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Behind the Scenes – Before the Screens: Interactive Audience Participation in Digital Cinemas

After the transformation of film production by digital means the digital evolution now hits the distribution channels and cinema houses: digital cinema networks are about to start by 2005 in Europe offering new possibilities for interaction experiences and alternative content. Interactive narration models will have to balance direct and indirect audience participation to motivate enriched cinematic experiences in the auditorium instead of focusing on the screen activity only. The article sums up the transformation process in film production and links it to the experiences of audience participation in art and science. These experiences of interactive installations may expand into the upcoming digital cinema networks. This will create a new identity for the film theatres which will become truly interconnected community buildings on a local and global scale. A number of initiatives work on standards for the digital infrastructure to establish this common base. A special focus on European developments compares this potential to existing theatre traditions which have to be reinvented and expanded into the future by digital means.

D-Cinema: Behind the Scenes Digital Cinema has been developed in filmmaking on two parallel pathways for the last 20 years. Live-action movies used postproduction facilities for digital intermediates to enhance their

imagery by artificial add-ons. Cartoon movies began from short film experiments to establish full feature animation films in 3D design. Through digital technology the film industry has reinvented the special effects feature film during the past decade, and digital cartoons outperform the classical 2D animation movies by far at the box offices today [1].

This development has been so successful in terms of audience attraction as well as in cost reduction of complex filmmaking that the end of the 20th century can be seen as a technological turn around towards the digital age in the movie industry. The digitally created dinosaurs of *Jurassic Park* [2] were thrilling attractions drawing young audiences into the multiplex theatres in 1993. A decade later in 2004, a science fiction film like *I,Robot* [3] is realized primarily by digital means (more than half of the credits are dedicated to digital works [4]). The use of digital effects is now so everyday film business that it does not warrant even mentioning them for promotional purposes.

Only a few years before, experiments like *Final Fantasy: The Spirits Within* [5] explored then 'radical' simulation techniques from the video game sector with animation film narration to create a complete digital movie experience made up exclusively in the computer. Another perspective of digital filmmaking was shown by *Russian Ark* [6] which applied digital production technology to create a unique theatre based live-broadcasting experience: a whole feature film narration made up in one single camera shot.

Whereas digital progress has taken over today's way of producing films in production, postproduction and marketing, there has been no similar movement on the distribution side of the movie industry – yet. At least, the replacement of video sales by DVDs confirm the establishment of digital means by adding special

bonuses, mini games and detailed 'making of' along with the improved image quality of the films. DVDs offer a better look behind the scenes of contemporary filmmaking, and – as the sales figures indicate – the audience appreciates [7].

However, today's movie theatres still work in the mechanical times of Henry Ford. 35mm rules the world as the unique distribution standard for mechanical projection booths, and even complete digital film productions (like the new *Star Wars Episodes*) still need to be transferred onto this format in order to be shown in the cinemas.

Figure 1: *Russian Ark* – a theatrical filmperformance
© 2002 Egoli Tossell

But change is coming. The film industry is about to realize a rather big revolution on the distribution side by managing a 'digital roll-out' in the movie theatres worldwide: digital film formats have been standardized for digital film projectors with interconnected film servers and film archiving playout-centers using either broadband or satellite transmission.

The digital transformation hidden behind the scenes thus reaches the space before the screens. Digital technology changed first the way we produce films and how we reproduce them on the small screens. And now, digital cinema houses will surely change the way in which we perceive them on the big screens.

Audience Participation: Before the Screens Up to now audience participation has been developed only in experimental forms on media art forums or special conventions.

Historically, interactive cinema has been presented first at the Expo'67 in Montréal by a czec creative team guided by Radúz Činčera: the audience had to push buttons for a voting system based on mechanical means to make a choice between alternate trajectories of a film presented by real presentators on-stage in the theatre. Činčera's film *One Man and his Jury* and the

Figure 2: *Star Wars Episode 2 - Attac of the Clones* was a first industrial step for the transition of film production and distribution to a complete digital roll-out
© 2002 Lucasfilm Ltd.

mechanical cinema interface with red and green buttons served as a groundbreaking event for his *Kinoautomat*[8] system. It was a groundbreaking performance, indeed, concerning the complex interference of film scenes, interactive devices and theatrical live-action presentation, but it never approached a large audience and could only be presented occasionally at the Montréal Expo and other special events until 1974[9].

Although the origins of interactive film presentations based on electronically means followed quickly when Myron Krueger performed his video installations in the 1970's, interactive filmmaking has not been able to expand its performance from the art world to a more common ground until today. Most of the works of Myron Krueger and his media art successors demonstrated the interaction possibility of spectator and screen in terms of a theory of *Artificial Reality* [10] put into demo mode more than the actual development of applied interactive narration. Some of these basic works have been developed further by companies like the Vivid Group [11] as individual installations for theme parks and game arcades based on blue screen technology and pattern recognition.

Since 1991 Loren and Rachel Carpenter marked the annual SIGGRAPH conventions with their interactive entertainment system Cinematrix [12] which put the audience into an active role before the movie screen by measuring individual choices of each participant on his seat. This majority measuring real-time system used red and green reflective panels to move the action on the screen from one binary situation to the next one. Whereas annual presentations of the system retained a steady panel interface, the binary situations grew more and more complex throughout the years. Starting with simple choices between alternate short story plots and quiz shows they evolved into real-time game play with high end 3D graphics in HDTV image format. In comparison to the earlier media art installations and game arcade applications, Cinematrix realized a first successful attempt to motivate interaction within a truly cinematic theatre situation marked by a group of people sitting on their seats in rows before a movie screen. In the late nineties the Cinematrix system even made it to some multiplex theatres as a preview attraction before the screening of *Star Wars Trilogy* using the panel interface for manoeuvres of low-polygon space ships from the *Star Wars Games* [13].

MIT et al. researchers [14] took this development a little further by audience movement tracking in typical film theatre situations. There is no specific interface that each participant uses to interact with the screen. Instead, group movements are tracked by a camera in front of the audience. Not each single voter counts for the majority oriented interaction; a generalized movement of a whole group indicates in real-time what is happening next on the screen. This technically less exact measuring of audience interaction has been proven sufficiently for cinematic audience situations. The researchers focused more on the variation of interactions based on more or less general audience tracking than on the perfection of accurate scans of individually distinguishable movements. Other interfaces apply laser pointers or shadow object tracking to interact with screen games, always counting on a general motivation in the audience even if only a certain number of spectators can be sure to be tracked accurately or has access to specific tracking devices.

Figure 3: Cinematrix Interactive Entertainment System in action at SIGGRAPH '94

These recent research works implant audience interaction in a truly cinematic theatre situation as people act and interact on their seats in a natural way with their neighbours to make a difference on what is happening on the screen. Also, these entertainment systems need only everyday computer hardware and camera equipment to perform in every standard cinematic theatre situation.
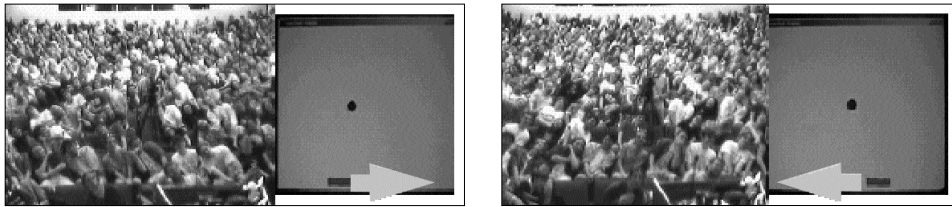
Figure 4: A large audience leans left and right to control an onscreen game (*Pong*)
Courtesy Randy Pausch

Even if the access to audience interaction has been simplified and cost reduced in the recent years, content models have stayed pretty much the same. Some examples we already know from Cinematrix, such as short gaming situations like quiz shows, ball games, paint programs and car racing. The main difference to the predecessors is the discovery of general audience scans instead of accurate single tracking points as being sufficient for creating an overall stimulation for audience participation in a cinematic theatre situation.

Sony's *PlayStation* profits from a similar approach with the enormous success of its mass-market distribution of the *Eye Toy* experience, a cheap and affordable add-on-device based on raw pattern recognition and audience tracking with a simple web cam installed on the home television set [15]. The player uses his hands in front of the television screen to match with predefined 2-D outlines and to perform simple tasks in real-time from this predefined position before the screen. Although this example focuses mostly on single player interaction it is rarely played alone. Although it is originally made for console owners and gamers, it drew a different audience towards an interactive experience with the television screen; namely, the home television audience including the family, the kid's friends and the party guests.

The gaming situations are simple, so are the installation and the interaction. But these games are not for single user purposes, even if only one or two persons can interact at the same time. These games have to be experienced

in a group, comparable to a Karaoke evening with friends. Here again, the accurate user interaction is embedded into a communicative group experience which counts more than the fascination of the game play alone or the complexity of the simulation on the screen.

The development of audience participation models first focused on the event of a single interaction with the screen in special situations. It preserved this surprise moment of controlling the screen action as an attraction effect and moved to group oriented interface devices. Today, we can observe single interactions and less accurate audience tracking embedded into group determined cinematic theatre situations as successful models of acting before the screens.

Because it is inevitable that the cinemas are going to implement digital distribution technology in the near future [16], this basic installation will do more than only influence the way we see the digital films on the screens. Whereas mechanical projections demand a passive audience experience, the more flexible digital equipment certainly serves for projection purposes, but at the same time it is a common base for generating new models of crowd interaction before the screens. The switch from photomechanical film material on a serial projection base to a data based, signal processing and interconnected server structure makes interaction possible on a large scale at the cinema of the future.

Cinematic Game Design: Massive Match Making Since the beginnings of digital media, the concept of interactivity and the concept of narration have been perceived as opponent types, with few convincing areas of overlap. The cinema traditionally belongs to the narrative platforms that present linear media types in a highly concentrated form. Digital cinemas are not expected to change this basic tradition. Encoding the film material digitally

does not imply an automatic change in the perception of the medium. Digital music files did not change our way of listening to music either. However, digitalization certainly changed the distribution ways of music – as one can expect satellite and broadband infrastructures will change the distribution ways of digitized films.

But the motivation to go to the movies may as well change dramatically as home entertainment becomes more and more cinema-like. The big screen and surround sound are no longer sufficient to attract people to the theatres in the near future, nor will watching a film remain a special event once exclusively reserved for movie theatres. Cinemas will be forced to offer event facilities to enhance the movie experience and to make the visit a special moment. Interactive audience participation may be one option for such an expanded cinema experience, and it is not the most exotic one as the technology serves the core business of film screening as well as it does for this new type of added value experience.

Interactive audience experiences also have to be implemented into a traditional reference frame of non-interaction in digitized cinemas. This predisposition will stay dominant for the cinemas as their core business rests in film projection on a large scale. Thus, by introducing interactivity into the classical linear movie, narration will quickly experience the following limits:

- on the technical level, an immediate response to interactivity is not possible, as there will be a considerable delay either by signal processing or by decision making

- the 'flow' of the narration can therefore be discontinuous for the spectator because of waiting periods

- the style of the narration can lose its consistency because of interruptions and therefore falls into separate parts marked by intermissions

- the emotional atmosphere of the narration may be perceived as interrupted, too, in case the intermissions prevent the spectator from following continuous emotional storytelling and growing identification with the characters

- the binary structure of an interference may not be motivated by the narration in case the audience's active role cannot be perceived as a necessarily dramatic part of the whole theme

- the technical framework of the interaction dominates the storytelling, mechanical choice cools down the emotional impact of the storyline

Instead of concentrating on the narrative aspect on the screen, the interaction should be focused on the communicative aspect in the auditorium. Intermissions and interferences need to become integrative parts of the whole and as emotionally involving as the storytelling on the screen, supported by appropriate theming in plot and role playing design. People go to the cinema to leave their isolated home situation for a moment and to gather together. They want to get out of everyday routine to experience something special 'bigger than life'. Even if the big screen is the most important asset of a movie house, the auditorium may have growing influence on the event feeling and attraction momentum of a visit to the pictures. And making the show an event and a communicative attraction will be important for any sort of expanded cinema to compete with future home entertainment [17].

As seen in the research works of interactive audience participation and in the popular *Eye Toy* games the communicative aspect around the specific game

Figure 5: Eye Toy/Play
Wishi Washi
© 2003 Sony Computer
Entertainment

situation is at least as important as is the game-play itself. Thus, introducing interactivity in the audience on several levels can have a stimulating effect for communicative events:

- not everyone has to be interactive at the same time but everyone has to have the feeling to be part of the event

- the specific interaction should provoke comments, reactions and the desire to influence the situation in the non-interacting parts of the audience

- the motivation for this type of indirect interaction has to be regarded as important as motivation for interactivity on the screen or in the narration

- direct interaction pushes the action forward, indirect interaction makes the situation an event

- best interaction is when direct and indirect interaction become indistinguishable: everyone joins the action, no matter if he's tracked or not

- simplicity is crucial – on the screen, in the device design and in the game play – so that as many people as possible can identify quickly with the situation

- indirect participation needs motivation of accessing the situation intuitively, otherwise a great part of the audience will stay out of the game and the interactive part will feel observed and isolated

- indirect participation can become direct participation, so that there is a motivation for taking part on each level of interaction

- indirect participation can be used to prepare oneself for direct interaction

- participation can be a controversial as well as a unifying group experience for either direct or indirect interactions

The event design of cinematic interaction models basically will have to create a party-like atmosphere where everyone in the audience has the impression of being part of the show. Instead of reducing the audience to an anonymous mechanical part of the whole, a choice maker counted in and dominated by inflexible technological tracking systems, the human factor has to be as effective as a virus and stimulate organic communication. Therefore, the cinema can create its own community platform, a place where people like to join an experience and to share the same goals.

Models of linear film narration and communicative interaction do not necessarily exclude each other. In 1975, *The Rocky Horror Picture Show* [18], a classical musical-film, became a fascinating communicative experience where people went more than once just to celebrate with others a party-like expanded cinema show:

the audience created its own spectacle in correspondence with the film scenes although the concept of the movie did not expect any interaction or participation.

This once exceptional experience may become a model for successful community building in event-driven movie theatres in the future.

Digital technology may make community building easier as stimulating interference with the screen can enhance the participation even more. Digital technology will certainly interconnect the movie theatres and create new forms of matches between different audiences, either in different rooms in the same theatre or in different theatres in distant places. This very local aspect of a digital cinema is at the same time a high potential for becoming an interconnected match maker in global networks. Thus, interactive audience participation based on digital technology can help to transform the future movie theatre into a real community building.

D-Cinema Developments: Next Levels of Details In the world of media and technology a global standard applied in all countries and cultures is an exception. Especially, in the domain of electronic media we have seen many regional differences whenever there came up a new media channel: television works on a global level, but there are several technological standards applied in different regions of the world, same with video standards and HDTV. Even the digital transformation of image formats could not standardize the medium on a truly global level: we just have to consider different regional categories for DVDs than for the analogue video regions. Seen from this point of view, the film industry established a consistent worldwide picture format rather early in its history and maintained this standard up to today through all electronic and digital changes: 35mm rules the world of movies. Still.

FILM MAKER
35 mm/digital reels

DISTRIBUTOR

DISPATCHER

Mobile
CineDisk

POST
PRODUCTION
D5 Digital
master

XDC
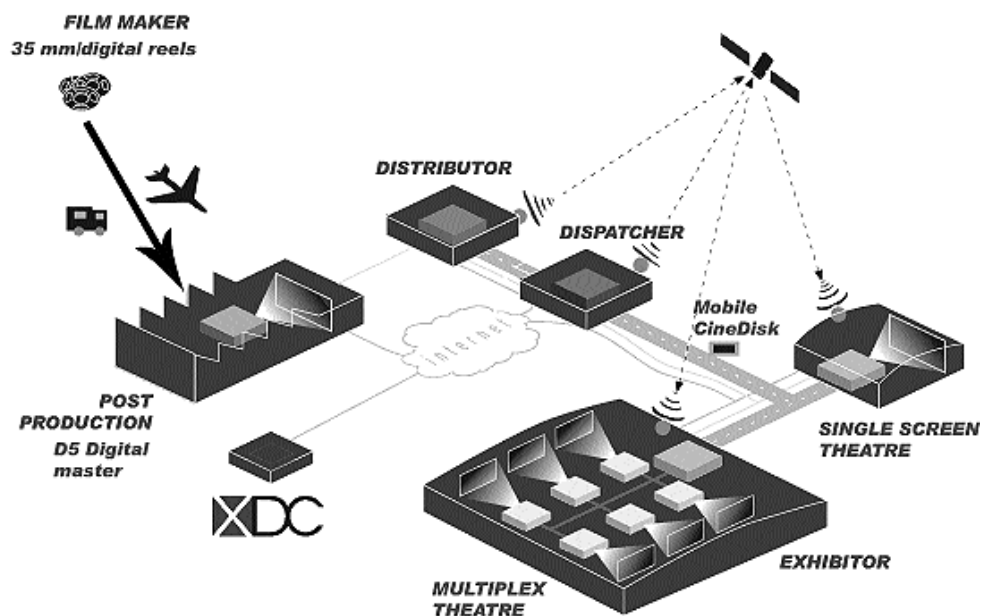
SINGLE SCREEN
THEATRE

MULTIPLEX
THEATRE

EXHIBITOR

Figure 6: A typical digital distribution workflow.
Courtesy XDC - EVS Group

A switch from a worldwide established photomechanical media system to an upcoming digital media system in full development implies several serious problems for the global film industry:

- This may turn out to become a similar experience like in the television-video world, and the one and only standard may fall apart into various regional aspects.

- The transformation process has no end, yet, which means continuous and dynamical changes in the digital world instead of fairly stable and predictable conditions on the mechanical level.

[n] There are digital rights managements to be included into any type of turn key solution to protect individual copyrights and exclusivity for the cinema owners.

[n] And there is a necessity for a general business plan between all players to share the costs of such a huge transformation. The cinema houses alone cannot take the charge as they have to invest heavily into new equipment without getting better ticket sales exclusively for digital film projections. But they may generate supplementary income with alternative content based on this digital infrastructure.

To overcome the gap between the established film standard and the upcoming digital perspectives there are several initiatives – organized on a regional base, once again – taking care of a somewhat smooth bridging into a digital cinema world made up of common sense.

On a technological level the SMPTE group and others [19] worked out a few categories of image standards to be accepted all over. On an industrial level of the film studios, Hollywood's Digital Cinema Initiative (DCI) coordinates the film industry's main interest of maintaining an exclusive attraction experience in future movie theatres. On a political level, the European Digital Cinema Forum (ECDF), the European Cinema Network and the UK Digital Screen Network encourage individual cinemas to equip themselves for the future by applying for state funds and leasing subsidies.

All these initiatives also established test beds and research facilities to set up their standard vision and to test out possible future developments: the Entertainment Technology Center (ETC) at the University of California transformed a traditional movie theatre into a platform for Hollywood's

future products and distribution models, the digital test bed at London's British Film Institute organizes equipment testing and innovative demo shows, and the fx-center at Studio Babelsberg near Berlin put up an impressive shoot-out of server and projection technology to breed on the European Cinema standard.

After a few years of sometimes motionless discussions on D-Cinema conventions at Showest/Showeast, IBC and many special panel events, we will experience now the beginnings of a complex transition period marked by the general agreement on three levels of projection standards:

- 1.4K as the projection standard for smaller screens, so called E-Cinema
- 2K as the projection standard for HD films for bigger screens and advertisers
- 4K as the Hollywood projection standard for large screens and multiplexes

In 2005, the digital roll-out will begin in Europe and the UK. The British Film Council managed cleverly to set up a nationwide standard for digital cinemas on a 2K level for art houses and multiplexes equally. There are about 250 participants to be expected in the first wave. The European Cinema Network will equip 170 participants in many countries on the continent exclusively for art house cinemas on a 1.4K E-Cinema standard. The multiplex advertisers are expected to introduce 2K projection systems to the commercial theatres by 2006. This may also be the earliest moment for the big wave of Hollywood's digital roll-out promoting its high level 4K projection standard to the large screens worldwide.

Apart from the western world, the Asian market will perform this transition period in a rather impressive jump. China alone is supposed to equip

30.000 screens in the coming years. India will follow with similar figures. Singapore, South Korea and Japan have installed some showcases in digital multiplexes already.

Led by avant-garde European initiatives, dominated by American industrial expansion and equipped by Asian electronic manufacturers we can expect the transition period of digital cinema including all the inevitable ups and downs to be realized mainly in the beginning of the next decade. In the coming years of this transition period, we may also witness a strong impact of digital film projection accompanied by interactive shows, broadcasting events and cooperative network games in the modernized cinema houses all over the world.

Whereas the standards for digital film projections have been preserved and maintained, the standards for alternative content have yet to be discovered and set up in each specific culture and particular region on our well known movie planet. In any case, the digital infrastructure will create a planet of its own – without leaving behind the impressive history of worldwide unified technological standards once installed and conserved by the motion picture industry.

Focus on Europe: The History of the Play is the Future of the Match European film industry is influenced largely by the American film industry: France maintained a certain home market, England melted talents and production facilities with big brother's movie factories overseas, and Germany fused the strongly state funded local films with television dominated production strategies. There is no European country dominating the respective home market with home made film products against the Hollywood mainstream successfully. In general, the European market standard for film is the Hollywood standard, one can say.

On the surface, one can say the same for the European movie theatre chains. Even national big players are nowadays owned by even bigger international players, mostly non-European ones. But looking behind the scenes of the movie traditions, there are quite some differences striking the eye:

- European cinemas – art houses as well as commercial cinemas – are mostly located in the centre of the cities, close to the medieval churches and the big warehouses – not so much in the suburbs or malls outside the city centres.

- Many European cinemas still show their theatrical foundations with curtains before the screen and locations in the traditional theatre districts of the bigger cities. They are less integrated into mall architectures and skyscrapers like in Asia or America, but they stand out as entertaining landmarks of city night life.

- European cinemas depend not exclusively on box office sales but all of them show advertisement programs and local slide shows before the main film program starts.

- European cinemas are still perceived in most parts of Europe as a prolongation of the longer lasting traditions of artistic theatre and literature: the *cinema d'auteurs* is focused on traditional novels and poetry, the movie houses maintained the theatrical bases integrating the projection technology smoothly, the screening often is accompanied by laser shows, water plays or theatrical pre-shows to stimulate the special event for the movie goers.

In fact, what we know as cinema culture basically has been a variation of theatre tradition for most of its history. A true cinematic ambiance – based on the pure

screening effect without reference to theatre culture, and a technological enhancement in sound, vision and seats making a difference to former theatre - has only been established by modern multiplexes in the last 25 years.

While film history has evolved quickly in many ways and film technology has taken some decisive steps every few decades, the evolution of the movie theatres largely rested in theatrical agony: many traditional art houses in Europe constructed their screens on top of the original theatre stages which still can be seen today, many attractive cinemas still profit from the hence glorious times of their architectonical predecessors in marketing the event and the shows with a certain exclusivity – and even the clean and purified THX-enhanced multiplex experience still maintains the order of seats and rows just like a hundred years ago in a theatre show.

The origins of cinema culture can be seen clearly in European movie houses. The general conscience in European culture still maintains this old idea of the rather young movie tradition as continuity of theatrical traditions lasting for many centuries.

In German language, we speak of *Filmtheater* (meaning the movie theatre), *Lichtspiel* (play of light, meaning the film) and, finally, *Lichtspieltheater* (theatre for plays of light) in a very traditional way when speaking of cinematic culture. This old fashioned saying seems to point to the future of photonic simulations as *Star Trek* used to present them for real in the 'holodeck' of the televised 24th century.

The multiplex architecture is a very first step towards an emancipation of cinematic culture from its theatrical origins, and this small movement can be pushed even further by digital technology. But the other component for a truly

holistic experience with plays of light remains not in film projection but in the upcoming alternative content perspectives based on aspects fairly older than cinema itself: it is the special event moment, the participating interaction and the networked community experience which will move to a *Lichtspieltheater* of the very near future. Digital technology may thus bring back a human factor to the auditorium, hopefully.

Cinema will expand with digital technology, back and forward in time, between the rows and the screens. The expansion has just begun: European theatre tradition once again in the making of *Russian Ark*, Asian game play in the making of *Final Fantasy* and American arts & crafts in 3D cartoons and sci-fi pictures, they all transformed film history behind the scenes. Soon, the digital scope will transform cinema history as well before the screens.

Notes

[1] Best selling computer animation films more than triple the sales figures of best selling cell animation films, actually; see box office charts for animated fantasy films at http://boxofficemojo.com/genres/chart/?id=animatedfantasy.htm (1978-2004) Accessed Jan 2005
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[2] *Jurassic Park*. Spielberg, Steven (dir.). USA 1993
See also: Shay, Don and Jody Duncan. 1993. *The Making of Jurassic Park*. New York: Ballantine Books.

[3] *I, Robot*. Proyas, Alex (dir.). USA 2004
More details at http://www.irobotmovies.com. Accessed Jan 2005

[4] Full cast and crew for *I, Robot* and all companies involved can be seen at http://www.imdb.com/title/tt0343818/combined

[5] *Final Fantasy: The Spirits Within*. Sakaguchi, Hironobu (dir.). USA 2001
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6) *Russian Ark*. Sokurov, Aleksandr (dir.). Russia 2002
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7) Many surveys on the video/DVD-market describe this development. See a general
comparison in The Economist, Nov 22nd 2001: The DVD market – The Real
Magic; a detailed survey has been published by Jon Peddie Research: DVD Market
Report, Tiburon, CA, 2003; more actual figures for the European market in
Screen Digest: Market overview 1992-2008, Nov 2004, London

8) See the Expo'67 performance at
http://www.medienkunstnetz.de/werke/kinoautomat. Accessed Jan 2005
Chris Hales is working on a publication on DVD with material on the *Kinoautomat*.
See http://www.smartlabcentre.com/4people/chris1.htm.
Accessed Jan 2005

9) It took until 1990 that Radúz Činčera could expand his vision at the Expo in Osaka
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13) See "fixed sites" at http://www.cinematrix.com/fixed.html. Accessed Jan. 2005

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15) See Carless, Simon, "Richard Marks on the Eye Toy. Interview at GDC 2004."
appeared in Gamasutra.com on March 26, 2004, CMP Media LLC.
http://www.gamasutra.com/gdc2004/features/ 20040326/interview-
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16) See Screen Digest. 2003. *Digital Cinema Business Models: The Global Outlook*.
London.

17) See Screen Digest.2003. *Alternative Content – the New Cinema Profit Engine*.
London.

[18] *The Rocky Horror Picture Show*. Sharman, Jim (dir.). USA 1975

[19] SMPTE DC 28 Group of the Society of Motion Picture and Television Engineers. Other groups active in standardization are the ProMPEG Forum of the Moving Picture Experts Group (MPEG), part of the International Organization for Standardization (ISO) and the group ITU-R SG 6 of the International Telecommunications Union (ITU)

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Jochen Schmidt, born 1963 in Germany, is a digital event designer and lives in Berlin. He studied comparative literature, media design and computer graphics in Berlin, Paris, Madrid and New York.

After the realization of multimedia theatre shows, namely with Robert Wilson and Fabrizio Plessi, he focused on the development of real-time animation applications like the virtual studio (EU consortium 1994), CAVE (Coca-Cola marketing events 1995-1997), virtual characters (Japan, Korea, Taiwan 1998-1999), theme park shows (World Expo 2000, Bertelsmann Science Centre 2001) and rich media developments.

Since 2003 he is engaged in the domain of digital cinema developments as a researcher, producer and consultant. He took part in the jury at the digital test bed in Berlin in 2004. Currently, he works with the 'D-Cinema Alliance' at Fraunhofer Gesellschaft to establish interfaces and interactive narration models for alternative content events.

Jochen Schmidt is Member of the Industrial Advisory Board of the International Conference on Entertainment Computing (ICEC) and member of the organising committee for the NMI conference 2005 by the Alcatel Foundation. Since 2003, he evaluates new media developments for the EU CORDIS program.

In 2003, he was consulting expert at the sagas**net** workshops for a multi-user online game project (ESP) by the Royal Institute of Technology Stockholm which then won the award for the best innovative game in Sweden.