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Introduction to Social TV: Enhancing the Shared Experience with Interactive TV

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Previous research on the social impact of communication technologies has followed two distinct directions and has considered independently either the interpersonal communication or the mass communication. In this context, the human-computer interaction aspects of integrated media and social communication are examined. The design of “Social TV” systems that support interpersonal communication, which is motivated by mass media consumption and which takes place within colocated groups or over distance, is explored. In terms of the temporal dimension, Social TV might be synchronous, which happens in real time, or asynchronous, which happens with a time difference. This article provides an overview of research findings and outlines evaluation methods and user requirements for usability and sociability in interactive TV.

1. INTRODUCTION

Interactive Television is an oxymoron. On the other hand, television provides the most common ground in our culture for ordinary conversation, which is arguably the most enjoyable interaction a person has. We should try to leverage the power of television while creating some channel back from the audience to provide content, control or just a little conversation.’

—Dan O’Sullivan, *Interactive Telecommunication program*
New York University, Tisch School of the Arts

We define interactive TV (ITV) as a user experience that involves at least one user and one or more audiovisual and networked devices. Previous definitions were

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focused on the technological aspects and ignored the fact that even traditional TV is potentially interactive. For example, viewers compete mentally with quiz show participants or co-operate between collocated groups. Moreover, viewers react emotionally to TV content; they record and share TV content with friends and discuss shows either in real time or afterward. In this context, it is necessary to pay attention not only to usability issues but also to sociability. In the past, ethnographic and survey studies have documented the social uses of TV (Gauntlett & Hill, 1999; Kubey & Csikszentmihalyi, 1990; Lee & Lee, 1995; Lull, 1990), and more recently the convergence of computing with mass media has provided opportunities for computer mediated support of TV sociability. In this special issue, we explore contemporary research and applications that enhance the social dimension of TV.

The rest of the article is structured as follows. In the next section, we begin with a brief overview of the social uses of traditional TV. In addition, we describe ITV systems that support computer mediated social communication. In section 3, we describe the basic user requirements and the design principles of Social TV systems. Finally, we provide a research framework and suggestions for further research in Social TV.

2. MOTIVATION FOR SOCIAL TV SYSTEMS

Within media studies, television has received significant attention, although it has remained a controversial electronic medium. Some researchers have blamed television for a fall in civic engagement (Putnam, 2000, p. 228). Alternatively, there are researchers (Silverstone, 1994, p. 32) who argue that TV creates a shared and common experience that bonds together members in an extended society. Indeed, people lead widely diverse lives and activities, but TV and other mass media (radio, newspaper) provide a common point or reference or a kind of “social glue” that bonds both strangers and acquaintances together (Lee & Lee, 1995).

Despite the many criticisms on the quality of TV content and on the passive nature of the watching activity, the social uses of TV have been also documented in acclaimed research (Gauntlett & Hill, 1999; Kubey & Csikszentmihalyi, 1990; Lull, 1990). In particular, the use of audiovisual content as a placeholder for starting and sustaining relationships (e.g., discussions about yesterday’s football match or a popular TV series) is an everyday experience for the majority of TV users. Nevertheless, the pressures of daily life and the increase in the number of diasporic households make joint television viewing increasingly difficult.

There has been a significant body of computer-supported cooperative work research on supporting interaction among geographically distributed coworkers, but there is limited investigation in the context of leisure activities, such as TV. In fact, there is not much knowledge on designing applications for leisure or informal TV sociability. Previous research has not considered a closer integration between mass media content and social communication. Social TV applications have a wide appeal as audiovisual content becomes more closely integrated with the social structure of Web video services, such as YouTube.

We define a Social TV system to be part of an easy-to-use audiovisual system and to support distant or collocated viewers to communicate with each other by employing several synchronous or asynchronous interpersonal communication modalities, such as open audio channel, instant messaging, and emoticons. Next, we provide an overview of early research on Social TV systems.

One of the first approaches to Social TV was the Prisoner Chat by interactive media pioneer O'Sullivan (1995), which supported text communication over broadcast TV. Later, the Inhabited TV research project (Craven et al., 2000) developed a collaborative virtual environment, where viewers could interact with other viewers or virtual objects. In this case, viewers were watching TV within the virtual environment. The aim was to extend the TV experience by enabling social interaction among participants and increased interaction with content.

Previous research has put particular focus on instant messaging. The goal of Media Centre Buddies was to allow multiple users to log into an instant messaging client that was running next to a TV channel (Regan & Todd, 2004). The Amigo TV system provided a technological platform for integrating content delivery, communities, and interpersonal communication (Coppens, Vanparijs, & Handekyn, 2005). In addition, the content of the broadcasts can be personalized by sharing personal photos and home videos. Amigo TV supports online user meetings and buddy lists. Interpersonal communication is based on voice, text, and video formats, as well as animated avatars.

3. SUPPORTING TV SOCIABILITY

The design of Social TV systems should address the user requirements that have been identified in previous user studies. Preece (2000) presented a basic set of design principles and strategies, which are organized in two dimensions: designing for usability and supporting sociability. The first design principle focuses on usability, because people need to perform tasks easily and effectively. The second design principle focuses on social interaction and three components of sociability: (a) purpose; (b) people and roles; and (c) policies related to governance, membership, codes of conduct, privacy, security, and copyright protection.

Girgensohn and Lee (2002) identified three basic requirements for the design of sociable Web sites: encouraging user participation, supporting social interaction components, and promoting visibility of people and their activities. In particular, they distilled their research results into a set of four basic social interface components that can foster social interactions: common ground, awareness, interaction enablers and mechanisms, and place-making for building social interaction sites. They emphasized the concept of "common ground," which refers to the need to have a shared interest or experience between the members of a group.

3.1. Interpersonal Communication

The Ducheneaut et al. (this issue) user study suggests that Social TV software should be designed to (a) support the proper timing of social interaction during group television viewing, (b) minimize disruptions in the television program's

flow, (c) isolate exchanges that are beneficial to the group from side conversations, (d) allow viewers to move in and out of the audience smoothly, and (e) avoid drawing viewers' attention away from the television screen. Moreover, Coopens et al. (2005) suggest that to make the television experience like going to a football stadium together, three components are essential: audiovisual content, community support, and rich verbal and nonverbal communication.

In the context of Social TV, computer-mediated interpersonal communication over distance or over time could employ one or more of various communication modalities, such as audio, text, video photos, and nonverbal cues (e.g., emoticons, avatars). There are several ways to organize the communication modalities in Social TV. In terms of timing, there are two types of social communication: synchronous, when viewers get together and watch the same show at the same time, and asynchronous, when viewers interact after the show has already been seen by each one, independently and at different times. In terms of collaboration type, communication between viewers is realized at two levels: direct communication, such as chat or instant messaging, and indirect communication, such as cooperating in a team, or competing to win a game, such as a TV quiz.

3.2. Presence, Awareness and Seamless Social Bonding

If TV watching takes place over a distance or even during different times, then the main requirement is to facilitate the communication of basic information that discloses status, preference and activity of distant viewers (Gross, Fetter, & Paul-Stueve, this issue). Indeed, an important functionality of a Social TV system would be to create the impression of watching TV alongside a group of friends. For example, a Social TV system could offer real-time indicator or history trace of TV content that the rest of the viewers in a social circle have been watching. According to Agamanolis (this issue), Social TV is an opportunity for establishing a shared social context for conversations.

A Social TV system should remotely sense the presence of other viewers who watch the same or a different TV program. For example, a buddy list on the TV could correspond to a "friends" key on the remote control. The buddy list would be the first stage of an interface that would allow one to see what a social circle is watching in real time. In addition, a Social TV system should offer the option to stream a particular program directly from a friend's video storage, which would be very appealing for people who live in different countries. In this way, each local video storage becomes a sort of virtual TV channel (Chorianopoulos, 2004) that broadcasts a particular TV program to a social circle of viewers.

3.3. Interaction and Visual Design

When adding new functionality to TV programs, there will be a respective visual interface added onto one screen; then there is a risk of having on-screen interactions interrupt the enjoyment of TV content. This is a major issue in the case of TV, because viewers have become familiar with an established set of audiovisual techniques that keeps the video area clear of other visual distractions. On the

other hand, the use of avatars and emoticons promotes a seamless and nonverbal communication among distant viewers. Indeed, the employment of an animated character has been considered to increase the enjoyment of music TV video clips (Chorianopoulos 2004).

TV watching in groups is governed by a set of cultural practices and interaction rules, which have evolved such that colocated viewers can enjoy each other's company. These rules should be reflected in the case of mediated sociability. For example, Social TV systems should offer an option to express high attention to the running TV program and "mute" audio or other modalities of communication by peer distant viewers. In the same way, there should be an option to express availability for intense social interaction. These types of status could be informed by previous experience, in particular, from the design of instant messaging software (Gross et al., this issue).

3.4. User Evaluation Methodology

Shrimpton-Smith, Zaman, and Geerts (this issue) provide an empirical comparative evaluation study of two versions of the traditional think-aloud method. In particular, they suggest that because TV is a social medium it must be tested in a social context as well. For this purpose, they employed real-life couples in think-aloud usability testing. The same usability test was also performed with single users. It was found that couples detected more usability issues than single test users. Furthermore, the test session was considered to require less effort in the couple condition. Besides colocated groups, there is also a need for evaluation methods in the context of distance communication among multiple TV viewers. Ducheneaut et al. (this issue) performed an elaborate analysis of the voice communication between two remote groups of TV viewers. The evaluation was based on videotaping and detailed transcripts (both spoken and nonverbal) of the interpersonal communication, within the same room and between the two remote rooms.

In continuation to the past qualitative analysis of traditional TV audience (Lull, 1990), Obrist, Bernhaupt, and Tscheligi (this issue) performed an extensive ethnographic study of interactive TV use. They employed diaries and cultural probes, and they evaluated a broad range of ITV applications. They found that the preferences of different user groups (e.g., couples, singles, roommates, seniors) could be fulfilled only with an equally diverse set of ITV applications, and they put special emphasis on social communication. In complement to qualitative studies, Sperring and Stradvall (this issue) employed multiple usability and media evaluation methods including eye tracking, questionnaires, and physiological measurements. They report that the viewers' behavior during the show and involvement in the game varied depending on whether they participated together with friends or alone. In summary, the articles in this special issue provide a complete overview of the user evaluation methods that are suitable from studying social communication with ITV.

4. SOCIAL TV RESEARCH FRAMEWORK

There are some situations that could be benefited by Social TV systems. In order of importance, these are

- *Synchronous viewing over a distance*: This is probably the most interesting area, because the requirement it poses is to recreate the experience of colocated group viewing, when the viewers are located in two or more distant places. For example, distant viewers should be able to watch together popular social TV content, such as sports, quiz shows, or series. A good starting point is to consider ways to disclose presence and status of viewers, to continue with support for multiple interpersonal communication modalities (especially nonverbal ones), and to summarize the social experience with the production of automated highlight, which could motivate further discussion and social bonding between the distant viewers.
- *Asynchronous viewing over a distance*: This is a rather practical area, if we consider that distance viewers might have different time schedules, have differing patterns of daily life activities, or even live in distant time zones. Then the probability of synchronous coviewing is rather limited. In this case, a Social TV system could record and share shows and viewing habits with the members of the social circle. In addition, a Social TV system should allow annotation of content and recording of interactions, such as pausing, skipping, replaying, and content browsing. In this way, each time a particular TV program is accessed there is a trace, which is exploited at the next access, to personalize the content and most notably to provide a motivation for asynchronous communication. This could be rather subtle, such as visual annotation of the content highlights, or could be more explicit, such as audio and text comments.
- *Asynchronous viewing at the same place*: The main motivation for the development of Social TV systems is based on the need to bridge the distance between social circles of people, but there is also the case that colocated groups of people do not manage to meet as often as they wish for a social TV night. A subset of the functionality that was described in the previous case might be the most appropriate here.

In addition to these points, Social TV designers should consider the traditional TV-watching scenario, where a group of viewers gathers in the same place at the same time to enjoy a favorite TV program. Although this seems like a case in which computer-mediated communication is least needed, there might be worthwhile benefits in employing a Social TV system, such as providing enhanced opportunities for participation in the interpersonal communication. For example, social video games that employ sensors (e.g., cameras) facilitate simple participation in cooperative or competitive shared experiences that take place on the TV.

In summary, there are two dimensions of the social aspects of TV (see Figure 1). The first dimension concerns the presence of the viewers: colocated viewing in groups and distance viewing. The second dimension concerns the type of communication between viewers: synchronous communication that happens in real time and asynchronous communication that happens with a time lag. This matrix might be helpful in categorizing available and emerging Social TV systems and research.

In conclusion, although counterintuitive to many, watching TV can be a very sociable activity. Therefore, the ultimate objective is to design socially rich

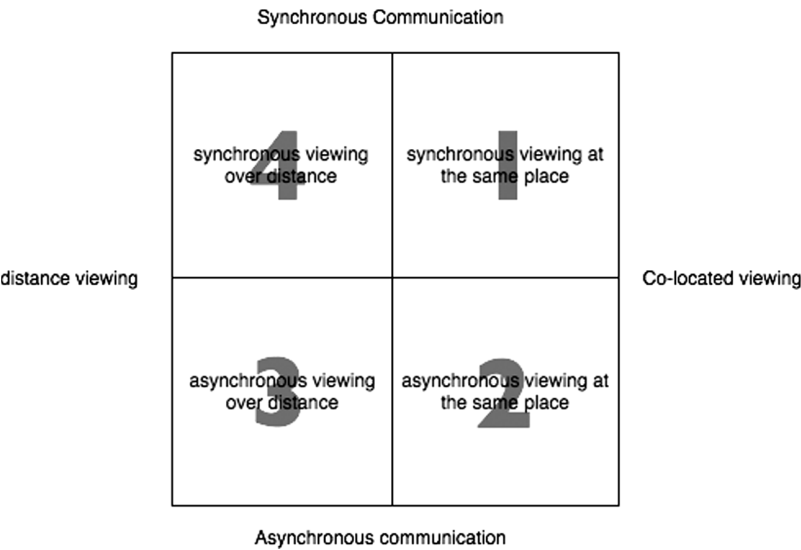


FIGURE 1 Taxonomy of TV sociability along two dimensions (presence, communication).

support for the practices that surround TV viewing while retaining TV as a leisure pursuit.

REFERENCES

Chorianopoulos, K. (2004). Virtual television channels: Conceptual model, user interface design and affective quality evaluation. Unpublished doctoral thesis, Athens University of Economics and Business, Athens, Greece.

Coppens, T., Vanparijs, F., & Handekyn, K. (2005, February 4). *AmigoTV: A social TV experience through triple-play convergence* (White paper). Murray Hill, NJ: Alcatel-Lucent.

Craven, M., Benford, S., Greenhalgh, C., Wyver, J., Brazier, C., Oldroyd, A., et al. (2000). Ages of avatar: Community building for inhabited television. In *Proceedings of the Third international Conference on Collaborative Virtual Environments (CVE '00)* (pp. 189–194). New York: ACM Press.

Gauntlett, D., & Hill, A. (1999). *TV living: Television, culture and everyday life*. New York: Routledge.

Girgensohn, A., & Lee, A. (2002). Making web sites be places for social interaction. In *Proceedings of the 2002 ACM Conference on Computer Supported Cooperative Work* (pp. 136–145). New York: ACM Press.

Kubey, R., & Csikszentmihalyi, M. (1990). *Television and the quality of life: How viewing shapes everyday experiences*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Lee, B., & Lee, R. S. (1995). How and why people watch TV: Implications for the future of interactive television. *Journal of Advertising Research*, 35(6), 9–18.

Lull, J. (1990). *Inside family viewing*. New York: Routledge.

O’Sullivan, D. (1995). *TV projects*. Retrieved March 25, 2007, from <http://tinyurl.com/2cyf9t>

Preece, J. (2000). *Online communities: Designing usability, supporting sociability*. West Sussex, UK: Wiley.

- Putnam, R. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon & Schuster.
- Regan, T., & Todd, I. (2004). Media center buddies: Instant messaging around a media center. In *Proceedings of the Fourth Nordic Conference on Human-Computer Interaction* (pp. 141–144). New York: ACM Press.
- Silverstone, R. (1994). *Television and everyday life*. New York: Routledge.