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Crisis, Farming & Community

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Abstract

In 2001, the UK was hit by Foot and Mouth Disease (FMD) precipitating one of the biggest crises ever to affect the UK farming system. The crisis unfolded as a series of information and communication problems, from government to farmers and from farmers to farmers, with consequences for action in a time of crisis, social support, and the maintenance of community. What happens to a farming community during such a crisis? When the countryside shuts down, and no one can enter or leave the farm, how can information be disseminated? As methods of dealing with the disease change rapidly, as happened in this crisis, how can information be delivered in a timely and coordinated manner? To explore these questions, data have been gathered from reports and writing about the crisis, and from interviews with Cumbrian farmers. Although we will address throughout the discussion the multiple information channels used by farmers, this paper focuses on the role of information and communication technologies (ICTs) during the crisis, notably a community networking initiative known as Pentalk. We conclude with a look at the current role of Pentalk in the farming community, and with discussion of how networks such as these can help during crises in which there are significant needs for information and communication management.

Introduction

In 2001, the UK was hit by Foot and Mouth Disease (FMD), precipitating one of the biggest crises ever to affect the UK farming system. The epidemic cost over £8 billion, led to the slaughter of over 6 million animals, and devastated the livelihoods of thousands of farmers. The crisis unfolded as a series of information and communication problems, from government to farmers and from farmers to farmers, with consequences for action in a time of crisis, social support, and the maintenance of community. Data from government and local sources, interviews with those who suffered through the crisis, and books written about the crisis, draw a picture of confusion, uncertainty, and isolation at the same time that masses of people and resources were brought to bear on the crisis. At the height of the outbreak, 7000 civil servants, 2000 veterinarians, and 2000 troops were active in assessing risk, disseminating information on prevention and cleanup policies, and slaughtering and disposing of animals. The logistical exercise facing the UK Ministry of Agriculture has been described as “bigger and more complex than the UK involvement in the Gulf War” (Hetherington, 2002).

Cumbria, in the north west of England and home of the Lake District National Park, was hardest hit, and is the focal region for this paper. Cumbrians suffered 893 outbreaks, the most of any region (next hardest hit was Northumbria with 190 cases), and were affected for the second longest period of time, from 28th February 2001 to a final determination of no more cases 214 days later on 30th September 2001 (the longest time taken to eradicate the disease was recorded in Northumbria by the Newcastle Disease Control Centre with 218 days). In addition to animal slaughter at the infected farms, a further 1934 farms were subjected to complete or partial animal slaughter as part of the overall disease control and eradication measures (Cumbria Foot and Mouth Inquiry, 2002). The cull in Cumbria was estimated to be around one million animals, 44% of the UK national total.

What happens to a farming community during such a crisis? How can they pull together when measures to prevent the spread of disease restrict movement about the countryside? Farmers were confined to their farms, isolated from contact with others, often unable to leave the household for several weeks. Rules established by the Ministry of Agriculture, Fisheries and Food (MAFF, later renamed as Department of Environment, Food & Rural Affairs, DEFRA) show the kind of "lockdown" required of any farmer who suspected the disease in their stock:

> Lock your farm gates and put a 'Keep out sign' at the farm entrance
> Do not allow persons to leave or enter your farm
> Do not move any stock, crops or anything else off the premises
> Isolate all animals
> Ensure that any goods delivered are delivered at the farm gates
> Ensure suspect animals are not moved on or across a public road
> If you are a milk producer you should prevent the collection of your milk from your farm, by placing a 'do not collect' notice on your farm-gate. (MAFF, 2001)

Not only were farmers locked down; the whole countryside was closed to visitors: livestock markets were shut down, community and sporting events cancelled, walking trails and footpaths closed, and access to the countryside denied (Harvey, 2001). Travelers in and out of affected areas crossed disinfectant baths for feet and car tires.

But, if the countryside is locked down, and no one can enter or leave the farm, how can information be disseminated? How can a farmer learn that the farm next door has just 'gone down' (a term used by the farmers)? As methods of dealing with the disease change rapidly, as happened in this crisis, how can information be delivered in a timely and coordinated manner? Television, telephone, radio, and the Internet each come to mind as immediate ways of communicating, yet which is the authoritative voice? Which is to be trusted? Which can actually reach farmers whose days are spent outside the house, on the land, tending to their animals? Moreover, how do these sources, along with farmers' needs for information and communication, support the community at a time when geographical place acquires extraordinary relevance, yet conditions prevent face-to-face social interaction around concerns for this place?

To explore these questions, data have been gathered from reports and writings about the crisis, interviews with Cumbrian farmers, local media representatives, and the director and coordinators of a community networking initiative known as Pentalk. Although we will address throughout this article the multiple information channels used by farmers, this paper focuses on the role of information and communication technologies (ICTs) and the Pentalk Network during the crisis.

The Pentalk network (www.pentalk.org) – named for Penrith, a town situated in the Eden valley in Cumbria – was set up during the crisis as a rapid response scheme to assist farmers and their families in the North West of England. To date, Pentalk has won the North West Regional Award for e-commerce in 2002 and again in 2003, and the Cumbrian Newspapers Countryside Award for best contribution to Rural Technology. Pentalk is a registered charity which draws its financial support from local and national government, and educational, business and charitable sources, under the leadership of Ann Risman.

Our initial discourse provides further background on the FMD crisis, its impact, and governments' initiatives in responding to it. We discuss how these efforts were received by Cumbrian farmers, the information and communication needs they encountered, and how this affected their relation with their community. Then we present the role of Pentalk as a support for farmers and the farming community during the FMD crisis. We conclude with a look at the current role of Pentalk in the farming community, and how such networks can help communities during crises involving major information and communication management issues.

Data Sources

Data for this paper come from a number of publicly available resources, as well as interviews with farmers (see below). The published sources include:

- Reports from independent inquiries: notably a report from the Cumbria Foot and Mouth Inquiry (2002), a proceeding which was also transmitted in its entirety by BBC Radio Cumbria (www.bbc.co.uk/cumbria); and a report from the European Parliament Temporary Committee on Foot and Mouth Disease (2002).
- The Warmwell independent website (www.warmwell.com) set up at the beginning of the crisis which provides an archive of articles, reports, parliamentary proceedings and commentaries from individuals
- Writings about the crisis, notably Caz Graham's (2002) edited volume Foot and Mouth: Heart and Soul, a collection of personal accounts about experiences in Cumbria during the foot and mouth outbreak
- Personal diaries and accounts as reported in local newspapers such as The Cumberland and Westmorland Herald (www.cwherald.com); The Cumberland News (www.cumberalnd-news.co.uk), and national newspapers such as The Guardian (http://www.guardian.co.uk), and The Independent (http://www.independent.co.uk)
- Recordings of local radio reports, such as the BBC Radio Cumbria Nightline phone-in program broadcast during the crisis.

These reports are supplemented by interviews conducted in 2003-2004 with 16 Cumbrian farmers from 11 households, the Pentalk director, two farmers who acted as Pentalk coordinators during the time of the crisis, one landowner, and three local radio representatives.

Farmers were selected for interview by snowball sampling. The two Pentalk coordinators, one from the Penrith area, one from the Brampton area (in the north of Cumbria) were used as starting points and asked to suggest the names of farmers to contact. Names of farmers suggested included both members and non-members of Pentalk. These farmers suggested the names of other farmers who they thought would be willing to be interviewed. Given the sensitivities of the topic, some of these farmers declined to be interviewed, not wishing to re-live the crisis by participating in an interview. Semi-structured interviews were held with the farmers and landowners, focusing on their information needs during the crisis, the use of media and ICTs to receive such information, and discovering the kinds of available informational, emotional and other distributable support. Farmers were asked whether the information they received was timely, accurate, and/or consistent, and how their needs changed over the course of the crisis. They were also asked where they got their information and how Pentalk supported them during the crisis. Where permitted, interviews were taped and subsequently transcribed, In the other instances notes were taken during the interview. Some interviews took place on the farms where it was also possible to observe the households and to understand the physical layout. Other interviews were carried out by telephone.

The Pentalk coordinators were asked about their role during the crisis and the types of interaction and support they provided. Local radio representatives were asked about the information services provided to farmers, including the role of phone-in programs, and their activities in providing support to the farming community. Occasionally, it was necessary to go back to the interviewees with follow-up questions or to verify details. Follow-ups were done by email and phone and the two Pentalk coordinators were re-visited.

Data were analyzed with close reading and themes were identified upon which to base coding. Memo-ing was done by code notes, theoretical notes and operational notes (Strauss and Corbin, 1998), and relationships were identified between themes using concept mapping. Data source triangulation compared interview data with data from the publicly available resources cited above (Fielding and Fielding, 1986).

The Foot and Mouth Disease Crisis

FMD is a highly infectious viral disease in which fever is followed by the development of vesicles or blisters, chiefly in the mouth or on the feet. It is probably the most infectious disease that can affect livestock, including all cloven-hoofed animals such as domesticated sheep, cattle, goats, and pigs, and wild animals such as deer. FMD can be spread by direct contact with infected animals; contact with animals, people, vehicles, and other objects that have been contaminated by the virus; or by airborne spoors. The prevailing meteorological conditions, local topography, and local animal movements affect the distance the disease can travel and this may be considerable (DEFRA, 2005).

Cumbria is the first example in the world of a large FMD epidemic occurring in a highly diversified rural area, where agriculture and tourism are each major components of the economy (Cumbria Foot and Mouth Inquiry, 2002). As Green (2002), a representative of the *Heart of Cumbria* **(**www.heartofcumbria.com) noted: "Many businesses were wrecked, both in tourism and agriculture, people's lives destroyed… rural communities torn apart… the loss of hundreds of years of breeding, some of the finest stock resources in the world, resulted in, without doubt, the worst tragedy to visit Cumbria this century (online, nd).

In the 2001 crisis, attempts to contain the disease and its spread entailed: the slaughter of infected animals; quarantine of any people, vehicles, or animals in contact with diseased animals; monitored or prohibited animal movement; and reduced or prohibited movement into, within, and out of the region. As a result, farmers in Cumbria and other affected regions were confined to their farms, isolated from contact with others, often unable to leave the household for several weeks. One farmer interviewed did not leave his farm for 10 weeks. Recent research published in the journal *Occupational and Environmental Medicine* described the "misery and despair" farmers were experiencing due to the UK's "agricultural crisis" (Thomas, et al., 2003). Isolated farmers witnessed the death of many uninfected animals and had to deal with financial hardship and the uncertainty of the future. When a contiguous culling policy was introduced by the government from March 15th, uninfected sheep in 3km protection zones had to be slaughtered**.** The Cumbria Foot and Mouth Inquiry (2002) reported that "there was considerable evidence of the impact of the FMD outbreak on community life in rural Cumbria and on aspects of emotional, social and mental health" (p.11). Farmers, living in remote areas and often solitary in nature, suffered 'isolation within isolation.' Social life came to a halt as members of the farming and non-farming community voluntarily restricted their own travel to limit the chances of being accidental carriers of the disease. Farmers interviewed described how life came to a standstill, with people unable to meet at the local auction marts, unable to meet at the pub, and unable to attend farmers' weekly discussion groups.

Many were and remain deeply critical of the way the disease was handled and question the need to slaughter so many animals. A cross-party report from the European Parliament stated that the government's handling of the crisis traumatized farmers, broke animal welfare laws, and generated miles of unnecessary red tape, and that burning pyres and mass burial sites damaged the environment and people's health (European Parliament, 2002; Osborn, 2002). Interviewees recalled grandparents dealing with the disease by just isolating a single infected animal, which recovered on its own. They questioned why vaccination was not used as an option, and government motivation for wanting to say the area was 'clear' of FMD. At the same time, they acknowledged the much larger scale of this outbreak than the 1967 FMD outbreak, and their dependence on government to choose and implement a wide-scale plan.

Difficulties in responding to the crisis came from many directions. The epidemic broke out just when the Ministry of Agriculture (MAFF) was being restructured into the Department of Environment, Food & Rural Affairs (DEFRA), making it more difficult to combat the epidemic in a coordinated manner. The nature and scale of the epidemic was unprecedented and disease control measures were complex. Policies and strategies were continually adjusted to deal with the emerging situation, with resulting continual change in legal requirements for compliance with disease control and implementation of disease prevention measures. Many agencies – local, national, government and non-government – were involved in responding to the crisis.

Farmers needed information from central authorities on many aspects of the disease: how to diagnose the disease, how to prevent infection, what to do if infection was suspected, how to comply with disease abatement policies, and who would come to their farms to carry out livestock culls and disposal of animal carcasses. Because local conditions were paramount in knowing the risk to one's livestock, farmers needed to know whose farms had been infected, what animals were involved, and how they were to receive permission to move livestock (e.g., to feed in different pastures).

The government responded by delivering information in a number of ways. Guidance leaflets were delivered through the mail on how to identify and respond to the disease. Veterinarians, from other parts of the country and from overseas, were brought into the area to assess and deal with diseased animals. DEFRA inspectors checked farms for compliance with disease prevention rules. Farmers called the

DEFRA offices for information on, for example, the complex licensing procedures. However, each of these methods was fraught with problems, particularly in the lack of timely delivery of information.

Communication – lack of it, inaccuracies in it, confusion – was a recurring theme throughout the Cumbria Foot and Mouth Inquiry hearings. Evidence from the report stated,

> MAFF regional offices and local government frequently received information informally via local stakeholders, before they received it officially. Sometimes when regulatory changes were made, local officials were not given enough warning. This caused confusion among farmers and others seeking information (Cumbria Foot and Mouth Inquiry, 2002, p. 143)

Interviewees reported that by the time information had arrived in the mail, not only had they already heard about these measures from other farmers (usually by phone), but the measures outlined had often been overridden by newer ones. A key problem was that personnel handling the crisis (veterinarians, inspectors, etc.) could not be reached while in the field, and thus could not be centrally coordinated.[1] (Although cell phones were issued late in the crisis, reception is not possible in all areas and they offered only a partial solution)

Farmers reported spending all day on the phone with DEFRA and other government offices trying to get details on what to do. Not only were details not forthcoming, but the hours of operation, and the personnel they reached were not useful to farmers. As one interviewee reported:

> There was a MAFF hotline. Everyone was on the phone at the time trying to get through to these people. To our astonishment they didn't actually open the office until 9.00 every morning. Well most farming folk are up at 6.00, if not earlier. They wanted the place running 24 hours a day instead of 9-5. The little girl behind the desk really didn't know the answers. Poor MAFF, from their point of view they were terribly understaffed and they didn't have the facilities to deal with a crisis like this because the whole thing had taken off so quickly. My husband spent most of his day on the phone or the computer but mostly on the telephone. Just hanging in there until somebody answered [landowner of infected farm].

The Internet seems a logical choice as a way to disseminate information broadly and synchronously to all parties, and one of the government responses was to make information about the disease available on the DEFRA website.[2] Yet even here, information was often not of use. Farmers told the Cumbria Foot and Mouth Inquiry (2002): "When the website was obviously out-of-date or inaccurate, they rang the helpline but got no better information. Staff on the helpline drew their information from the website. So, if the website was out-of-date, so was the helpline" (p.144).

Moreover, the move to place information online was made with little understanding of the daily lives and technological readiness of the many farmers living with the crisis. While official statistics are not assessable for the number of farmers possessing computers in 2001, Ann Risman (personal communication) of Pentalk estimates that, at the time, only 25 % of Cumbrian farmers had access to a computer. Thus, in placing great emphasis on communication through websites, government departments failed to communicate with a large part of the target audience in the farming community. Moreover, the personal nature of the crisis – as it affected farmers both economically and psychologically – meant that there was a greater need for this community to discuss the situation and interpret delivered information and procedures. In the face of often inconsistent and contradictory information from government sources, farmers needed to be able to discuss what was happening and what strategies to pursue in dealing with the crisis.

Most farmers gained their information from other farmers – many interviewees reported spending the day either on the phone with DEFRA or doing farm work, and the evening talking by phone with other farmers. As farmers struggled to interpret information from government sources, they turned to local sources of information, such as the local BBC (publicly funded) radio.

Soon after the crisis began, BBC Radio Cumbria became an important source of information, often farmer led. During the peak of the crisis, a five-minute foot and mouth bulletin was broadcast seven times a day. This local radio station would regularly receive information from local people as to whose farm had been infected; however, this information could only be broadcast when the case had been confirmed by DEFRA. A two-hour nightly phone-in, specifically on FMD, had more callers than it could cope with and was used as a mechanism for information exchange between farmers. Many farmers, in their isolation, spent time calling neighbors and listening to the radio news bulletins around the clock.

It was this dire communication need that triggered the formation of the Pentalk network. It was clear that farmers needed to become computer literate very rapidly and that, often, they could not afford to buy a computer. They needed to be provided with one and they needed to be taught to use it speedily, in a way that provided them with functional skills.

The Pentalk Network

The Pentalk network was a local response to this national agricultural crisis. It is a grassroots organization that was set up to provide free computers and information technology (IT) training (particularly email and the Internet) for farmers and their families at the height of the FMD crisis. Then, and now, Pentalk supplies computers to farmers free of charge for six months, after which they can buy them at a reasonable price or return them at no charge. Initial funding for the scheme came from a start-up grant of £50,000 from the UK Learning and Skills Council, which was matched by the Rural Development Programme. Further funding came from the Department for Education and Skills (DfES).

One of the initial aims of Pentalk was to provide farmers with access to the Internet, so that they could get news and information required to deal with the crisis. Another aim was to help reduce the isolation of farmers by giving them access to email to enable them to contact family and friends living in other parts of the country and the world. Pentalk also aimed to provide a skills boost to ensure that farmers became proficient in computer use, enabling them to cope with the growing demands of government for online work and to benefit their farm businesses. Without any initial publicity or marketing, approximately 500 members of farming families received computers and training during 2001.

The driving force of Pentalk has been its director Ann Risman, a former principal of an adult education college. As she has remarked, "in the extremes of life, education can be relevant, a comfort and an inspiration" (personal communication). Even before foot and mouth struck, Risman had been talking to training providers about educating farmers of the necessity of learning IT skills. Pentalk was the right initiative at the right time. "Word spread like wildfire. They always knew they were going to have to do it, not just because government wants it, but because the paperwork was getting so horrendous" (Ann Risman, personal communication).

Pentalk & the FMD Crisis

During the FMD crisis, the Pentalk network served to connect farmers across Cumbria, not only providing a forum for social interaction, but also providing links via their web pages to websites, where farmers could access news and information available from government and other sources on the spread of the disease. Pentalk enabled connectivity with similarly affected Cumbrian farmers, as well as farmers in New Zealand and Zimbabwe. Provision of both information and communication offered a focal point for farmers who could then discuss the regulations with others similarly interested and affected. As such, it made available support for community – the geographical community of Pentalk, but also the community of FMD sufferers.

Ongoing debate about the place of community in an increasingly online world, and of online community in relation to geographical place, rarely encounters the conditions associated with this crisis. At a time when online communication served an essential role, concerns were very much rooted in local geography. Place, rather than (cyber) space, carried extraordinary and pressing significance. Yet, it was often cyberspace that provided the means to deal with local uncertainty, often through contacts remote but similar – farming communities around the globe. There is equivalence among these farmers in what they deal with locally. Hence, they are not strangers to the conditions of FMD – as the visiting veterinarians often were, and as government employees were – instead, they have the local knowledge necessary to validate and bolster the online community. They are in this sense a community of practice (Brown and

Duguid, 1991; Davenport and Hall, 2002; Wenger, 1998), yet one in which each set of constituents is bound to their geographic community.

The following sections explore further the notions of community and its support through Pentalk that emerged during the crisis, as revealed in interviews and other materials.

Impact on Community

The FMD crisis presented a serious threat to the farming community, putting many into idleness in their occupation, threatening livelihoods on farms that in many cases had been held in the family for generations. In fact, many farmers took the opportunity of the crisis to move out of farming, sometimes leaving the business altogether, sometimes passing on the farm to the next generation. Prior to FMD, government initiatives already encouraged diversification in farm incomes, creating change in farm operations and household members' occupations. The crisis reinforced and hastened this change, making farming families look beyond their own farms and regions for income sources and markets for their goods. Yet, the FMD crisis also focused attention on the local community, reinforcing for many their interest and commitment to Cumbria and to their farming way of life.

The outcome of this pull in two directions can be seen in an increased need to receive information and social support from others within the community, but also from outside. As a transformative event, the FMD crisis precipitated a number of changes to the Cumbrian farming community, notably around the use of computers and the Internet.

Local Communities: Place and Space

Sproull and Kiesler (1991) wrote of communities brought together by interest rather than geographical co-location (see also Wellman, 1979; Wellman and Gulia, 1999). More recently, Wellman (2001) writes that the rise of the Internet has resulted in a shift from "place-to-place" communities, in which socialization occurs among families, and specialized communities.

The FMD crisis certainly created this kind of placelessness, as well as a new place in cyberspace, necessitated as physical meetings became impossible while human contact became essential, and sustainable via the Internet as well as through heavy use of the telephone. The farming community is naturally geographically dispersed but at the same time has strong local ties. Normal ways of meeting include talking with others while out in the fields, or when driving along local roads. Farmers also meet at livestock auctions, local markets and in town. With the restriction on movement imposed by the FMD outbreak, these kinds of meetings ceased. Auction sites closed down, cutting farmers off from interaction with other farmers and with their auction contacts.

For those without Internet access, the telephone became the lifeline. It was the only way to contact people off the farm, which often also included extended family on other farms and children who were moved off the farm so they could continue to attend school, and also be shielded from the sight of animal slaughter. For others, Pentalk became the lifeline, giving them contact with others in Cumbria, as well as veterinarians and farmers around the world. One Cumbrian farmer interviewed by Wall reported:

> "It was very hard being stuck on the farm, not being able to speak to anybody. It was soul destroying. I felt completely powerless. The Internet saved us. If I hadn't had the computer, I might have done myself harm. Other farmers I know have said the same. It was a blessing." (Wall, 2002, p. 51)

Yet this move into cyberspace was all happening against the background of a very real and immediate attachment to place. The crisis created a paradoxical attachment to place: it increased attachment to place as the impacts of the disease targeted the farmers' local, physical region, one that many had farmed as families for generations; yet it created a detachment from place as farmers were cut off from contact with other farms, family, local towns, schools, grocery stores, group meetings at churches or clubs such as the Women's Institute or the Young Farmers association, and routine work-related meeting places such as the country lane and livestock markets. FMD created a strengthened identification with physical place while at the same time it denied access to that place.

As a result of the crisis new spaces of interaction developed, along with a new sense of community (Bennett, et al., 2002; Wall, 2002). Pentalk created a virtual space where farmers formed a 'new' community during the crisis, creating new connections at a local level. The Internet became a safety net for the farmers who came together online, particularly for those restricted to their farms (Wall, 2002). Not only did new spaces emerge for social interaction but also new places were established, e.g., the Pentalk coordinators, when they could, met face-to-face to discuss the development of the network, thereby providing a new dimension to the increasingly restricted movement of the offline community. The offline and online communities were separate but also integrated (Haythornthwaite and Hagar, 2005), each supporting the other.

Global Communities

Along with specialized communities, people also belong to multiple communities: of work, family, interest, practice, etc., some enacted locally, but also globally. Internet connections made it possible for Cumbrian farmers to create and maintain global communities. Pentalk enabled the farmers to extend their work community internationally. Again, paradoxically, the need for international contact was driven by geographically local conditions.

During FMD, farmers explored international farming websites to see how the disease had been dealt with in other countries. Through Pentalk chat sites, Cumbrian farmers were able to talk with two New Zealand farmers who knew Cumbria because of previously hosting an International Agricultural Exchange Association student. This connection provided moral support to the farmers and also helped their overall well being. One of the Pentalk coordinators said that "the contribution the [New Zealand farmers] had made had been immense, giving farmers something else to think about besides their troubles, and offering practical farming advice that many British farmers had found extremely useful." This communication grew into a monthly newsletter in which the farmers detailed the work they were doing on their farm. This globalization is a kind of network effect for which communication plays an important role (Bucher, 2002).

New Actors, New Roles

Farming is typically a family business, one that involves both husband and wife, and may also involve grown children. The outside work of farming in Cumbria is largely a male occupation (Bennett, 2003); typically it is the man who works outside the house on the farm, with the woman farmer taking care of accounts and often running another business out of the farm such as a bed and breakfast service. Thus, before FMD, it was typically the woman who completed the paper work and the computer-related tasks (if a computer was used). As one interviewee reported, farmers in Cumbria like their routine, one that has been handed down from generation to generation: work begins outside the home at six in the morning, with return to the home at predictable times during the day, but with most work taking the male farmer out of the house all day. Adherence to routine, the accepted division of labor, and the outside work meant that many men had not been willing to learn new technologies. Computing did not fit with either the demands or routines of their work.

However, the need for news, information and communication during the FMD crisis, combined in so many cases with forced idleness due to the culling of their livestock, brought about a change in attitude. Learning new skills became a positive thing to do in the midst of their isolation and lack of work. Use during the crisis also laid the groundwork for continued use of computers by the male farmer and in the farming household. As women have become more involved in different kinds of activities, following government initiatives to diversify farm incomes and often going off the farm to work at other jobs, men are increasingly expected to take on computer-based activities related to farming.

Moreover, there is an increased need for use of computers as part of farming. Government procedures that require meticulous tracking of new animals and animal movement are becoming increasingly difficult to manage via traditional paper-based methods. Completion of forms and receipt of registrations and permission are easier and faster when completed online. Thus, there are changes that make it more necessary to have computers in use on the farm, which have changed the centrality of the computer to farming businesses.

Continuing Role of Pentalk

Although established to provide certain tools and skills during the FMD crisis, Pentalk continues to serve an important and growing role in the community. Membership now stands at approximately 2000, including farmers and members of the farming household. Pentalk continues in its mission to provide computers and training for farmers to equip them to meet the many new and emerging requirements for online use and submission of government data. DEFRA aimed to deliver all of its services electronically by 2004 and Pentalk's efforts were directed to ensuring that farmers had the computing skills necessary to cope with contemporary farm management in the UK.

Pentalk runs training courses on basic computer usage as well as specific use of new online reporting mechanisms, such as the e-IACS application (Integrated, Administration and Control System, https://eiacs.defra.gov.uk) a web-based submission process for farmers in England to claim European Union farming subsidies. In co-operation with the farmers, a training curriculum has been developed which closely matches farmers' needs, including courses on management of farming accounts, web design for farm website creation, production of promotional materials (e.g., how to make labels for home produce), use of livestock monitoring systems, and digital photography. Recently Pentalk launched an IT Handbook for Cumbrian farmers, designed to assist its members with ongoing computer training. Each farmer's progress is registered, either as a series of short, unaccredited courses or as foundation certificates. This tracking gives Pentalk a record of the development of individual farmers' IT skills, thereby, providing a picture of farming IT skills throughout the county.

The Pentalk network continues to meet a significant need for new, isolated learners in a rural area and works closely with DfES and DEFRA to meet occupation-related needs and future changes. This is managed in consultation with farming agencies such as the National Farmer's Union (NFU), the Federation of Young Farmers Clubs, agribusiness companies, and auction marts who advise Pentalk representatives and work closely with them.

Fourteen farmers now act as Pentalk coordinators. They represent different geographic areas of Cumbria, and can look after more than 100 farmers each, supervising computer installations, offering mentoring, and arranging training. Coordinators also manage lists of members, update website information, advocate the use of Pentalk features, and give local assistance in the use of the network. The network continues to act as an important source for local and national news and information, including hourly news updates from the Farmers Weekly team, the local BBC, as well as new information from DEFRA.

As e-commerce becomes a viable alternative to local markets, a Pentalk Market Place has been established as a web-based place where farmers can buy and sell stock, feedstuffs and machinery. The marts section includes the latest sale reports from all the major auction companies around the county, mostly posted on the actual sale day. In this way Pentalk is keeping farmers up to date and is itself keeping up to date with online marketing trends.

In a new community initiative, *Farm Watch Online*, Pentalk is working with the Cumbrian Constabulary to reduce rural crime. This scheme is offered as a service to the Cumbrian farming community and aims, by using the website and email network system set up by Pentalk to help prevent thefts from farms of machinery, livestock, trailers, quad bikes, power tools and other items. Graham Sunderland, Assistant Chief Constable of Cumbria reported (2004):

> "People feel safer when they are provided with accurate and timely information and by working with Pentalk we will be able to build a trusting relationship with the farming community. It is a superb opportunity to work in partnership and prevent criminality."

Pentalk has evolved into a resource used not just by farmers and their families but also by other members of the regional community and other farmers from as far away as New Zealand, Zimbabwe and the Falkland Islands. It has helped farmers to diversify, providing them with the skills and training to do other jobs, e.g., to develop farm websites and sell farm produce.

Conclusion

The significance of a crisis lies in the fact that it may produce a new fundamental outlook; it can be both a danger and an opportunity. Crises can create imbalanced, disorganized chaos or serve as a catalyst for new and positive developments such as the Pentalk community network described here. This is a particularly interesting case study because the Pentalk Network has been cited as one of the few positive initiatives to have emerged from what has been described as one of the worst years in history for the rural community and the biggest agricultural crisis to hit the UK. Pentalk helped contribute to the survival of farming in Cumbria during the crisis.

The case gives valuable insight into how a local community responded to a major national crisis, serving a population for whom work and home were in the same place. While further research is needed on the role of ICTs and the Internet during crises, this case shows that the network serves as more than just an information dissemination mechanism. The Pentalk Network acted as an important resource and site for interpersonal contact, information dissemination, and information discussion, each of which were particularly important during the crisis. Also important was the reach of the Internet as a source and mode of immediate, global communication at this critical time. The Internet holds promise for use in all aspects of crisis management, as a communication system, information repository, strategic tool and populist medium for news, commentary, and action (Putman, 2002).

Pentalk serves as an example for community leaders and administrators of a successful innovation and also a sustainable one. The success may be attributable to the focus on the specific needs of the farming community, first by reacting in response to a crisis, and second by continuing to help in ways that directly address community needs. Keeping the scheme purely for farmers and aiming it at providing basic skills has contributed to its success. Current training that addresses new government demands for online reporting, and a continued focus on farm needs and farm activity, have continued to encourage farmers to become involved. Also important has been the way work has moved from a central organizer to local coordinators, people embedded in the farming community, and conversant with its needs and members. This provides Pentalk with a base of engaged participants who are close to local needs, and again are responsive to contemporary informational and technology developments.

There is a degree of skepticism about how real some community networking projects are. The major challenge confronting local community technology installations worldwide is how they can be sustainable in the longer term (Gurstein, 2001). Pentalk, which emerged from a crisis, has become sustainable. When the crisis came to an end, not only did the network carry on but it rapidly spread to the whole of Cumbria. The attention paid to the social, cultural and organizational contexts in which the network was developed and used have contributed to this success. Discussions are currently underway as to how similar schemes could be set up in other parts of the UK. If networks similar to Pentalk can be replicated in other areas, then the farming community would be in a much better position to deal with a future animal disease crisis, should one occur again.

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Notes

[1] When the army was brought in to help with the crisis, coordination and communication among the different agencies and players involved greatly improved.

[2] This crisis unfolded against a backdrop of continuing government use of the Internet for dissemination of all types of information, as well as a move to farming document processing online: for example, via the Cattle Tracing System (CTS) website (http://www.bcms.gov.uk) farmers can report cattle movements, check the movement history of an individual animal, record the death of an unregistered animal, check the list of all the cattle on their holdings, download information on their cattle for use in their farm management programme, and register new calves. For more on "e-farming," see: Department of Environment, Food & Rural Affairs, 2003; Ministry of Agriculture, Fisheries and Food, 2000; and Warren, 2000.

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