly diversified, concentrating on four main areas : milk, grain-fed calves, strawberries, and green house produce.

In 1987, the Côte d'Or began to acquire new technologies to assist in management and production: first, they bought a computer for bookkeeping and managing the fields and feeding of the dairy herd, and this led to the introduction of an automatic feeding car in 1988. The process of change is not yet completed: the Pettigrews are planning to acquire more advanced systems and more powerful machines. What new reality do all these changes bring[1]? In **Cows and Bytes**, the

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1. For a more detailed discussion of how farm women and men are initiating and responding to changes in forms of ownership and operation, see Parent (1993).

members of the Pettigrew family (the parents, Yvon and Raymonde, their daughter Irène, their son Christian, and his wife Ginette) talk to us about their vision of the present and future. Their views are typical of the trends uncovered during research for the video, which are outlined in the following pages.

Appropriating Change : New Ways of Thinking and Doing

The experiences and opinions of the Pettigrews are not unique. Many agricultural producers are seeing their work environment change, along with the dynamics of their business, and their hopes and dreams - in short, their life on the farm. Close attention tthe comments of our informants reveals four main themes, corresponding to ways agricultural reality is changing and the terms of reference used by farmers : (a) technological choices, (b) forms of organization and ownership, (c) their relationship to agricultural work, and (d) their relationship to knowledge. These themes also reflect trends seen in the literature and information gathered from other farmers during preliminary research for **Cows and Bytes**.

a) Technological Choices

While older people attached a great deal of importance to ownership of farm machinery (because of its importance to production, but also as a source of self-esteem and status), the younger ones tend to be more interested in NICTs. The reasons they give are chiefly economic and technical, and are in keeping with the general trend in farming which is to focus on farmers' management skills. The effective use of NICTs results in savings on feed, improved health of livestock, greater production and control, better soil management, exploitation of agronomic

skills, improved quality of life, and greater independence from outside labour and consultants (particularly sales representatives for feed and supplements who provide agronomic advice). They also symbolize modernity and efficiency, and are an outward sign of farm men and women's technical and management abilities.

Some tensions, however, are experienced with regard to work procedures and forms of organization associated with NICTs. Even the younger people show some resistance, since the new environment created by technology conflicts with the affective relationship some of them have with the land, animals, and a simpler way of life, which is at the root of their involvement with farming. The dehumanization of work, the demise of the farm as a strictly family enterprise, and technologically induced unemployment are perceived as the greatest dangers related to the introduction of NICTs.

b) Forms of Organization and Ownership

Technological change is part of a larger movement toward the industrialization of farming, which is replacing the family-based enterprise with a business-based one. For example, in a context where the capital costs of machinery and technology needed for business are very high, in many cases the best strategy for passing the farm on to descendants and not overburdening them with debt seems to be to restructure ownership of the farm; the Côte d'Or, for instance, has been incorporated as a company (for more on this subject, see Debailleul and Gouin, 1988). Farms are becoming proportionally larger in order to accommodate children and their families. This new way of organizing the farm is becoming a

contemporary means of realizing the parents' aspirations of passing on the family property. They see this transformation as a sign of success[2].

Thus patriarchal ownership, based on the authority of the head of the family, joint operation by the family unit, mutual adjustment, and traditional patterns of succession, is giving way to the increasingly noticeable emergence of co-ownership (generally by parents and sons), based on power relationships not always connected to the family dynamic (with the involvement of several family units and the extended family), specialization and sharing of responsibilities among joint operators, the reintroduction of a salary, and passing down of the property according to a legal framework governing co-ownership. The prevailing dynamics on the farm are thus becoming increasingly entrepreneurial.

The growing specialization and sharing of farm responsibilities among joint operators seems to be a source of self-esteem and power for people, thus validating a logic of the organization separate from the logic of the family. Examination of the reassignment of work and responsibilities shows that administrative tasks are still almost exclusively women's domain. With the increased importance attached to this area of farm operations, however, it is far from a negligible source of power and recognition for farm women[3].

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2. But not without its ups and downs: Parent (1993) has demonstrated that the selection of descendants who will be involved in owning and operating the farm, the allocation of shares, the redefinition of power relationships within the business, and so on, become sources of tension, worry, and rifts in which the logic of the business confronts the logic of the family.

3. It is conceivable that because of its growing importance, in future, more and more men may move into this area.

c) Relationship to Agricultural Work

The new realities of agricultural work mean that although earlier generations saw farming as a way of life, the younger generation sees it as an occupation. Now young people more frequently view farming as a chosen occupation, and training as a prerequisite, whereas education used to be perceived as one way of escaping from the farm.

In the eyes of the new generation of farmers, a desireable quality of life is another reason for taking up farming. Leisure time, vacations, and early retirement are goals of many young farmers, and these features are helping to "urbanize" the rural way of life. Home and work are becoming increasingly separate spheres, as can be seen both in people's expressed concerns and in the way they organize their lives. Technology is valued for its capacity to free people from restrictive herd-tending timetables and to literally save time. It is directly linked to the new values associated with agricultural work, which are similar to those current in other sectors of society.

d) Relationship to Knowledge

Although informally acquired knowledge, experience, and know-how gained through traditional preparations for becoming a farmer are still valued, formally acquired technical skills - both demanded and exploited by the new technological environment - play an increasingly important role in running a farm business and defining the professional identity of farmers. The processes of acquiring and maintaining formal knowledge (initial and continuing education, attendance at

conferences and lectures, etc.) are increasingly being seen as legitimate activities, necessary to running a successful farm.

As far as the organization of the farm is concerned, effective power is shifting towards those with formal training (in most cases, chiefly better-educated young people) and away from the traditional structure of parental authority. Technological changes highlight the importance of new skills in agricultural work, enabling young people to play an increasingly central role, while older people who have not kept up with the latest developments are increasingly finding themselves assuming secondary roles.

Conclusion

Technological change seems to be part of a wider process of change occurring in the agricultural sector : it both affects and is affected by the reorganization of the agricultural industry, the urbanization of the way of life, and the emerging professionalism of farm men and women. For farmers, this translates into new values, ambitions, and ideas. They have hopes for a better quality of life and for fulfilment outside of agricultural work. This corresponds to a separation of the spheres of home and work. The family and the farm are increasingly separate in terms of the organization of work, ownership of the business, and power relationships. Finally, the economic, organizational, and technological changes that Quebec farms have undergone seem to be accompanied by a growing professionalism of farmers. Farms are becoming more business-like.

Organizational, economic, social, and cultural changes go hand in hand with technological changes in farming. It is likely that the way farmers adapt to organizational and technological changes today will affect how and how well they respond to the economic, social, and technological environment of tomorrow. By studying the way farmers incorporate change today, tomorrow we will be better equipped to develop policies and programs better suited to the farming world to help it adapt efficiently to the globalization of the agricultural market. **Cows and Bytes** shows that not only does technological change affect various areas of the lives of the people exposed to it, but also that technology and how it is implemented are expressions of ways of viewing work procedures, social values, rules, and relationships. This means that when the introduction of any type of technology is being studied, whether in agriculture or another sector, the social aspects of the question must also be looked at, if we want to understand the how and why of change so we can manage it more effectively.

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