Interactive Television: New Genres, New Format, New Content

Jens F. Jensen
InDiMedia
Center for Interactive Digital Media
ExCITe
Center for Experience Design,
Creative Industries and Technologies
Aalborg University
Niels Jernes Vej 14
9220 Aalborg, Denmark
+45 96359028
jensf@vrmedialab.dk

ABSTRACT
The aim of this paper is to discuss some of the main issues associated with interactive genres, formats and content in the context of interactive television (ITV). First, a set of new forms or categorizations of ITV will be presented. Second, the suite of interactive genres, formats and applications that currently constitutes ITV will be introduced and discussed. And third, some general conclusions concerning interactivity, television and the interactive user/viewer will be drawn.

General Terms
Media Theory; Art, Design and Media; Interaction Design; Cultural and Media Studies; New Genres, New Standards; Networking (technical and social); Interactive, Digital Storytelling.

Keywords
Interactive television, digital television, electronic program guides, enhanced TV, video-on-demand, personalized TV, Internet at TV, ITV advertising, T-commerce, games and betting, the interactive viewer/user.

1. INTRODUCTION
After the big ambitious experiments with interactive TV systems in the mid90s which aimed towards the full spectrum of interactive services and very advanced kinds of interactivity, the tendency around the turn of and in the beginning of the this millennium has moved towards downscaling and low technologically-based experiments with interactive TV. A kind of discount interactive TV.

This tendency is sometimes called "the evolutionary" instead of "the revolutionary" approach to ITV. A new more realistic strategy, which develops simple services based on existing and therefore relatively low-cost technologies and only concentrates on more advanced solutions in connection with the innovations of infrastructure, which will take place anyway. For example when older installations are being replaced or upgraded.

Copyright is held by the author/owner
Proceedings of the Second Australasian Conference on Interactive Entertainment, Sydney, Australia
ISBN 0-9751533-2-3/05/11

In other contexts this is being called "the crawl, walk, run" approach to interactive television. The "crawl" phase refers to the applications where the interactive content is embedded in the broadcast-flow in the same way as is the case for teletext services. There is no request or information coming from the viewer, but the viewer can by his own choice reach information such as e.g., news, weather reports, and sports, which are made available at the viewers' disposal in the flow. The "walk" phase refers to simple data collection and payment. At this level the set top box for instance has the possibility to call phone numbers to register a payment. Finally, the "run" phase refers to the complete interactivity which includes a return channel within the ITV system through which the viewer can send various kinds of input back to the broadcaster or other TV-users. In this approach to interactive TV, the assumption is that it is necessary with a slow adaptation of the viewers for them to become interactive users of the TV medium.

2. THREE FORMS OF INTERACTIVE TV
Currently, there are more forms in which interactive TV can be re-launched in relatively low-technology discount solutions with limited aspects of interactivity.

One form is the so-called Enhanced TV, where the content – often text and graphics – are put on top of the actual video content. Then, the viewer can reach this content interactively. Typically, the extra enhanced content is being sent through the free capacity in the actual broadcast signal. In this way, Enhanced TV is a kind of super teletext service – and thus, a pure expression of the "crawl" phase.

Another form is the personalized TV – in some cases also named customized TV or individualized TV. In the most common form, personalized TV is linked to a piece of hardware by way of a personal video recorder (PVR) which in principle offers the user the same control over the broadcast flow as formerly was linked to the video recorder. This means, the possibility of pause, rewind, fast-forward (in the part of the broadcast which is saved at the given time), slow motion, etc. For example, the viewer can via the remote pause a broadcast, while the content is saved on a hard disk, to resume the viewing later. This way, it is possible to perform time shift in

relation to the broadcast flow, e.g., to review a goal during a soccer match or fast forward past a commercial. Hence, personalized TV makes it possible for the viewers to watch what they want when they want.

The, at the moment, most common form of discount interactive TV is probably cross-media interaction, however. As the most places do not have advanced TV systems yet – not even the opportunity for Enhanced TV – and since most users still do not possess advanced digital set top boxes, much less personal video recorders, it has within the last years been common to establish various forms of two-channel interactions to produce interactive-programs or interactive moments in TV-programs. This means that another medium functions as a return channel from the viewer to the broadcaster. This can be the phone, the E-mail, the web, chat, fax, or SMS, which in this way temporarily is established in the role of interactive return channel.

Compared with completely integrated TV systems the obvious advantage of this kind of cross-media interaction is of course that the so-called "terminal barrier" already is broken down. The majority of western households have already a TV-set and a phone and many also a computer with Internet access, a mobile phone with SMS, etc. Hence, cross-media interaction does not presuppose major hardware and software investments neither for the service provider, the distributor, or the viewers.

Among various cross-media formats, SMS via mobile phone as return channel to live TV broadcast has won great penetration during the last years. This form has already had its own notation: SMS TV. In a research report, carrying the characteristic title *SMS TV: Interactive Television Reinvented* [26] Van Dusseldorp & Partners points at one of the most unexpected developments within the ITV area is that the TV broadcasters have pushed into SMS-text-messages as a new return channel to enrich their programs with interactive traits.

According to Dusseldorp & Partners, the broadcasters use SMS to TV interactivity because the mobile phone – next to the TV and radio – is the only real mass medium in Western Europe. Thus, the penetration of the mobile phone exceeds the penetration of real interactive TV, i.e., subscribers to digital TV with return channels. Additionally, SMS TV is much more cost-effective than most ITV solutions. Finally, the SMS technology is known and popular among the users, where the use of the mobile phone for text messages for most users appear as almost as intuitive as the use of the remote.

At the same time, this kind of interactivity helps in a very direct way to generate further revenues from the viewers who pay to send messages via their mobile phone. Thus, SMS applications have become a substantial commercial success. Dusseldorp & Partners writes: "SMS messaging is no longer a gimmick – and Europe's leading television players aren't about to miss out on its benefits ... This trend transcends the lofty high tech promises that accompanied the dot.com boom – because broadcasters, producers and telecom operators can actually make money out of SMS" [26].

Also, the SMS interactivity enables the broadcasters to increase customer loyalty and learn more about their audience. Viewer participation in voting or other forms of SMS interactivity generates valuable information i.e. for future marketing campaigns.

Especially, it is game shows, reality TV (such as, e.g., "Big Brother"), sports and channels addressed to teenagers and the young target groups, which have used SMS text messages to enable their viewers to interact with the program content, influence the program, publish the messages and communicate with each other.

The most popular formats for SMS TV have been voting, games and chat in the way of SMS messages sent by the viewers. Dusseldorp & Partners writes among other things about the last mentioned: "Television programmes can benefit from communications with the end user by integrating their opinions into their television formats. The willingness of the public to communicate and pay for that communication is significant ... Apparently, the largest appeal to the audience is their private opinion on matters. With the interactive media usage of the future, we might not only pay to view good programming by devoting precious time to advertisements or pay for cable subscriptions. Instead, the user might pay for delivering content to the television producers and broadcasters. In the end, we might be paying to hear our own opinions on the television screen. Providing access to 30 seconds of fame might prove to be the biggest asset of the media companies of the future" [26].

The successor for SMS TV will probably be the TV combined with MMS (Multimedia Messaging Service) which supplement the text based SMS service with sound and photos and thus, fits much better into the common TV formats.

3. INTERACTIVE GENRES, FORMATS, AND CONTENT

Although the term interactive television today covers a wide range of content, applications and services, it is possible to group the variety of interactive television elements into a number of major categories or interactive genres and formats. The rest of this paper is a brief overview of different types of ITV genres. The issues dealt with include electronic program guides (EPGs), Enhanced TV, content-on-demand, Personalized TV, Internet@TV, interactive advertising, t-commerce, and games and betting. This group of genres, formats and content types currently makes up the suite of ITV categories.

4. ELECTRONIC PROGRAM GUIDES

As channel choices in cable television and satellite television expand to literally hundreds of channels, surfing or zapping as the dominant way of navigating and accessing content – not to mention reading print based television guides – will become unmanageable. With, for example, 500 channels on a cable system, a complete 'channel surf' using the remote control would take so long (even just stopping to see a few seconds of each cablecast channel) that most of the scanned programs would be over before the entire system was checked. In principle, the viewer could then start from the beginning and spend his or her entire time in front of the television just zapping. Therefore, viewers will demand more comfortable, effective and sophisticated navigation tools and interfaces to the television content. These new interfaces and navigation tools are often called electronic program guides, EPGs (or interchangeably interactive program guides, iPGs) [23].

EPGs are onscreen program guides, that is, new computer based techniques or advanced interfaces that use various menus and quick scanning of current and upcoming programs

to aid navigation through the channels and to identify content that the viewer may want to see. EPGs thus allow the viewer to get a set of program listings on their screen searched and organized by time, channel, category, genre, topic, actors etc., or view a description of the individual program, for example, by activating the program name on the screen, and in that way navigate through the content using their remote controls.

An advanced EPG may contain:

- search engines that support interactive searches to explore more detailed program information in a reservoir of deep, searchable content;
- reminders that prompt the viewer when favorite programs are on;
- automatic recordings that automatically record previously selected choices;
- customization facilities including customized 'homepages' for individual family members; and
- intelligent personal agents, that is, software with pre-programmed guidelines, that regularly checks for certain types of programs or registers and 'remembers' a viewer's preferences, so that it can point out when and where something of probable interest will turn up and alternatively exclude channels or programs that the particular viewer never watches.

The EPG has the potential to become something of a web portal on television. It is also likely that advertising and even commerce will be conducted via the EPG so a substantial part of the ITV advertising revenue will come from the EPG (see below). All in all, EPGs strengthen the consultation aspects (navigation, search) and the registration aspects (intelligent agent etc.) of the television media.

5. ENHANCED TV

Enhanced TV refers to any type of content – whether it be text, graphics or video – which is overlaid on regularly displayed video content and is accessed interactively. Hence, enhanced TV may also be conceived as a refined tele-text service, a sort of super-text television. The enhanced content may be synchronized with the program stream, so that viewers can access data during the program or at different points in the programming, or it may be available on demand from the consumer independent of the given program. Enhanced content linked with the program stream might typically include statistics in sports programming, or information about favorite actors in television shows and films. Enhanced content independent of the program includes services such as weather reports, up-to-date news bulletins and interactive product catalogues. Similarly, enhanced TV may either be based on so-called local interactivity, that is, interaction between the viewer and content downloaded to the individual set-top box or based on user requests through a return channel [16]. In both cases the viewer simply browses the desired information, possibly displayed along with the program.

Examples of enhanced TV include Big Brother (where viewers can link directly from the show to enhancements associated with the program, viewing additional content and information) and Wimbledon (where BBC viewers could choose between individual games and multiple camera angles as well as statistics and results). In these cases enhanced TV has leveraged existing entertainment formats and values of traditional broadcast and extended them further [28].

Enhanced TV, in this way, strengthens the aspects of the television medium relating to the consultation pattern, *you go to the information source* or the pull model.

6. VIDEO-ON-DEMAND

The media of yesterday were based almost without exception on the transmission pattern, that is, in Viney Kumar's terms, *the information source comes to you* model [15]. Among the four information traffic patterns enumerated in Bordewijk and Kaam's [2] media matrix, this is the only one that does not have a return or back-channel that makes an information flow possible from the information user to the media system. However, current media developments including the arrival of new media such as ITV have been more or less singularly characterized by a movement away from the transmission pattern toward the other media patterns, especially toward the consultation pattern. The media of tomorrow will thus most likely have much more to do with consultation, that is, requests, content-on-demand, or *you go to the information source* models. There are several different types of content-on-demand systems as well as genres.

Concerning the information traffic patterns of content-on-demand systems there is a decisive difference between *video-on-demand* and *near-video-on-demand* systems. *Video-on-demand* (also called *true video-on-demand* or *movies-on-demand*) is the reception of content according to individual orders, which enables television viewers to access video content whenever they wish. In this case, the content is delivered directly to each individual home without a wait. Hence, this type of service corresponds to Kumar's *you go to the information source* model [15] and Bordewijk and Kaam's request or consultation pattern [2]. *Near-video-on-demand* (or multicasting), on the other hand, is the continuous transmission of the same program, for example, a movie on multiple channels at alternative time slots, so that the individual viewer only has to wait a short time (thus the name 'near') between ordering the program and receiving it on the home television set. If, for example, a 100-minutes long movie is aired at staggered times by ten channels the viewer would end up waiting a maximum of ten minutes from the time the movie is ordered until it is delivered. In services of this type, you might say that television as a transmitting medium is actually used consultatively. In reality the information source comes to you – the signals are in the air (or in the cables) all the time – but the user will experience it as if he requests the information, that is, according to the *you go to the information source* model.

Likewise, content-on-demand covers a wide range of content types or genres. Most often the programs are movies. In this case, the service can be considered a network version of video rental or sales. Similar services can be found in the music field, that is, music-on-demand. In the same way, news-on-demand is a news service, which is updated continuously, where the consumer interactively selects and retrieves news items and may even choose the level of detail and type of presentation (text, graphics, narration, photos or video). Parallel services can also be found for sports (sports-on-demand), weather etc. Finally, games-on-demand is the network distribution of video, television or computer games (replacing diskettes, cartridges and CD-ROMs), where the

consumer either downloads the desired game from a cable network to a computer, game machine or set-top box, and is given online access to the game on a pay-per-play basis, or is able to compete against other players connected to the network (see below).

7. PERSONALIZED TV

The new interactive media not only represent a shift in information traffic patterns from transmission to consultation, from the *information source comes to you* model to the *you go to the information source* model [15], or from push media to pull media [14]; they also mean new combinations and the convergence of familiar patterns. One of the groups of applications or interactive genres that can be conceptualized as a combination or convergence of traffic patterns is personalized TV.

Personalized, customized or individualized TV takes on many forms. In its most simple model, personalized TV is television with Personal Video Recorder (PVR) – interchangeably called Digital Video Recorder (DVR) – functionality. This functionality can come from a 'stand alone' PVR device such as TiVo, or it can be contained within a digital set-top box. With full PVR functionality the user can pause during a broadcast as content is cached on the disk and take up viewing later. Likewise, PVR functions enable the user to rewind and fast-forward television content using the remote control. In this way, viewers can time shift the broadcast during a sports event to see a goal again, skip over commercials and so on. A PVR can also be programmed to automatically record episodes and programs by title, timeslot, actor, theme, rating etc., and even adjust to changes in the schedule. Thus PVRs empower viewers to watch what they want, when they want.

Other versions of personalized TV allow users to modify a program such as calling up instant replays in sports and live news, guiding the plot in dramas or comedies, or choosing their own camera angels in a sports event [16]. This last kind of service, 'be your own editor' or 'choose your own camera angle', is based on the principle that the same event, for example, a live transmission of a sports event, is transmitted on several parallel channels where each channel represents a certain camera angle. This way the viewer can 'zap' from channel to channel and 'edit' his own coverage of the event. So again, this is a service of the 'push' type – the information actually comes to you – that from the user's point of view is experienced as a pull-service, you choose which information you want to receive.

On a more general level, personalization and customization can be conceived as ways of managing information. Both relate to the information traffic pattern Bordewijk & Kaam call registration [2], that is, they are both based on the media system's registration of the individual user's choice, behavior or preferences. However, there is a significant difference concerning the location of the agency of this registration.

Personalization is driven by the media system, which tries to serve up individualized information to the user based on some model of that user's need. This form is also called adaptation or adaptive systems, that is, systems and interfaces that seem intelligently to adapt themselves to the user by noticing patterns of interaction or responding to user idiosyncrasies or desires according to expectations. Thus, personalization requires the system to have some sort of information about the user. This form of service can be conceptualized as the combination of registration and transmission.

Customization is driven by the user, that is, is under direct user control. The user explicitly selects from certain options and thereby tailors the information. An example is the setting up of a personal television home page on an EPG service that presents the user with a set of favorites, a variety of options or preferences concerning topics of interest, news channel, etc. This service can therefore, in contrast to personalization, be conceptualized as a combination of consultation, registration and transmission [2].

8. INTERNET@TV

Internet on TV, or television-based Internet access, enables users to carry out many of the activities normally performed on a personal computer (PC) connected to the Internet through the television set, for example, to read and write e-mail and instant messaging, to participate in chat and discussion groups, to surf the web or search the Internet by keyword or category etc.

The web, as well as being a way of transferring files on the Internet using a hyperlink system to connect computer files or pages, has become a huge collection of interlinked information and entertainment including tens of millions of web sites. However, the content of the web is not restricted to being delivered over the Internet, it can be selected and distributed in other ways as well. There have been many experiments with broadcasting web pages to computers or television sets. One way is to upload selected popular web sites to a data carousel. This can provide a much faster response time than is usually available over a telephone line to the Internet. Another way is to download specific pages through an on-line communication channel upon user request.

In this case, the ITV operators' general strategy is to transfer the web from the PC in the study to the television in the family room. The argument goes like this: the Internet itself is the killer application, and you just have to bring it to the unwired majority where they already are – on the couch.

There are several important trends that bring broadcasting and the web together at this moment. At first many broadcasters feared that the rapid growth of the Internet and the web would draw audiences away from traditional broadcasting and lead to its eventual demise. This fear has now more or less been substituted by a vision that sees broadcasters and content providers as perhaps those best positioned to turn Internet growth to their advantage. On one hand, the web is no longer seen simply as a shop window where broadcasters must have a site in order to keep up with competitors. Instead, many believe that the emergence of packaging and 'channel' concepts on the web means that broadcasters can now use the Internet as a valuable extra resource through which to reach new consumers of their products. On the other hand, if it proves correct that the real mass market for Internet access is through the television, then broadcasters are surely the best positioned to exploit this medium. In both cases, the emerging digital television markets – where video and audio are converted to digital data – provide the most obvious framework through which an

Internet business can be fully integrated into a broadcasting strategy.

Besides the web, Internet@TV is also closely related to and sometimes identical with communication, chat and messaging services on the ITV platform.

Chat and messaging offer the viewer the opportunity to interact with and respond to their television programs. The most common form is so-called event chat, that is, chat that runs with existing programming, and is planned and executed as an integrated part of the program. This allows the viewer to engage in conversation with the host of the program, with participants and guests in the show, or simply with other viewers on topics relevant to the programming. Comments are usually entered into an on-screen text box using the remote control or a keypad, or simply drawn from a list of commonly used phrases, and the chat stream is normally displayed beside or underneath the broadcast. Seen from the point of view of the user, this extends the viewing experience beyond the passive into a truly embedded interactive form. Furthermore, chat and messaging are perhaps the most simple, intuitive and engaging ways of interacting with a medium. Seen from the point of view of the programmer, it makes it possible to produce programs in the form of live chat-based events where content, to a certain extent, is based on direct viewer input, that is, user produced (and therefore cheap) content.

It is expected that chat functions will increase the viewer's loyalty to the program, so that he or she stays with the program and even returns to the channel or program for the next event. Thus, in a situation with increasing viewer fragmentation, chat can be a way of producing the 'stickiness' that make viewers stay with the program, and in this way maintaining and increasing viewership.

To summarize, from a general perspective, Internet access from the television screen can be conceptualized as television's transformation from an exclusively transmissional service into a complex combination of transmissional services (POTV: plain old television), consultational services (web browsing and searching, television-based home pages, interactive television links that connect programs or commercials with web pages), conversational services (e-mail, chat, messaging, discussion groups, page builder) and registrational services (surfwatch, parental control etc.) [2]. At the same time, the viewer undergoes a metamorphosis from a television viewer or receiver into a producer and sender of messages and content.

Clearly, one aspect of this development is the convergence of push and pull technologies, of broadcasting and the Internet, and consequently the merger of television and the computer, and more specifically, television's universal market acceptance and the web's anarchic multimedia content.

9. ITV ADVERTISING

ITV advertising – also known as interactive advertising, personalized or customized advertising, targeted advertising, addressable advertising, one-to-one advertising, or nichecasting – are terms broadly used to signify the communication of marketing and brand messages using the expanded functionality supported by interactive television and digital broadcast [20, 28].

In traditional television advertising, broadcasters and companies subject viewers to commercials during standard commercial breaks whether they have asked for it or not, in the expectation that the viewers will notice their television presence, remember the brand and eventually buy the product. This is the exemplary model of push, the advertisers push the information to the passive, non-(inter)active viewers. Conversely, when the viewer or user actively accesses and pulls information about commercial products and services, we have the prototypical pull model [14]. Hence, interactive advertising has a strong affinity towards the pull pattern.

There are numerous forms of interactive advertising, that is, many ways of attracting the viewer's attention and generating specific responses by means of ads extended with interactivity. NDS Business Consulting [18] lists the following aspects:

- jump: go to a specific interactive site, for example, a product catalogue (consultation);
- tag: mark a specific interactive site for later access (consultation);
- response: order a brochure or sales call (consultation);
- targeted: display a different message to different viewers depending on the viewer profile, that is, target specialized market cross sections (registration, transmission);
- incentive: reward the viewer for watching or interacting with an advertisement, for example, in the form of product coupons, discounts, special offers, an entry to a lottery etc.;
- quiz and interactive contests: reward the viewer for providing the right answers to questions relating to ads;
- viewer response: collect viewer responses and register them in a database (registration);
- impulse purchase: allow the viewer to purchase a product directly, that is, while viewing the ad (consultation, registration).

Often interactive advertising simply takes the form of conventional television commercials with additional overlaid information offering various interactive options to the user or additional links – often called triggers, hot spots or rollovers – that are displayed along with or on top of the existing video content. If the interactive user 'clicks' on one of these links or presses a button on the remote control he can experience more of the commercial than the ordinary viewer. The overlaid information or the links can, for example, make it possible for the user to request more information concerning a specific product, to express an opinion, to order a brochure, to buy a product, or simply lead to the advertiser's web site containing extra information. Thus, interactive advertising allows the commercial messages to be expanded and supplemented beyond the 30-second slot [28].

One of the significant potentials of ITV advertising is the ability accurately to target messages to specific market cross

sections or even individuals – or rather to each individual set-top box – with personalized messages based on their customer profiles. This specific kind of advertising is also called targeted advertising, addressable advertising, personalized advertising, one-to-one advertising, or nichecasting. ITV has the potential to gather information about the personal demographics of television viewers, the program preference, the viewer interaction, the individual responses to the advertising etc. On the basis of this kind of information it is possible to create customer profiles, and these profiles can in turn be used to direct specific adverts towards the expected interests of specific audiences or individual users. The term narrowcast hints specifically at the targeting of the interests of smaller and smaller segments, even down to the individual viewer. In this respect, as can be seen from the above, ITV advertising has a strong affinity to personalized TV [20].

However, there are also some serious challenges to interactive advertising. One of the most important of these is the personal video recorder (PVR). With the emergence of the PVR the way people watch television is basically changing. First and foremost, there is an increasing amount of time-shifted television viewing, that is, television watched asynchronously outside the scheduled program time slots Furthermore, some PVRs give the user the ability to record shows without ads. Other challenges are concerns about privacy, the problem of who owns the customer data, and who is going to sort and analyze it, technological incompatibility, etc. [16].

As it has been demonstrated, interactive advertising not only allows the user to request more information about the product, but in some cases even allows the viewer to purchase the product directly from the ad. In this aspect ITV advertising borders on T-commerce.

10. T-COMMERCE & HOME BANKING

T-commerce – also known as television commerce, T-com, home shopping, ITV-based Retail, T-Retail, Real Time Merchandising or transactional TV – is simply the e-commerce phenomenon known from the Internet transferred to the medium of television. While traditional television monetized creative content by putting commercials between content segments, the television world of T-commerce monetizes creative content by supporting sales during the content [3]. In other words, T-commerce allows the viewer to purchase products and services that he or she views on the television screen. In this way, viewers become consumers as they transact through television content. This new mingling of content and commerce will be realized in a variety of ways. Among other things, T-commerce includes shopping and banking.

Home shopping turns the television set into a 'virtual shopping mall'. The combination of the set-top box interactivity and home-shopping channels (and advertising) allows the viewer to purchase products interactively. One of the advantages of T-commerce is the ability to target niche markets that are almost impossible to reach through traditional channels. Home shopping includes the sale of books, CDs, clothing, travel, food and similar goods and services one usually also finds on the Internet. Furthermore, home shopping will be used in a variety of new and creative ways: music shows will let you buy the new CD; 'handy man' programs will have product placement with direct purchase available from local retailers; television film will let you order pizza through sponsorship, and so on.

While home shopping turns the television set into a shopping mall, home banking turns the set into a simple ATM machine. ITV viewers can check their balance and account status, pay monthly bills and perhaps download cash to their cash card. Clearly, such sensitive transactions – both in the form of home banking and home shopping – must be based on a highly secure system for sending information to and from the viewers.

As seen above, the new generation of interactive services will, among other things, allow access to the Internet through ITV. At the same time, however, open Internet access will permit users to engage in transactions outside the controlled environment of the local service provider (broadcaster/cable operator/Internet provider, etc.). In the short term, this may even cause service providers to be reluctant to offer access to the Internet to consumers. In the long term, however, market forces and user demand will force service providers to differentiate their service offerings and, for example, offer Internet access. For this reason, the British based analysis institute, Ovum, predicts that service providers will have to think of new ways to minimize the user's engagement in transactions outside the controlled environment of the service provider and, conversely, to keep subscribers in their own environment, thereby maximizing revenues from their own interactive services [21].

One way of doing this is to ensure that the content is more attractive than similar offerings delivered on the web. For instance, service providers may choose to reinforce the thematic content of a channel; or they may seek to establish alliances with content owners to develop attractive interactive content or to offer additional services to subscribers. That is, to develop what Ovum calls a 'walled garden': "By 'walled garden' we mean the areas of interactive service revenues that digital broadcasters and Internet portal services develop within their own environment" [21].

A 'walled garden' is thus a portal-like suite of ITV applications and additional services, a discreet area of a television service that the user can access with the press of a button. Walled garden services normally incorporate communications, entertainment, gaming, commercials, shopping, banking and customer care applications. The metaphor of the 'wall' around the garden implies that only the content and the applications provided and included by the platform operator are available to the user. In this way, the service is secured from the wider Internet and potential competitors, and consumers can in principle only move between the services as defined by the content provider and the broadcaster.

In that way, the concept of 'walled garden' may be considered ITV's counterpart to traditional broadcast television's concept of 'station design' and 'program flow', since the general purpose of station design and program flow is, precisely, to keep the viewers from zapping to other channels. The user experience of a walled garden in an ITV environment is often more or less like another channel on the television. However, within the walled garden the user can access the available interactive applications with the press of a button on the remote control.

11. GAMES AND BETTING

Interactive television games have become the surprise hit on ITV platforms around the world [20, 27]. They come in a variety of forms and flavors:

- Play-along interactive games are driven by a broadcast main event, such as a quiz show or sports event. The game set-up allows the viewers to become active participants in the show or contest by interactively responding to questions associated with the event from their homes. Their competitors may be in the television studio or be other television viewers at home. The correct answers are either securely transmitted over the ITV channel (terrestrial, satellite or cable) and stored locally in the set-top box memory for local interactivity, or sent to the broadcaster via a two-way interactive system or a cross media return path (such a mobile phone, SMS, e-mail etc.). Correct answers from the viewers are often rewarded in some way.
- Pay-per-play are game services that charge the user on a 'taxi' payment principle, so that the player pays for the games that are actually played. Gaming content in this case includes trivia quizzes, simple platform games and classics such as Tetris and Trivial Pursuit.
- Downloadable games are games you download to the set-top box. These kinds of services take advantage of the power and storage capacity of the set-top box to provide a veritable stand-alone game console. Many of these games can be played with the familiar remote control. A wide range of game providers is currently converting their conventional computer games to the set-top box platform. Other services offer download to conventional game consoles and PCs. In this way downloadable games are effectively the game version of on-demand services
- Finally, multi-player network games are games that allow the viewer to compete against other players connected to the ITV network.

A service related to games is betting or wagering, that is, gambling services, that make it possible to play the lottery, place bets, etc. using the television. Sometimes this is done in real time, that is, while the event being bet on is taking place

12. CONCLUSIONS

Contrary to traditional prejudice against television viewers as passive couch potatoes, there are strong indications that they are in fact willing to be very active. ITV programmers can derive advantage from this trend. However, according to many observers [1, 18], it will not be the flavor of interactivity known from the computer with complex applications that require concentration, long attention spans, etc. Instead, they point out that made-for-television applications will have to live up to a new mode of interactivity particularly designed for television: the principle of 'lazy interactivity'. Lazy interactivity is a so-called 'low-attention-span paradigm designed for television viewers', that is, interactive applications intended for quick decisions, short attention spans, handheld remotes, and instant gratification [1].

Lazy interactivity thus requires a simpler interface, involving minimal consumer effort that can attract couch potatoes (presumably with the remote in one hand and a pizza or a beer in the other). For example, Bernhoff et al. [1] expect that the first instances of lazy interactivity applications for ITV and, generally, the most typical interactive applications for television in the long view will be:

- electronic program guides;
- interactive commercials: adds are seen as well suited for lazy interactive content and are assumed to be effective because advertisers, for example, by adding web links to television spots can drive self-selecting consumers to a web page offering further information or transactions (see above). Short attention span 'lazy interactivity' is therefore perfect for interactive advertisements;
- shopping: quick-hit applications like buy-the-CD on MTV or buy-the-t-shirt on Baywatch are well suited for 'lazy interactive' television;
- news and weather programming: news and weather programming are inherently non-linear, random access content and as such appropriate for interactivity and ITV;
- sportscasts: television producers are looking for ways to retain viewers during slow moments in sports transmissions or between plays. Sportscasts are thus in need of interactivity in the form of additional information, statistics, betting, games, chat, etc.;
- talk and game shows: it will be relatively easy to supplement talk and game shows with interactive elements and participatory events like real-time polling, play-along, chat, etc. This will engage viewers, retain viewer loyalty and fit well into television viewers' presumed biases toward effortless entertainment.

All in all, Ovum [22] expects that interactivity will bring television viewers or ITV users into more direct relationship with networks, programmers, and advertisers. Likewise, it is expected that interactivity will be most appropriate for non-linear content or random access content like news, weather programs, ads and sports. These types of programs or genres are immanently well suited to being viewed by hyper-jumps, selective choices or browsing. On the other hand, it can be expected that drama or narrative storytelling will be much more difficult to enhance through interactive services.

In many respects, content, applications and services are the least developed, least explored aspects of the new media. New forms of expression, new genres, formats and products, will, of course, evolve. When the PC was first introduced, word-processing and the spreadsheets were just about the only software applications envisaged. However, once the technology was in place, applications proliferated at a previously unimagined pace. The same will surely occur in the case of interactive media such as interactive television.

Although the potential of interactivity is widely recognized, and despite the fact that interactivity has been the subject of a considerable amount of hype and media attention,

it has received remarkably little attention within the research community. The field of media and communication research still lacks a comprehensive theory of the phenomenon, let alone a consensus definition of it. Likewise, 'interactive content' and audience demand for this interactivity is still not well understood. Interactivity and interactive content, applications and services are clearly areas in need of theoretical and analytical work.

13. ACKNOWLEDGMENTS

This study is being pursued in the context of the research project BID-TV (Danish abbreviation for User-centered Interactive Digital Television), and supported in part by InDiMedia (Center for Interactive Digital Media), and in part by ExCITe (Center for Experience Economy, Creative Industries and Technologies), Aalborg University.

14. REFERENCES

[1] Bernhoff, Josh, Mines, C., Van Boskirk, S. and Courtin, G. *Lazy Interactive TV. The Forrester report*, Forrester Research, Inc., 1998.

[2] Bordewijk, L. and van Kaam, B. Towards a new classification of tele-information services, *Intermedia*, 14, 16-21, 1986.

[3] Gelles, A., *T-Commerce Business Models*. Myers Mediaenomics, 4th Dimension Interactive Inc., 2001.

[4] Interactive Television International. *Interactive Television content definitions*, undated, http://iemmys.tv/itvi/message_boards.html#

[5] Jeffcoate, J. *Multimedia in Practice. Technology and Applications*. Prentice Hall, 1995.

[6] Jensen, Jens F. Mapping the web: a media typology for information traffic patterns on the internet highway. In Mauer, Herman (ed.). *Proceedings of the WebNet 96. World Conference of the Web Society*, San Francisco, AACE, 1996.

[7] Jensen, Jens F. Interactivity. Tracking a new concept in media and communication studies. In *Nordicom Review*, vol. 19, 1998.

[8] Jensen, Jens F. Interactivity. Tracking a new concept. In Mayer, P. (ed.). *Computer Media and Communication*. Oxford University Press, Oxford, 1999.

[9] Jensen, Jens F. and Toscan, Cathy (eds.). *Interactive Television: The TV of the Future or the Future of TV?*, Aalborg University Press, Aalborg 1999.

[10] Jensen, Jens F. The concept of interactivity in interactive television and interactive media. In Jensen, J.F. and Toscan, C. (eds). *Interactive Television: The TV of the Future or the Future of TV?,* Aalborg University Press, Aalborg, 1999.

[11] Jensen, Jens F. 'So, what do you think, Linda?' Media typologies for interactive television. In Agger, G. and Jensen, J.F. (eds.). *The Aesthetic of Television*, Media & Cultural Studies 2, Aalborg University Press, Aalborg 2001, pp. 349-396.

[12] Jensen, Jens F. Interactive Content, Applications, and Services. In Brown, A. and Picard, R.G. (eds.). *Digital Terrestrial Television in Europe*, Lawrence Erlbaum Associates Publishers, Mahwah, New Jersey, 2005.

[13] Kantrowitz, B., and Ramo, J. C. An interactive life. In *Newsweek*, 31 May, 1993, pp. 38-44.

[14] Kelly, K. and Wolf, G. 'PUSH! Kiss your browser goodbye: the radical future of media beyond the Web'. In *Wired*, 5.03, 1997 http://www.wired.com/wired/archice/5.03/ff_push.html

[15] Kumar, Vinay. *Mbone. Interactive Multimedia on the Internet*, New Riders, 1996.

[16] Macklin, Ben. *What every marketer needs to know about iTV,* eMarketer, 2002, http://www.broadbandbananas.com/wem.pdf

[17] NDS Business Consulting. *Digital TV – Creating new revenue opportunities*, Broadcast Papers.com, 1999 http://www.broadcastpapers.com/broadbiz/NDS_Creating_Revenue.pdf

[18] NDS Business Consulting. *Interactive advertising*, Broadcast Papers.com, 2000 http://www.broadcastpapers.com/data/NDSInteractiveAD01.htm

[19] Nielsen Media Research. *TV Viewing in Internet Households*, Nielsen/NetRatings & National People Meter data, 1999.

[20] Online ITV Dictionary. *Definitions*, 2003 www.itvdictionary.com/itv.html.

[21] Ovum. *Digital Television: How to Survive and Make Money*, Ovum White Paper, 1998.

[22] Ovum. *Digital Television Global Forecast Report*, Ovum Consultancy Limited in association with DVB Project Office, 1999.

[23] Rendall, Roger. *Electronic Programme Guides*, International Marketing Reports, 2002 http://www.im-reports.com/EPG/index.html

[24] Stroud, Jim. *TV Personalization. A Key Component of Interactive TV*, The Carmel Group, 2001.

[25] Unna, Howard,. *Digital Interactive Television*, IPA, 2002 http://www.ipa.co.uk/bookshop/ditv.pdf

[26] Van Dusseldorp and Partners. *SMS TV: Interactive Television Reinvented*. Executive summary, 2003, http://www.vandusseldorp.com/publications/SMSTVExSum.pdf

[27] Van Tassel, J. *Advanced Television Systems. Brave New TV*, Focal Press, 1996.

[28] Weapon7. *iTV – A View from the Trenches*, Weapon7 Ltd. and Chinwag Ltd., 2002. .http://www.broadbandbananas.com/vft.pdf

[29] Wolf, Michael. *The Entertainment Economy: How Mega-media Forces are Transforming our Lives*, Random House, 1999.

[30] Yoomedia. *Sector Report Interactive TV*, netimperative, 2002 http://www.broadbandbananas.com/itvreportfinal.pdf