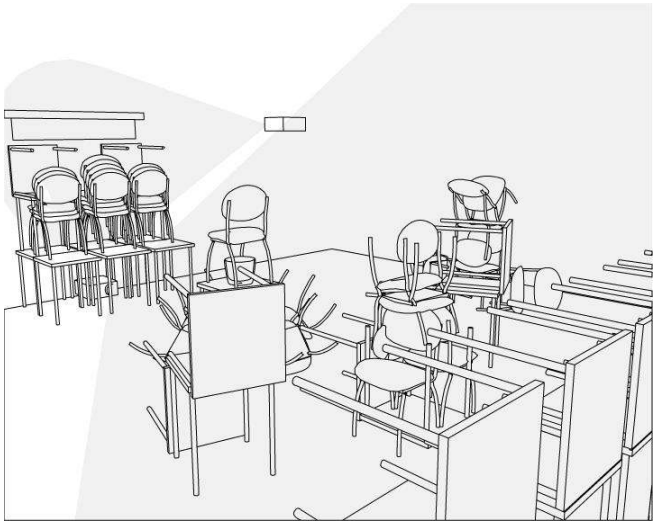
BA Computer Visualisation and Animation

Innovations Report

Classroom Space



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Innovation: a creation resulting from study and experimentation.

- from Dictionary.com Source: WordNet ® 2.0, © 2003 Princeton University

The aim of this project is to create an installation that incorporates computer graphics and in doing so exploring alternate ways of presenting computer animation.

Abstract

Computer graphics is normally presented on a screen which in most cases is watched by viewers passively, this project attempts to explore an alternative way of presenting computer graphics, taking it out of the cinema setting and TV screens.

The project consisted of research, experimentations and the production of a final piece of artwork i.e. an installation that would be exhibited as it was felt that the work could only be completed with an audience.

This report documents the research and experiments carried out, in exploring ways of using computer graphics in an installation. It also contains a critique of the final installation artwork.

One could view the report in two parts. The first part is the research for this project where the subject installation and other related topics are studied. Artists and their works are also looked at and analysed in this part of the report. However as research was carried out on a broad topic, only the most relevant information and inspiring artworks were documented in the report. The second part is concerned with the experimentation and the implementation of the final installation. This part of the report also references video clips recorded during the experimentations and the final installation. These video clips are on a DVD titled “BACVA H Innovations 2004/5 Classroom Space by Bettina Fung (b1467548)” that accompanies this report.

Introduction 1: Concept behind this project

From the book Film as a Subversive Art, Amos Vogel (1974 [1]) described the film experience in the cinema as a semi-hypnotic trance, totally isolating and hallucinatory. It is inside the darkened theatre where the viewers willingly forget themselves and where they are. They are in isolation, cut off from the outside world by the darkness of the theatre and seating arrangement. They permit themselves to be invaded by successions of images that are manipulated by a director.

"Removed from the real world, isolated even from fellow-viewers, the spectator falls to dream and reverie in the womb-like darkness of the theatre. Flooded by images, his conscious is freed from customary constraints and his rational faculties are inhibited."

- Amos Vogel (1974) [1]

This distinctive atmosphere in the cinema is given the term "cinema situation" by German psychologist Hugo Mauerhofer (1949[2] cited in Uhde 1995 [4]). This "cinema situation" intensifies the hypnotic power of the film image which explains viewers' voluntary passivity and uncritical receptivity. Stephenson and Debrix who were referred to in Vogels' book (1974 [1]) also pointed out that except for seeing and hearing the body and other senses were at rest in the cinema and therefore allowing imagination, stimulated by the filmmaker's emotionally charged materials to exert deeper more lasting influence.

German film historian and theoretician Siegfried Kraucauer (1961 [3]), also mentioned in Vogel's book, emphasised the dialectical wavering between self absorption that led viewers into personal associations triggered by the image and self abandonment that was the submersion into the image.

However the emotional involvement of the film viewer is deeper than that of a television spectator. The relatively small size of the picture tube, the lower image definition and colour quality reduce the illusion. Additionally the private mode of viewing opens to a variety of disturbances and the viewer's freedom to change channels or to engage in other activities weakens the identification process as mentioned above (Uhde 1995 [4]). Nonetheless, both methods of viewing involve viewer's passivity and viewers in a fixed position.

Today we frequently see computer graphics in animation, films, music videos, commercials and additionally computer games. The usages of computer graphics mentioned here are mainly presented on a screen, be it on a cinema screen or a television screen. The viewers are in fixed positions and are able to submerge themselves entirely into what is being presented.

Apart from computer games which contain interactivity, most common use of computer graphics i.e. in films, animations, music videos and commercials as mentioned above are all presented in this passive manner as described above i.e. on a screen with passive viewers in fixed position. It was this factor that led to the subject of this research i.e. to explore alternate ways to present computer graphics in a non passive manner.

Introduction 2: Idea of this project

In order to present computer animation in a non passive manner, one must remove it from the cinema space and look elsewhere.

"*In the closed space of cinema there is no circulation, no movement, and no exchange… This model is broken apart by the folding of the dark space of cinema into the white cube of the gallery*"

-Chrissie Iles (2001[5]).

During the 1960s and 1970s tremendous changes occurred in artistic modes and practices, particularly in the fields pertaining to the moving image. Artists began to work with time based media, including film, slides, video and holographic and photographic projections as ways to alter viewer's perceptions of physical space. The very idea of medium was thrown into crisis as in the past medium had been the established criterion for different artistic vocations. This crisis extended into the space of exhibition, the gallery and the ways in which an artwork was perceived by its audience. The space or distinction between artwork and audience was changed and in many cases broken down altogether.

"To innovate, the avant-garde needed to push film out of the black box, the darkened theatre, into the white cube of the gallery space… filmmakers had to transgress cinema proper and move into the territory of art."

-Genevieve Yue (2003 [6]).

In the late 60s, film had branched into two avant-garde strains: one that took on the Hollywood challenge by distorting and recombining its forms and conventions such as with genres and narrative structure (commercial films) and the other that turned towards "pure cinema" (structural and conceptual film). For the latter, film became its own subject. For example with Michael Snow's work Wavelength (1967) that replaced the "actor" with the action of the camera in a slow but determined zoom. His work was described to have refined filmic space as that of action.

Over the past thirty years film and video had an increasing presence in the gallery space. Film and video began to emerge in exhibitions such as the ICA's Festival of Expanded Cinema (1976) that included works by artists such as Ron Haselden, who combined film projection and audience participation with other sculptural elements in the gallery space

from trolleys to photographs and drawings (Railway Trolley[1], 1973). In addition filmmakers such as William Raban who explored the possibilities of the film loop that allowed a film to run for an indefinite period of time and also exploring ways in deconstructing the conventional apparatus of cinema[2].

The works from the exhibition described above and from the exhibition name suggested that they lie in the category of the “Expanded Cinema”, a term used to describe works that does not conform to the traditional single-screen cinema format. This term could stand for having two or more images side by side on the screen, projecting in an unorthodox manner without a screen and even films that incorporate live performances. Projectors are often placed in the room with the audience and become part of the overall event. In fact, the event happening in the room could be more important than what is being shown on screen and hence questioning the role of the audience. Expanded cinema provides a broad limitless territory enabling artists to test the conventional boundaries of filmmaking and to produce work which might be in the form of an installation.

It is this alternative experience of moving image that is determined by the architecture of the gallery space (its environment) and the unrestricted movement of the audience that inspired me to challenge myself to create an installation that incorporates computer graphics for this project.

[1] Railway Trolley (1973): This piece consisted of a cyclical time structure based on a drawing of a railway trolley. Live figure was used during the performance which was filmed during the show and was incorporated in subsequent showings. No two performances were ever the same, as film record of one was then built into the next performance. (Lillington, 2003 [7])

[2] Examples of William Raban’s work are: Take Measure (1973) where the artist physically unwound the film through the audience from projector to screen; Diagonal (1973) which consisted of three projector beams extending beyond the screen into the theatre space and centred on the workings of the projector gate; 2'45" (1973) where the event of projection and interaction with the audience, screen and filmmaker was recorded and repeatedly re-filmed. (Green, 2003 [8])

Research in installation art:

To create an installation one must first find out what an installation is. As a student not from an artistic background, the idea of installation must be researched. The online art dictionary ArtLex (2005 [9]) stated that an installation or installation art is art made for a specific space. It exploits certain qualities of that space, more often indoors than out. The term became widely used in the 1970s and 1980s, largely replacing the term "site-specific" (which means the same thing). Installations may be temporary or permanent but most will be known to posterity through documentation.

The research initially went straight to the direction of video art. This movement in art began in the 60s when video was invented and offered the possibility of individual's manipulation of the medium and hence enabled artists to make their own videos. Research began looking at this movement as it was relevant to the research topic as it was concerned with moving image being presented elsewhere. Since video is concerned with the moving image so is computer animation. Therefore researching into this field more inspiration could be found. Research would later venture into other film and video installations.

Video Art and other film and video installations

Video art is a subset of artistic works and is comprised of video and/or audio data. One of the key differences between video art and theatrical cinema is that video art does not necessarily rely on many of the conventions that define theatrical cinema. Video art may not employ the use of performers, may contain no dialogue, may have no discernible narrative or plot. This distinction is important because it delineates video art not only from cinema but also from the sub-categories such as the avant-garde or short films. Video art's intentions are more varied, be they to simply explore the boundaries of the medium itself or to rigorously attack the viewer's expectations of video as shaped by conventional cinema. It is most frequently combined with other media and is subsumed by the greater whole of an installation.

Video art originated as something that criticised television and mass media and was used to subvert normal television and the one-sided nature of television viewing. Television was manipulated by artists as attempts to interrupt signal of a commercial medium and transform it into a material for art in this case as sculpture such as the works of Nam June Paik who was one of the pioneers of video art. His first major exhibition Exposition of Music Electronic Television (1963) confronted television as a means of mass communication and the disturbance or breaking its conventional one-way character. He presented technically manipulated TV devices showing electronically distorted images where all of the televisions presented were modified differently to each other[3] (see Figure

[3] Some manipulations were made so that external influences determined the picture such as a pedal switch connected to the modified television, when the pedal was pressed it would bring about fireworks of instantly disappearing points of light on the screen. Another set was hooked up to a microphone when one

1). The viewers were invited to undertake manipulations of their own and thus actively participated in the image process. This exhibition was said to be the beginning of video art.

Fig 1. Photograph of one of the manipulated television in Paik's exhibition Exposition of Music Electronic Television; [a]

His later work TV Buddha (1974), a closed-circuit video installation, demonstrated use of video (see Figure 2). In this work, he hit upon the idea of making a TV viewer out of an antique Buddha statue. The subsequent addition of a video camera meant the Buddha now watched his videotaped image on the screen opposite. Past and present gazed upon each other in an encounter between Oriental deity and Western media. The Buddha statue self-reflexively confronted with its own image. The being absorbed in contemplation and the unavoidable confrontation with one's own image were the principle of this work, an early form of media deceleration and decompression. Furthermore the artist employed video cameras and monitors to explore our perceptions of both external objects and ourselves and to create a profound sense of how we understood the world. In addition Paik also took the reverse route to emphasize the flood of information, irritations and the redundancy of the media in large video installations such as Video Fish (1975)[4] and TV Garden (1974)[5] (see Figure 3). These works also demonstrated his way of applying rhetorical and aesthetic strategies to dismantle customary ways of seeing. He thereby used the electronic medium as a means of unlimited reproduction and permanent self-citation as a principle of construction that could be seen throughout his entire work (Decker-Phillips 1998 [11]).

spoke into the mike an explosion of light dots would appear on the screen. Another manipulation was to have a tape recorder that fed music to the TV (and to the audience): parameters of the music determined parameters of the picture (Daniels 2005 [10]).

[4] Video Fish (1975) consisted of 20 aligned monitors placed at eye level. Each monitor displayed an edited video of swimming fish, flying planes, and Merce Cunningham dancing. To view the monitors, one must looked through an actual aquarium, stocked with living fish, which created the odd perception of the fish tank becoming a television monitor and vice versa.

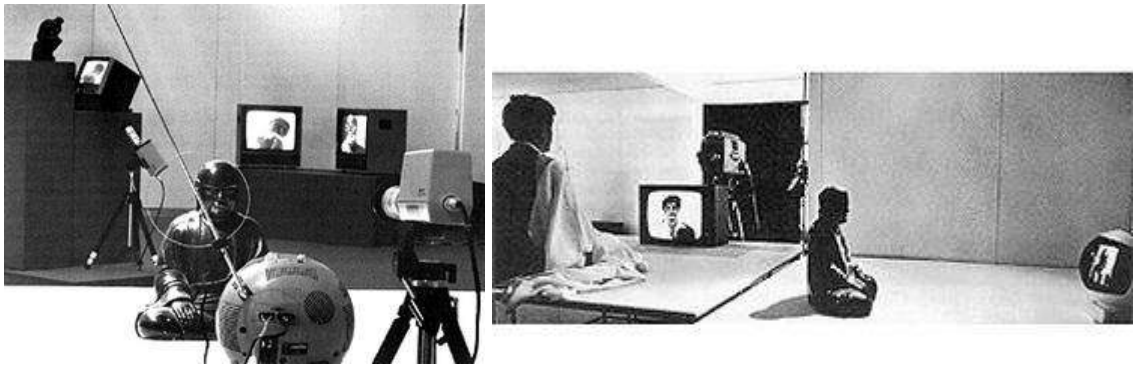

Fig 2. Photographs of the installation TV Buddha (1974) Nam June Paik; this work acts as an example that questions the role of the viewer as well as expressing the early media deceleration and decompression; [b]

Fig 3. (*left*) TV Fish (1975) Name June Paik; [c]
(*right*)TV Garden (1974) Name June Paik; [d]
Both examples demonstrated Paik's expression of information overload and the irritation of the redundancy of media.

[5] TV Garden (1974): monitors were placed face up amid leafy vegetation, broadcasting Paik's Global Groove, a video incorporating synthesized imagery from commercial television programming and the work of filmmakers. The monitors functioned as exotic blossoms that mixed together with foliage.

Later on video art became less focused on the subversion of television and ventured into other territories. Video technology afforded artists the opportunity to question traditional notion of perception and the manipulation of video image itself. For example Three Transitions (1973-1977) by Peter Campus demonstrated the use of video manipulation enabling him to stage situations of perception that were impossible in reality. By taking various perspectives that could not be perceived simultaneously and linking them to one another, he questioned the structure of natural space. For example in one sequence he overlaid two footages both shot at opposite angles of him performing an action and in this sequence he eventually walked through his own image. The viewer thereby became a witness of his own deception.

Conceptualism

Video art has a conceptual approach. Critic Lucy Lippard characterized this period in art as the time when art became dematerialized that is the focus of art shifted from the 'object' (painting, the sculpture) to the 'idea'(1973 [12]). Additionally according to Joseph Kosuth what is essential to the practice of art is the motivating idea possessed by the artist that questions existing codes or expressions, both in the world of art and in the culture at large. Therefore the importance of "the idea" led to a rapid increase in the use of varied materials that can be anything from paint to pipe cleaners, cotton fibres to fibre optics could be used as a material for art (1991 [13]). The consequence of this led American art critic and philosopher Arthur Danto to announce "the end of art as we know it" (1997 [14]).

"*Conceptual artists too wanted to create a new kind of relationship between artist, gallery and public, a relationship that would challenge not only the commercial nature of the art world but also the idea of the viewer as a passive consumer of sensations rather than thoughtful interlocutor. Text, photography and found objects were incorporated into artwork not simply because they were interesting new media but because they offered specific ways of engaging the attention of the art public*."

-Peter Wollen (1999 p73-85 [15])

It is with this conceptual approach that video as well as other time based medium are used to challenge the convention way of viewing art, the notions of a fixed position for the viewer and the relationship to the architectural space.

Furthermore the book Video Art by Micheal Rush stated that installation art by its very nature suggests interactivity. It makes environment for viewers to enter literally hence creating a physical participation with the work. This in turn expands the perceptual and optical impact of the work. It extends the experience of the moving image beyond not only the monitor but also the darkened room (2003 p178 [16]).

The notion of time as a medium, interactivity, participation and environment which are indicated as important aspect of installation art will be discussed further in this report together with other aspect shown in other installations will also be discussed.

Time as a medium

Artists were also interested in the notion of time due to the instant playback ability that video technologies offered where time becomes the medium especially in the form of video. Hence video art was described as "art of the moment" (Rush p61 [17]).

"*The process of capturing events that are invisible to others with your own eyes becomes art.*"

-Kubota Shigeko(Rush p61 [17])

Artists Dan Graham used time as a dimension that can be experienced in space in his installation Present Continuous Past(s) (1974). This installation was set up so that audience entered into a room with mirrored walls, a video camera and a large video monitor. The mirrors reflected present time and the video camera taped what was immediately in front of it and the entire reflection on the opposite mirrored wall. What was captured on the camera would appear 8 seconds later in the video monitor via a tape delay placed between the video recorder that was recording and a second video recorder that was playing the recording back. If the lens's view of the facing mirror was not obstructed by the viewer, the camera would record the reflection of the room together with the reflected image of the monitor which was showing the time recorded 8 seconds previously reflected from the mirror. Therefore viewers when viewing the monitor could see both image of him/herself of 8 seconds earlier and what was reflected on the mirror from the monitor 8 seconds prior to the 16 seconds in the past as the camera view of the 8 seconds prior was playing back on the monitor 8 seconds earlier and was reflected on the mirror along with the then present reflection of viewer. Therefore this created an infinite regress of time continuum that was separated by 8 seconds interval. The mirror at right angle to the other mirrored wall and the monitor wall gave the present time view where the monitor gave the continuous past(s) (see Figure 4). Graham treated the relationship of spatial and temporal experience and constructed a space that made the phenomenon of constantly continuing presence available to be experienced by visualising temporal distance in space (Hall et al. 1990 p185-186 [18]).

Unlike Graham who emphasised breaks within time i.e. he separated time in space at intervals of 8 seconds, artist Bill Viola produced the experience of constant continuity in his installation He Weeps for you[6] (1976). This installation consisted of a drop of water emerging from a small brass valve. It is magnified by a video camera and projected on a large screen (see Figure 5). The close up image of the viewer and part of the room where they stood were visible inside each forming drop. The drop swelled and eventually fell

[6] Video clip of installation could be viewed on line at http://www.sfmoma.org/espace/viola/dhtml/content/viola_gallery/BV08v.html [Accessed March 2005]

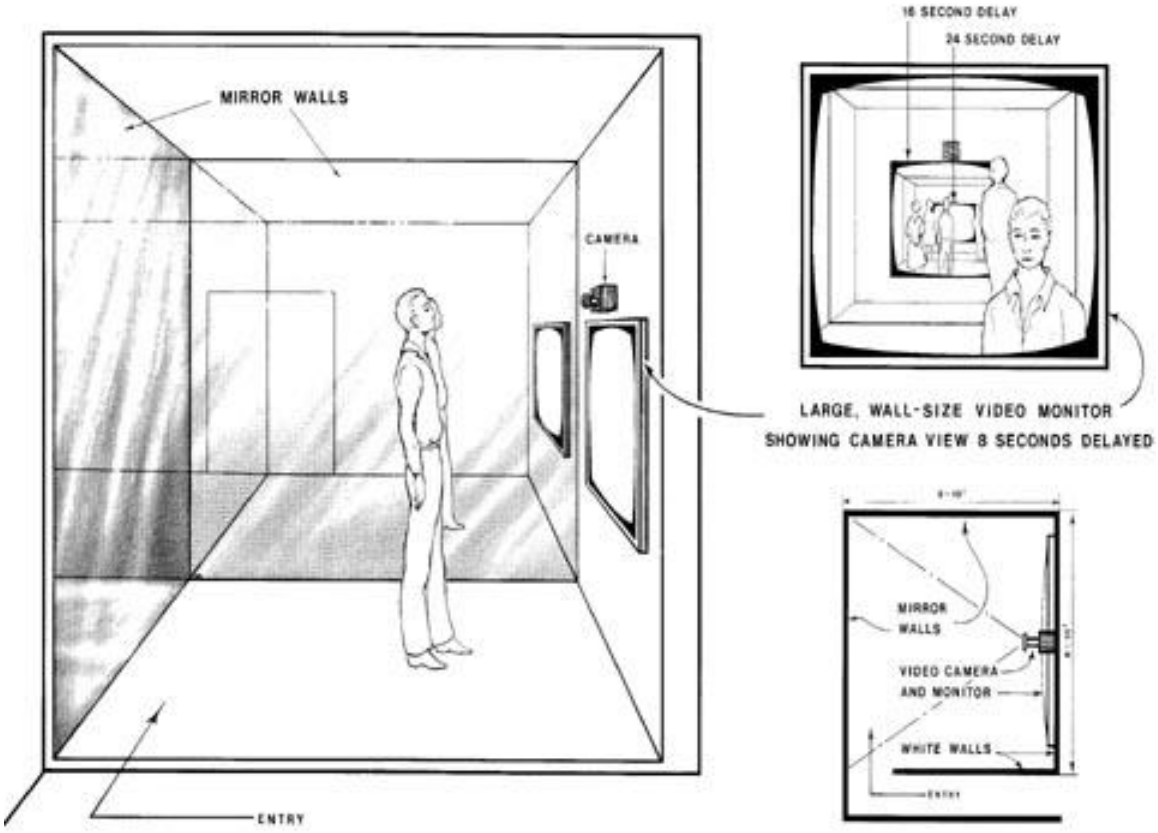

Fig 4. Diagram explaining Dan Graham's Present Continuous Past(s); [e]

and created a loud echoing sound as it landed on the amplified drum below it. A new drop immediately began forming and the cycle continued in infinite repetition. As the work involved a live camera each visitor became a real time participant in the work. Viola produced a space of experience based on total perception and also addressed notions such as inexorable cycle of renewal (Viola 1995 p42 [19]). The work was alsoinspired by the connection between microcosm and macrocosm expressed in the Islamic mystical tradition of Sufism.

Fig 5. He Weeps for You (1975) Bill Viola; this work explored the constant continuity of time as well as the relationship between microcosm and macrocosm. [f]

Participation and Interactivity

The descriptions of artists' installations above already demonstrated examples of viewers' participation and that their participation became part of the work. Additionally like the work by Dan Graham the viewer's perception and also the conventional way of passive viewing (i.e. viewers looking onto a TV screen displaying something) was changed. The viewers who normally viewed others on a TV screen were now watching themselves on the screen, therefore becoming very aware of themselves and their presence. This is different to the cinema setting or even television viewing. Another example of this is the installation by Bruce Nauman, Live-Taped Video Corridor (1970) which used the instant playback quality of video (see Figure 6).

This installation combined the video and the architectural qualities of a corridor that was 20 inches wide and roughly 12 feet high and 32 feet long. Two television monitors were stacked at the far end, the monitor at the top broadcasted live video fed from a camera hung above the corridor's entrance and the monitor below displayed a previously recorded tape of the same space with no one in the corridor. Only one person was allowed to enter at a time. The viewer would see his/her own image on the upper monitor upon entering the installation, but because of the camera's positioning only the back of the viewer was visible. As the viewer moved towards the other end, he/she moved away from the camera and hence the image of his/her back grew smaller. The audience participation came to mean witnessing one's own shrinking figure. Vision was restricted in this installation to a single direction hence emphasising the futility of vision. To see one's own back suggested that one could only see things after they happened. Additionally audience were denied their own face even if they turned around the vantage point solely

existed for the camera. Unlike in the cinema or in front of television screen where the viewers were not the subject being watched, the viewers were in fact being watched by the film/camera (Yue 2003 [6]).

Fig 6. Live-Taped Video Corridor Bruce Nauman (1970); This work expressed the futility of vision and removed the audience role of viewing, audience were being viewed. [g]

The use of mirrors enabled Dan Graham to use space to describe time and the confinement of the corridor space and architectural quality in Nauman's work helped to emphasise the claustrophobic imprisonment aspect of the Live Video Taped Corridor as mentioned above. The space in which the installation is held is as important as the work itself. In fact space is part of the work. This aspect is heavily demonstrated in the works of Italian artist Daniele Puppi.

Puppi's work mainly consists of sound and video installation entitled Fatiche (Efforts) and colour photographs called Frammenti (Fragments), which act as snapshots of moments of the installations but are themselves autonomous works. His works are mainly site specific and the moving images of his work are not projected on screen but onto the existing architecture. The Fatiche installations are all generated from a direct encounter with the physical space. The space is not a neutral place that hosts the work of an artist but the material from which the work emerges and takes form.

"*The creation and construction of my work is a synthesis of the several aims I set myself in confronting space: to produce a movement which holds the space and simultaneously involves all its points; to find a means of being able to 'appear' at any point; to construct a new space 'adjacent' to the space already consolidated.*"

- Daniele Puppi, Press Release from Lisson Gallery, 2004 [20]

An example of his work is Fatica no 25 (2004) (see Figure 7) held at the Lisson Gallery in London. Viewers were made to enter the basement of the gallery where upon entry were confronted by a floor to ceiling video projection showing the artist's massively enlarged foot crashing downwards. When it hit the ground there was a resounding loud bang. Viewers automatically gained the feeling of being oppressed. Puppi's manipulation with the sense of scale of the giant limb plunging through the gallery space was much emphasised on the floor above where the upper part of the leg was projected. When standing halfway up the stairs between the two floors, viewers could witness the foot going through the floor to the basement (through the use of video editing) and emphasising the viewers' sense of being diminutive. On closer look at the videos which might first appeared to be shot in the gallery, viewers could notice certain details such as the corrugating metal screen and the light tracking system appeared different. This way caused the viewers to become sensitised to the environment. Puppi's work had transformed the element of architectural surroundings into an expanded multi sensory experience.

Fig 7. Fatica no25 (2004) Daniele Puppi; Installation transforming the space of the Lisson Gallery, London. [h]

In fact Puppi considers himself as an artist of space:

"Video is a medium that allows me to make direct contact with a space then transform it into something unexpected."
- Daniele Puppi, Interview in Art News magazine, Jonathan Turner, November 2004 [21].

Sound played a vital role in the installation of Fatica no 25 in order to enhance the feeling of being oppressed as it filled the space. Sound is an important factor when it comes to space. This could also be seen in recent the work of Bruce Nauman, Raw Materials, which filled the whole of the Tate modern's Turbine Hall with sound. Raw Materials drew on Nauman's fascination with space and the way it could alter people's sense of behaviour and self awareness. The Turbine Hall was organised so that visitors encountered bands of sounds that ran in strips across its width, some sounds were voices,

some clearly audible and others indistinct. These sounds merged together with the sound of the visitors to form a new whole. No other physical objects were in the space and sound became a sculptural material in itself that orchestrated and measured its surroundings (Dexter 2004 [22]).

The installations mentioned so far were all non narrative, viewers were able to enter the installation for an indefinite amount of time at any moment of the video and have the message (if any), idea or sensation brought across. However other artists include narrative in their work. For example artist Diana Thater created her video installation, Broken Circle (1997) (see Figure 8) within the constraint of the architectural space of the Buddenturm (12th century tower see Figure 9) as part of the Sculpture Projects in Munster, Germany. The artist made full use of the architectural space of the building as well as including narrative to her work. She filled five interior levels with six projection environments and a video monitor as well as applying a series of coloured films to the window and lighting them from the inside so that her work was also visible from outside the building. The video footage projected was a 360 º pan following animal trainers as they stampeded a herd of 30 horses and mules in and out of a canyon. However this was fragmented as the different levels of the tower broke the circular camera motion into jagged but interrelated parts. The staircase in the building provided access to each level and the journey first up and then down established a narrative. The installation expressed both notions of watching and being watched as the Buddenturm was designed as a watchtower (Lunenfeld 2000 [23]). Thater enabled the spatial to take on the temporal aspect but also ensured that the temporal took on the narrative i.e. the titles were on the first floor and the credits were on the fifth floor, in this way the enabling the spatialization of time in Broken Circle.

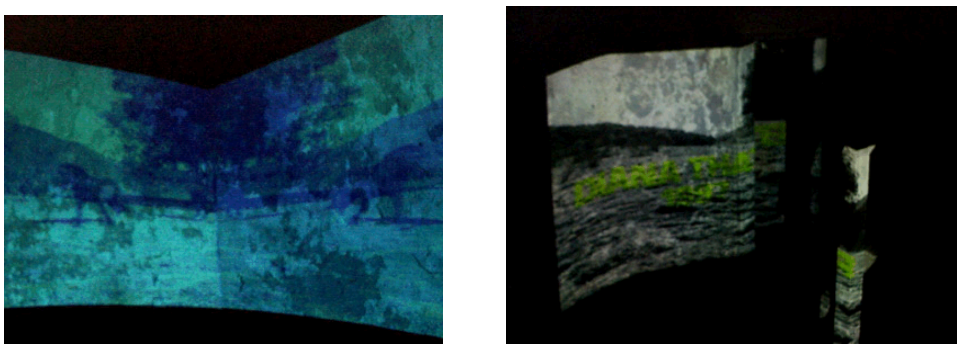

Fig 8. Broken Circle (1997), Diane Thater; Site Specific installation in the Buddenturm tower, Germany. This work enabled Thater to demonstrate an alternative way of presenting narrative using the architecture in which the installation is held. [i]

Fig 9. Photograph of Buddenturm tower, Germany where Diane Thater's Broken Circle was held. [j]

The spatialization of the moving image is explored by Finnish artist, Eija-Liisa Ahtila. Some of her film installations contained narratives and involved multi screens such as The Wind (2002)[7] (see Figure 10), or some were shown within complex installations that required the viewers to navigate their way through the space as in Anne, Aki and God (1998) (see Figure 10), an installation with an elaborated theatrical setting. It consisted of an empty bed, a reading lamp and five monitors arranged within a large wooden structure. Above was a large projection of two actors playing the role of God in this melancholic narrative of the man Aki. The narrative of the story explored Aki, a young engineer who gradually retreated from the world, hid himself away in his apartment to fall into a web of delusion. The installation took form of a casting session, five male actors auditioning for the role of Aki were shown on the five monitors, and shown on another projection screen were seven female applicants auditioning to be his fictional partner Anne. As the viewers moved between the self-consciousness of the untrained actresses competing for the role of Anne, and the various interpretations of Aki by the professional performers, they were presented with glimpses of the multiple personalities inside Aki's mind.

[7] The Wind (2002) was a three-screen projection that echoed the process of mental breakdown. It demonstrated simultaneous perspectives of the same place and time. The disjunction in the narrative, as dialogue was repeated and the sequence of events became confusing, emphasised the woman's breakdown of logic (2002 [24]).

Ahtila described her work as 'human dramas', fictional narratives that emerge from lengthy periods of research as well as from her own observations and experiences. The way images are constructed, the way narrative unfolds and the physical space in which the work is encountered are all important aspects to her work. In an interview, she explains that the work is more than visual dialogue but also a physical experience as the viewers come to a space with several screens. Additionally it is important to her how the viewers in the space receive information and how they form meaning while interacting with the work (2002 [25]).

Fig 10. (*left*) Wind (2002) Eija-Liisa Ahtila; Multi screen film demonstrating a woman in her psychosis. [l]
(*right*) Anne, Aki and God(1998) Eija-Liisa Ahtila; Installation work using elaborated setting together with multi screens to portray a narrative. [m]

Ahtila shoots on film and transfers the footage to video and DVD projection. As this technique results in a grey area that is neither film nor video, Rush named it “filmic art” (2003 [26]). Ahtila’s work challenges the cinema setting for film this could also be seen in Steve Mcqueen’s work. His films are presented in the gallery space instead of in the cinema as he wants the viewer to be a participant and not just a passive audience. McQueen’s works are usually short and well structured with only a few takes. They challenged the need for narrative in film as his works lack narrative such as Bear (1993), an installation of a projection of huge black and white filmic image of two black male naked wrestlers slowed down to 50 frames per second with no sound. In Bear, viewers were very aware of their presence due to the lack of sound. The film lacked narrative but was dramatised by the use of rapidly changing points of view, close ups and very high or low camera angles.

The above research showed a vast amount of different artistic approaches to film and video installation and how by presenting moving image in a setting other than the cinema could alter the viewers’ perception to the work being presented. This demonstrated an outlet for moving image not to be confined in cinema space or the passive way of viewing (e.g. sitting in front of the television). It also enabled an interesting approach in using the moving image. The next step in the research was to look at how computer graphics could be applied or incorporated in this form of presentation.

Digital Art

Research was made to look into digital art where artworks are produced with the use of computer technology. The 1990s witnessed more and more artists using digital technologies. Digital art installations come in many different forms, like most installations, they are aimed at creating an environment that may consist of varying degree of immersion. It may be works that allow audience immersion in a projected environment or immersion into a virtual world.

In Christiane Paul's book Digital Art, she suggested that immersion had long been connected to art, architecture and symbolic system (2003 p71 [27]). She gave the examples that cave paintings could be viewed as early immersion environment and medieval churches were aimed at creating a transformative enclosure for their visitors through the combination of light, architecture and symbolism. Most digital installations tend to explore the construction and immersion of virtual worlds. They are in one way or other concerned with possible relationship between the physical space and the virtual and according to Paul, and what distinguishes them are the balance between the two realms and the approach to translate one space to the other.

An example of blending the two realms is Jeffrey Shaw's The Golden Calf (1994) (see Figure 11). The piece involved a pedestal and a colour screen on which displayed a virtual sculpture of a golden calf. Viewers could look at the calf from all sides by moving the monitor around the pedestal. In this installation, the reflections of the physical environment were mapped onto the surface of the calf by using photographs of the room and hence viewers could see the reflections of the room on the calf's body. Additionally viewers might also see their reflection on the calf depending on the angle and the lighting. This therefore blurred the boundary between the real and virtual worlds.

New York based architectural office Aysmptote also produced works focusing on the interplay between virtual and physical structures and architectures. The Fluxspace series were created as a study in different forms of intersections between the virtual and actual, aiming to merge the different qualities of both realms together and translating features of the digital medium into the actual space. In the installation Fluxspace 3.0 (2000) (see Figure 12) the fluidity of the virtual space became part of the physical environment. A distorted urban landscape was projected onto an amorphous shape hanging in the middle of the room with mirrored walls. The reflection seemed to create a virtual 3-dimensional architecture that surrounded the viewer and hence successfully transported the characteristics of the virtual to the actual and hence augmenting the notion of physical space.

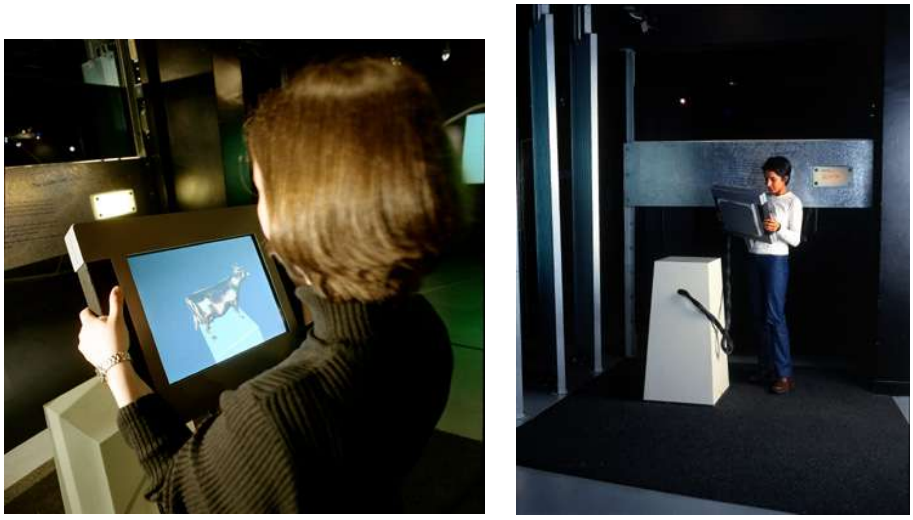

Fig 11. The Golden Calf (1994) Jeffrey Shaw; this installation demonstrated the mergence of the virtual and the actual by taking information of the environment then displaying them as reflection of the golden calf on the screen. [n]

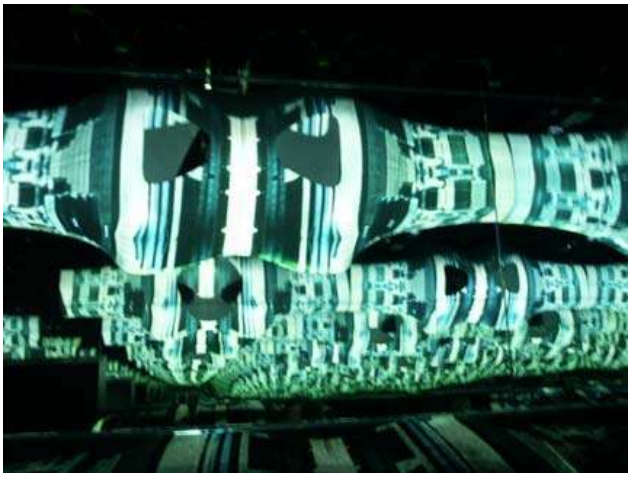

Fig 12. Fluxspace 3.0 (2000) Asymptote; Installation involved a physical architectural object shaped by projection of urban landscape in a mirrored surrounding. [o]

Another example of the attempt to blend the virtual and actual is the work of Japanese artist Masaki Fujihata's Global Interior Project (1996). This installation consisted of a networked multi user environment that created a mirror world, in which the physical installation became a map of a virtual world. The installation itself represented the architecture and construction of the virtual space. Viewers entered and interacted with the world through a "Cubical Terminal" which contained a computer and a trackball. The viewers travelled through a maze of interconnected virtual cubic rooms that resembled the physical terminal using the trackball. In the virtual space, the viewers were represented by a cubic form with their face mapped onto it and they could communicate with each other in the virtual space. The activity in the cubical of the virtual space was mapped in the "Matrix Cubes", stacks of boxes with doors each of which corresponded to a particular virtual room. If someone accessed the room the box opened.

Fujihata's work demonstrated a new meaning to interactivity that is solely unique to the digital medium. With traditional art ultimately any experience of artwork is interactive, depending on the interplay between contexts and productions of meaning at the recipient's end, where this interactivity exists as a mental event in the viewer's mind. With digital art, interactivity allows different forms of navigating, assembling and contributing to the artwork. Although viewer's participation and involvement are used in the video and film installations mentioned above, the possibilities of remote and immediate intervention are unique to digital art (Paul 2003 p67 [28]).

With interactivity in digital art comes the term "interface". Interfaces make a work open to interaction. Fujihata's work as mentioned above used some form of interface to enable viewers to travel in his virtual space. Artist Perry Hoberman's works focused on the critical examination of interfaces. His installations Cathartic User Interface (1995)[8] and Bar code Hotel (1994)[9], both acted as a form of interface which allowed viewers to use them.

From the installations described above some of them were 3D worlds that existed in a 2D format of the screen. Many of the works attempted to replicate the physical world. The virtual world that viewers experience may not physically exist and only part of it may be visible on the screen, however as Paul pointed out, it will always exist as a mathematical

[8] Cathartic User Interface consisted of a wall constructed out of obsolete PC keyboards. Viewers were invited to throw mouse like balls at the wall and hence triggering projections that were modified pop up windows and control panels that appeared on computer screens and so often became obstacles for productive interaction, e.g. a menu pop up saying "There is not enough RAM in the known universe to complete the task you have requested."

[9] Bar Code Hotel consisted of bar codes that acted as the interface to a virtual environment. "Guest" to the hotel were given a wand which allowed them to scan and transmit bar codes printed throughout the room which would instantly be transmitted to a computer system that would generate 3D objects in a projected virtual environment.

construct. According to Paul, the creation of a believable world requires continuity where the environment needs to develop in a continuous way. Additionally psychological effect does not solely rely on the construction of the environment, as with computer games the adrenaline rush induced from them often relies on the psychological perception of speed rather than the realism of graphics. Therefore she suggested, the virtual space may have created new forms of worlds but it is also connected to the moving image which has affected our assumption about the representation of the world (2003 p96 [29]).

The connection between the virtual world and the moving image mentioned above brought computer animation into mind. As mentioned before, computer animation has been widely used in films and as animated feature films that are presented in the cinema or television. My research led to the use of computer animation in the gallery space.

Artists Susan Sloan's work Figure in Motion (2001), an animated film that was presented in the gallery space, demonstrated the blend of the actual and virtual described above. This piece represented the action of walking pared down to its basic component of three steps, where the body was caught in a perpetual state of acceleration and deceleration. The piece was constructed by recording information from the real world such as the human motion using Motion Capture and high definition 3D model scans of the body and photographic images. This information was then transferred to 3D animation software where the real and the artificial merged together as one (2004 [30]). This piece blurred the relationship between the artifice and reality.

Another more sculptural work by Sloan is the installation Three Way Conversation (2002) (see Figure 13). Sloan yet again merged the actual and virtual with the use of computer graphics software. Three Way Conversation involved a dialogue held between three people. It consisted of three screens where each screen displayed one of the three people's digitally manipulated heads. Therefore the conversation took place over separate screens. The work questioned the structure of perception and with the use of computer graphics, aimed to present multiple views simultaneously. The manipulated images were from the real world and underwent structural manipulation in the three dimensional virtual space, and hence once again merging the two realms together to be presented as one.

Fig 13. Three Way Conversation(2002) Susan Sloan; Installation explored the mergence of the actual and virtual. Three screens each displaying a digitally manipulated head held a conversation. Imageries from the physical space were manipulated in the virtual space. [p]

Sloan has demonstrated an alternative means of using computer animation for artistic expression by taking it out of the cinema setting and into the gallery space.

The research consists of numerous examples of what has already been done in installation art that involved film, video and/or computer technology, the different means of presentation of the moving image i.e. taking them into another space such as the gallery space. Examples of alternative use of computer animation/graphics as a medium in fine art have also been demonstrated. The next stage of the project was the actual experimentation and implementation of my own work.

Experimentation and Implementation

The notion of space interested me greatly during the research however the total immersion into the virtual world as in virtual reality was not in my interest for this project. I was interested with the exploration of merging the two realms of real and virtual space to form another space rather than total immersion into the virtual space.

The project started as an experiment and a challenge to create an installation that incorporated the use of computer graphics, instead of initiating the project with an idea that would work well as an installation. However before experimentation could begin, a space in which the installation took place must be allocated as well as finding the resources that were available. Hence this enabled me to set myself the constraints and limitations in order for me to develop an idea for an installation.

"The more constraints one imposes, the more one frees oneself of the chains that shackle the spirit... the arbitrariness of the constraint only serves to obtain precision of execution."

-Igor Stravinsky, Russian composer 1882-1971
[31]

Organisation:

Finding Space

It is important to find a space before one could do any experimentation concerning an installation as space is from my research and as I believe is one of the most important aspects for an installation. It was decided to use one of the study classrooms in the university for the installation, as initially I decided to use university and education as a theme for my installation and also due to the higher chances for a student to book a classroom in the university.

A contact to Room Bookings[10] (part of the Estate Group) in the university was given to me from my tutor. At this stage of the project, a schedule was made to allocate time for experimentation and an email was sent to the contact to find a room available for the times allocated in the schedule. As I was booking a university classroom, most classrooms were mainly available for longer durations during the evening therefore initially rooms were booked for 3 hours in the evening. I was given 2 small rooms to experiment in for the first 3 sessions and then room P425 for the rest of the experimentations until the final showing of the installation. Different rooms were allocated to me instead of just one due to room availabilities however as the first few sessions would be for experimental purposes rather than actual implementation it did not affect much.

[10] Web link to the university's room booking: http://www.bournemouth.ac.uk/estates/room_bookings.html

Equipment
Equipments such as projector, DVD player and even television could be borrowed from the university's Computer Equipment and Support desk in the Talbot Campus library[11]. Equipment bookings were made well in advance to ensure equipments' availability. It was felt that this was sufficient for the installation and that additional equipments that might be needed would have to be borrowed from friends, tutors and family. Advice was also given to ask for sponsorship from local companies such as Comets for borrowing equipment in return for advertising.

Experimentation Sessions:

Session 1:
I began experimenting by testing out the equipments borrowed from the university. I borrowed a projector, DVD player and a television. As the project involved computer graphics in an installation, I used some of my old computer animated work (second year animation projects) as materials for the initial sessions in order to test the look and feel of what computer animation would look like when presented differently.

A projector was used to project the animations onto the environment of the classroom and already produced interesting results. The classroom was arranged like an exam room i.e. rows of tables and chairs (see Figure 14). The animation was projected onto a corner of the classroom at an angle, therefore altering the space of the room. Shadows of objects that blocked the projector merged together with the animation being projected and hence forming something new. Additionally the animation being projected was fragmented by the objects (such as tables and bottle on the table) in the room forming abstract images onto the furniture. Viewers were allowed to move around the space in the classroom where different part of the room produced a different experience. When caught in the projection the viewers' shadow would be mixed with the animation and the animation would be projected onto the viewer (see Figure15 b) and therefore the viewers became part of the blending of physical objects and projection. Furthermore, the opening of a door in the animation being shown induced a sense of alternate space which was an interesting concept.

(Please view DVD "Session 1" section under "Development Work" menu for video footages and further images of this session)

I was surprised by the result in this first session and decided to use projectors for this installation. The fragmentation of the projected imagery created very interesting effects. The fragments of the animation on an object which together formed a new object brought cubism to mind.

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[11] Web link to the Computer Equipment and Support help desk at the university: http://www.bournemouth.ac.uk/computer_and_equipment/students/index.html

Fig 14. Photographs taken in session 1. This involved a projector projecting computer animation at an angle onto a classroom.

Fig 15 a. **Fig 15 b.**

Fig15ab.
Photographs showing fragments of animation onto the furniture (a) and viewer (b).

From an Msn Encarta Encyclopaedia article on cubism (2005 [32]), it stated cubist paintings create ambiguous sense of space through geometric shapes that flatten and simplify form, spatial planes that are broken into fragments and forms that overlap and penetrate one another. It also mentioned analytical cubism which fragments the physical world into intersecting geometric planes and interpenetrating volumes. In relation to the projection in the classroom, a new sense of space was created with computer animation that consisted of 3 dimensional geometric shapes that were flattened by the 2-dimensional projection and the objects in the room. The projection of the animation enabled the virtual space being fragmented onto the real space and hence the overlapping of the two "spaces" where one penetrated through another in the form of a projection. Instead of the physical world being fragmented, this set up was fragmenting the virtual with the use of elements from the physical space.

The fragmentation of the animation onto the objects in the classroom could also be seen as "painting" onto the environment which is similar to the works by artist Calum Colvin. His photography works were created by painting an image onto an environment and then photographing it from a fixed point perspective showing the actual image being painted on the environment. He is interested in the process of transformation that occurs when everyday objects are juxtaposed with painted images (2005 [33] see Appendix for artist's work).

Session2:

The second session was held in a different room to the first however I set up the room in a similar setting as the first session. I experimented with 2 projectors still using the same materials from the last session (second year old computer animated coursework). The experimentations involved placing projectors in different places in the room and overlapping projections. The results were not as surprising as the first experimentation. Having two projections did not affect any sense of space but just more fragmentation. Additionally depending on where the projectors were placed, it might feel like the room was divided with two projections (see Figure 16), therefore it was decided then that one projector was sufficient.

Fig 16. Photograph taken in session 2 using two projectors

The overlapping of the two projections was interesting as it enabled the mergence of two virtual space, but it was felt unnecessary in the session (see Figure 17 and video clip on DVD titled “Overlapping Projections” from “Session 2” menu under “Development work” menu). However an interesting discovery was found by looking at the reflection of the projection on the window. The reflection of the projection gave interesting effects and extended what was being projected into the space of the outside environment (i.e. outside the window) and therefore added the projection to a new dimension (see Figure 18 and video clip on DVD titled “Reflections on Window” in “Session 2” menu under “Development Work” menu).

Fig 17. Photograph showing overlapping two projections

Fig 18. Photographs showing reflection of projections and also projecting onto the window.

(Please view DVD the “Session 2” section under “Development Work” menu for video footages and further images of this session)

Session3:

At this point I was interested in altering information from the physical space in the virtual space i.e. using the computer to manipulate photographs of a classroom and projecting it

back to the physical space as inspired by the digital art installation as mentioned in my research. Photographs of a similar looking classroom were taken at daytime (photographs of the same classroom was preferred but this was not able to be achieved due to room availability and time) where one of the photographs was chosen and was fragmented into more photographs, which were then textured on all sides of 3-dimensional cubes in Maya. These cubes were then animated, they rotated, grew and shrunk, each time distorting the actual image and then forming into the original photograph again (see the video of the animated cubes on DVD titled “3D cubes video use in this session” in “Session 3” menu under “Development Work” menu). This was hoped to add more dimension to the virtual space created. The idea was to attempt to create multiple spaces inside the virtual space each time the cubes rotated or expanded or shrunk.

The animation of the cubes forming into an image and deforming again was projected in a similar manner as previous sessions (i.e. at an angle). Two projectors, both playing the same animation but not in synch were used in order to fill the space of the classroom (see Figure 19).

The day light image of the classroom added an interesting effect to the room which was at night time. A sense of daytime was felt as the curtains of the room were closed and images of the windows at daytime were projected on them. It also created a sense that we were looking back at the time passed in the classroom (see Figure 20).

Furthermore the projection onto the wall of the classroom extended the classroom further as the windows from the animation created new exits in the classroom and opened up the space.

As the projections were set similar to the previous sessions i.e. projecting onto the classroom, the animations projected were again fragmented. However this produced too much fragmentation as the animation was already itself fragmented by computer 3D cubes. Additionally because the colour of the classroom as in the walls, carpet and furniture in the animation was the same as in the classroom in which the projection was taking place, it blended in with the physical objects too well and hence made the whole piece rather empty and mundane. In contrast to lots of pattern being made onto the objects in the first two sessions where the animation being projected was full of primary colours. Therefore a sense of emptiness was created and this was emphasised by the empty classroom in the animation being projected.

It was also decided that with the use of sound such as recordings of a lecture would give a feeling of an invisible lecture being held or even the nostalgic feeling of a lecture that had already taken place.

(Please view DVD the “Session3” menu under “Development Work” menu for video footages and further images of this session)

Fig 19. Photographs taken in session 3. (*left*)Photograph with the lights on demonstrates the setting of the room and the projections.

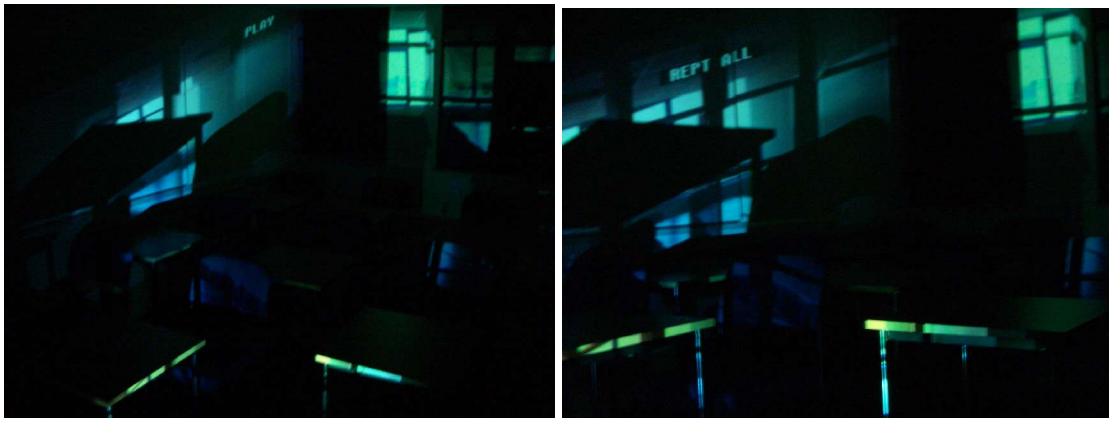

Fig 20. Photographs taken in session 3, demonstrating daytime windows projected onto closed curtains in the room.

Session 4:
It was thought that in session 3 the classroom was too empty therefore I decided to composite animated computer generated shadows onto photographs of the same and similar classrooms at daytime using Maya and Shake (see video clips of the work on the shadows on DVD in the "Work on cg shadows" menu from "Session 4" menu under "Development Work" menu). These were then to be projected onto the classroom at night time. The projection would be the same as in previous sessions where the projection would be fragmented and also shadows of object would intertwine with what was being projected. This was an attempt to merge the computer generated shadows with the actual physical shadows, blending the virtual and the actual in a 2-dimensional projection that would penetrate through and attempt to merge with the physical space (see Figure 21).

During this projection the recordings of a lecture about innovations (part of the Innovations project lecture) was played in order to give a feeling of an invisible lecture or a feeling of a lecture that had happened (idea mentioned above) and also at the same time explaining the idea behind this innovations project.

Fig 21. Images demonstrating the computer generated shadows composited onto a photograph of a classroom used in session 4.

Unfortunately this idea did not work well, the sound element which might work well in session 3 felt very separated from what was being projected and what was being projected did not blend well to the environment. The computer generated shadows were quite distinguishable and did not blend in well with the actual shadows. The whole piece felt very separated and disassociated from each other in terms of the sound, the room and the projection (see Figure 22).

Attempts were made to rearrange furniture in order to produce interesting shadows to go with the projection. However it was felt that there were too much furniture and time was limited to rearrange the classroom as equipments needed to be returned at strict times. This problem was resolved by shifting everything into one corner and only using one corner of the classroom and using a few tables and chairs or even just one chair on its own. Projection onto a few chairs not only fragmented the image but created interesting

Fig 22. Photographs taken in session 4. Projection of imageries from classrooms with computer generated shadows, projected onto a classroom.

Fig 23. Photographs in session 4 showing projection onto a single chair.

results with a computer generated shadow being displayed on the chair and another hiding behind the chair's shadow. The shadows were hiding themselves behind the actual shadows of the objects but also appearing on the objects (see Figure 23).

It was felt that by having all the redundant furniture in one corner and only using another corner of the room only opposed the concept of creating environment and did not use the space to its full. The projector that was fixed onto the ceiling of the classroom was later used to give two projections however this also gave unsatisfactory results (see video clip on DVD titled "Using two screens" in "Session 4" menu under the "Development work" menu).Therefore I felt that session 4 was very unsuccessful.

(Please view Development DVD session 4 section for video footages and further images of this session)

Evaluation from Experiments:

It was noticed that there was not enough time spent exploring the arrangements in the classroom. In most of the experimentation so far, the environment and the furniture of the classroom were not used to the full. It was felt that attention was mainly spent on the projection and what was being projected and hence similar to the cinema setting. More thoughts needed to be made on the sculptural element of the installation and what kind of environment was to be created such as what function the room possessed and what were the functions of the furniture. The lack of attention in the exploration of the actual physical classroom space might be due to the limited amount of time spent in the classroom in each session. Each session lasted roughly less than 3 hours including the time for setting up and putting classroom back to its original form as well as returning equipments as they must be returned before 7pm and the room was only available from 4pm onwards. Additionally equipment malfunctioning was common during most sessions. Therefore the classroom was booked for over the weekend (Saturday and Sunday from 8am until 10pm) to allow sufficient time to explore the space and furniture of the classroom.

At this point of the project, sufficient knowledge of the "medium" was gained and a more solid idea was formed as to what worked well with the project. The idea of projecting an environment back onto itself was interesting, together with the fragmentation caused by room objects as well as the shadows merging with the projection to form a new whole. However the problem at this stage existed as a solid idea as to what the installation was about had not been formed. Past experiments demonstrated what different effects could be made but less concentration was paid to what the installation should be about. The next stage of the project was to develop an idea for the final installation. Nevertheless some aspect of what the installation should be was already decided. It was already decided that the installation was to be shown in the evening (with the absence of daylight) hence the reflection of the windows could be used and also information of the classroom environment collected during day time were to be projected back onto the environment.

Implementation of final installation

After referring back to the research materials and experiments, I decided to concentrate solely on the environment of the classroom as the theme of the installation. I attempted to produce a piece that would create a new space that would describe an environment.

Having access to the classroom over the weekend and with the help of a friend (who assisted me with moving the furniture) enabled me to rearrange the furniture in the room without being limited by time. I was enabled to explore the actual space of the classroom. I wanted to create a classroom that was not in its usual form and the idea of using the tables and chairs to generate the sculptural quality of an installation was formed. I decided to show the classroom in a way never seen before. Therefore initially the classroom was rearranged by putting most tables in one corner and the chairs were stacked up onto another corner. Then the rearranged classroom was photographed to capture the moment when the classroom was no longer in its usual form. Pictures of the whole environment and pictures of more close up details such as underneath the table with labels showing were taken. I attempted to take close up pictures of the furniture at angles that were normally unnoticed (see Figure 24). The whole environment of the arranged classroom was also filmed (see filmed footage of first transformation titled "First arrangement" on DVD from the "Final Installation Development" menu under the "Development work" menu).

Fig 24. Some of the photographs taken in first transformation of classroom.

After documenting the first arrangement, the room was transformed again. I began to place all the tables upside down as they were often seen the right way up. Chairs were as well flipped over showing the label at the bottom of the seat. Decision was also made to stack the chairs together in an interesting way or were placed together to create interesting forms. At the end the classroom was totally transformed. The second transformation was then documented by filming the whole environment afterwards and also taking photographs of the transformed classroom (see Figure 25 and see filmed footages of second transformation titled "Second arrangement" and "Film used in

Fig 25. Photographs of second classroom rearrangement.

Fig 26. Filmed footage of the transformed room at daytime was projected onto the same room in the evening.

installation1”on DVD from “Implementation of final work” menu under Development work menu).
At this point, I was satisfied with what the classroom became and therefore decided to project the filmed video of this transformation back onto the environment at night time. The projector was placed at first in a corner of the room projected onto the opposite corner of the classroom in addition projecting onto the stacked chairs (see Figure 26). The fragmentation of the filmed footage onto the chairs was different this time because of the changed positions of the chairs. Instead of standing upright they were now either upside down stacked on top of each other or on the side. This therefore enabled different part of the chairs to display the fragmented part of the filmed footage. The underside of the seat had turned into an alternative screen displaying a fragment of the film. Not only the filmed footage was fragmented by the furniture, the shadows the chairs produced created an interesting result of an eerie landscape which merged with the stacked chairs in the filmed footage of the same environment at daytime. This therefore also blended the past and the present together (i.e. chairs at day time together with chairs in the evening).

There were also interesting results with the reflection of light from the frames of the lights on the ceiling of the room caused by the projector. The reflected lights created flashing line patterns onto the walls from the lights on the ceiling. Reflection of the lights from the legs of the chairs and tables caused by the projector also produced interesting effects. After further trials of placing the projector at different corners of the room, I decided to also make use of the projector from the room itself that was fixed onto the ceiling. This projector was first neglected due to its fixed position from which the projected image would be displayed directly onto a screen, resulting in the cinema setting and hence passive viewers. However it was decided to place chairs to obstruct the projection and hence creating something new. A new screen was therefore constructed using stacked chairs on top of tables to fragment the imagery. The same footage was projected from the classroom projector (see Figure 27 and see video clip on DVD titled “Projection onto same environment” under the “Final Installation Development” menu that is under the “Development work” menu.).

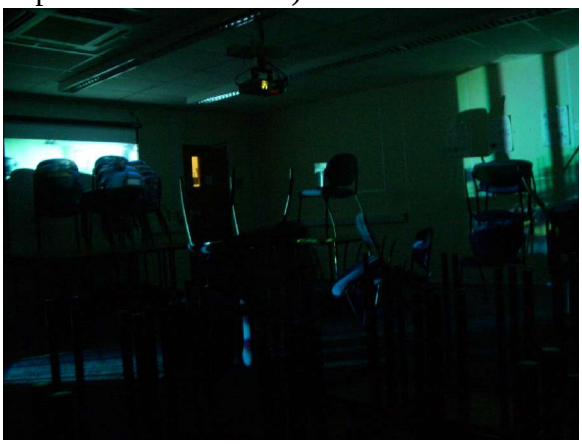

Fig 27. Photograph showing the “screen” constructed from stacked tables and chairs.

Having two projections and also a transformed classroom, it was felt that the room was used to the full. However movement was limited due to the displacement of the furniture, so the arrangement was rearranged again this time to allow viewers' safety while

accessing through the classroom during viewing. Initially a path was constructed of upside down tables around the room so that viewers could walk on it. Later on this idea was replaced by another room arrangement as it would be interesting to have a projection of a filmed footage from a specific time in the past onto the same classroom with a different setting. This therefore resulted in the overlapping of the same space from different time.

The effect of using the underside of the seat of a chair and back of a chair to catch fragments of the film footage was interesting. It was decided that the classroom should be rearranged further to fragment the footage more and also to create interesting shadows onto the projected film. The underside of the desks was used also as an alternative screen to display fragments of the filmed footage. Therefore instead of upside down tables on the floor they were laid on the side using the underside of the desk as a screen. The stacked chairs were also moved and some of them were changed (see Figure 28 and 29). A more symmetrical arrangement was made this time and the position of the projector was also moved so that the two projections were opposite to each other creating a sense of confrontation. This confrontation of the projection was emphasised by having the classroom projector to project another film which was at a faster pace and tempo compared to the filmed footage which was an almost 360º revolution pan of the classroom looped back and forth. The looped film projected by the classroom projector consisted of quick array of images that documented the change of the classroom environment and were suddenly interrupted by a virtual space representation of the actual room in its current state moving through humanly impossible spaces of the room. (Please see video of the looped film and the filmed footage of this final arrangement on the DVD titled "Film used in installation2" and "Actual setup of final work" from the "Final Installation Development" menu, under "Development work" menu.)

Fig 28. Photographs showing the final arrangements of the installation. (*Right*) Photograph showing a clearer photograph of the stacked chairs and tables to be projected on.

Fig 29. Photographs showing the arrangements of the chairs in the installation.

As mentioned in the research above where sound is an important aspect in defining space, it was vital to have sound in this installation. Sound was also later added whose purpose was to disorientate and displace the viewers as well as to enhance the atmosphere of the new formed space altogether. I had the idea to use sounds that did not belong to the classroom and also simulated the feeling of being under pressured, the sense of hostility and also the sense of being oppressed. It was felt that the sounds would match the atmosphere I have created especially with the arrangements of the tables whose legs were facing directly at the viewers. Sounds were made for the installation by manipulating and distorting sampled sounds with the help of a friend who owned sound creating software.

Final Installation: Classroom Space

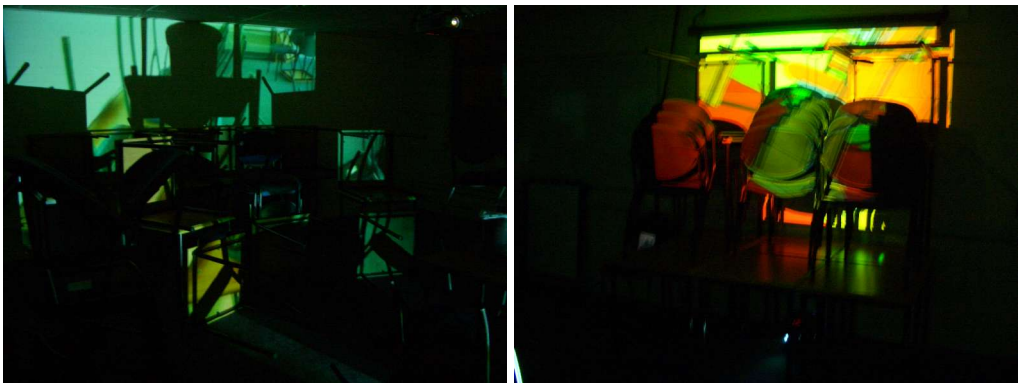

Fig 30. Photographs of the final installation. (*Left*) The dominating shadows formed by projecting onto the rearranged furniture. (*Right*) The projection of a looped fast pace film onto a "screen" made of chairs and tables.

Upon entry to the classroom viewers were confronted by dominating shadows formed by the chairs and the tables. A filmed footage of a previous arrangement of the classroom played back and forth was projected onto the rearranged furniture (see Figure 30). On the other side another film was projected onto a "screen" constructed by stacks of chairs and tables (see Figure 30). The quick display of images of the captured moments of the development of the classroom rearrangement with sudden intrusions of computer animation was projected here. This contrasted the slow paced filmed footage that was projected onto the environment. Just by the side of the "screen" constructed by tables and chairs, a laptop displaying the filmed footage that was being projected sat on a chair. An eerie sound was played continuously to disorientate the viewers and to enhance the atmosphere. The classroom was no longer what it used to be.

(Please view DVD for the filmed footages of the installation, titled "The Show" together with additional footages and images. This is allocated under "Installation Show 23/2/05" menu on the DVD)

Fig 31. Photographs showing more detailed fragmentation onto the objects.

Critical Analysis

Inspired by Daniele Puppi who strives to transform a space given into something unexpected and to view space as a material for the artists rather than a neutral place to host their work, I wanted to generate a new space within the space that I was given and to transform a space so familiar to most lectures and students into something never seen before.

The sense of immersion was important in order to create a new experience for the viewers. I paid attention to Christiane Paul's description of the connection between immersion and art and aimed to explore the relationship between the physical space and the virtual. The interactivity of an interface that is solely unique in digital art mentioned in the research above was not demonstrated here. I wanted to concentrate more on the immersion of environment and hence the interaction would occur when the viewers were within the artwork rather than the viewers using an interface. However the interaction did not solely exist as a mental event as described by Paul when referring to traditional art, the viewers were allowed to move freely inside the room however they wished and were allowed to touch the objects provided they did not destroy them. I attempted to concentrate on this immersion which also led to viewers' interaction with the artwork. Additionally I have created a space for the viewers to think and to experience the sensation within this new classroom.

A feeling of a classroom that did not want to be itself anymore could be felt. It seemed like the tables and chairs were defending themselves from the intruders of their space i.e. the viewers. At the same time the recorded footage seemed to capture the different moments and development of this revolt. Additionally the sound worked well in this aspect to enhance the feeling of hostility. In this sense this installation contained narrative however it was not the intention of this artwork but rather a personal interpretation (a personal habit to form narrative from anything). The work was not supposed to impose meaning but rather to allow viewers a space to think and explore to generate a meaning of their own.

I especially liked projecting daytime footages during night time as it gave a sense of time and development of the project. The whole installation could act as a presentation of the coalescence of what the classroom became and what it had been through.

This installation must be viewed at night time for the above purpose as well as to create the effect of the reflection on the windows of the projection which was also part of the artwork (see Figure 32 and video clip on DVD titled "Reflection on Windows" from "Additional Footages" menu under "Installation Show 23/2/05"menu). The reflections helped to extend this classroom revolution onto the university campus as seen outside the window. In addition, it opened up the space of the classroom further and also maintained the symmetrical structure.

Fig 32. Photographs showing reflections on the windows in the installation, which extended the work into the university campus.

I was highly interested into the fragmentation of the projected image and as mentioned already could be regarded as “painting” onto the environment, similar to the work by artist Calum Colvin (see Figure 31 and video clip on DVD titled “Close Up of Chair Screen” from “Additional Footage” menu under “Installation Show 23/2/05” menu). This could also be seen as a new way of spatialising the moving image as in Ahtila’s work. Instead of using multi-screen to spatialise the moving image and to portray narrative in an interesting manner, I spatialised the moving image by splitting it into fragments that were displayed onto different objects.

The installation was solely created with the use of computer. The footage was filmed using a digital camera and then transferred digitally to be played back and forth in a loop on a laptop displayed through a projector. The back and forth motion of the projected film caused an impression of movement in the room which added vitality to the space of the installation. The other projected film was made using computer software. The photographs of the moments during development of the classroom were selected and placed together to create a sense of rhythm that contrast the slow paced back and forth motion the other footage has. It was also decided to break the rhythm by intruding the images with the computer animation. The idea of using the computer animation was to create another dimension to the artwork. The computer animation consisted of different shots of a computer representation (3D model) of the actual installation. All the shots involved the camera moving through humanly impossible space. Having the virtual camera moving through spaces that were not possible by a human distinguished the virtual space. It is also interesting to point out that computer animation is widely used in films nowadays to create shots that are hard or impossible to capture using the conventional methods such as Fight Club(1999; David Fincher) and Matrix (1999; Andy and Larry Wachowski)and hence in this way blending the virtual with the reality of film. I also wanted the animation to be brightly coloured to distinguish itself and also to “paint” onto the furniture to create interesting patterns. The animation acted as a representation of the thought and spirit of the environment: the rise of the furniture and that was the other reason to choose bright and dominating colours. Therefore these

thoughts would interrupt the array of time slots that captured the development of this revolution of the furniture.

Instead of having an idea in the beginning that would work well as an installation, I had to find an idea in the end, this might have affected the work. It felt that it became something that was formed based on the outcomes of the previous experimentations. However I feel this experimenting approach was valid for this project and in fact very valuable. It was felt that the computer graphics element of the piece (animation of the 3-dimensional model of the installation) should be displayed more to emphasise the virtual space more however it was decided to keep the time slots of the development as they were also part of the piece as well. Nonetheless it was feared that it might gave an impression that the computer graphics was just there for the sake of it. However I felt that the room was used to the full and I had successfully generated an environment for viewers to immerse in.

The viewers response:
Fortunately, the exhibition went well and many comments were received (see Appendix for comments). Most viewers tend to grasp the uncomfortable, disorienting and hostile atmosphere I have created. However some viewed it as rather comical and the work was described as mischievous chairs and tables at night, where the sound was interpreted as the sound of the furniture moving. Some even found it nauseating due to the back and forth motion of the filmed footage, yet also some found the room calming at the same time. The viewers also reacted well to the coalescence of the space of the classroom, projected filmed video (space of the past) and the computer graphics elements (virtual space) into a whole new space. Additionally, it appeared that everyone had a different interpretation to the piece. Being able to create a piece of work that could enable multiple interpretations was rewarding especially when the work was supposed to be open for interpretation.

Additionally it should also be pointed out that different viewers spent different amount of time in the installation this ranged from 3 minutes to 45 minutes (these values are a rough estimation). This reflected the indefinite duration of the piece where its duration was determined by each individual in the installation rather than already determined. Therefore this contrasted the conventional way of viewing film and animation whose beginning and end are already determined and not affected by the viewers.

Conclusion

The challenge of bringing computer animation/graphics out of the cinema and television screens and exploring an alternative use of computer graphics which is normally applied in live action and animated feature films was tackled by creating an installation, which in itself was also a challenge as well as a personal innovation.

The limitation of resources e.g. limited amount of time in the room given and having to put the room back into its original state at the end of every session restricted but also aided me into producing the final work. It has restricted the production of a more complex installation hence the room could not be drastically rearranged and have extra elements brought into the room e.g. the use of big mirrors (an idea that was thought of). This was due to the risk of objects being misplaced by others who also used the classroom. However this limitation had enabled me to concentrate on a few aspects instead of being distracted by the vast amount of different possibilities I could take.

Valuable knowledge was gained not only in researching on artists and their work which inspired me and helped me gain insight into installation art but also in organisation skills. I gained experience in organising and promoting an exhibition (see Appendix), booking equipments and rooms. Additionally time management skills were also gained, such as allocating time for experimentation and the actual implementation of the installation.

I feel that my exploration in the alternative use of computer graphics to create new artistic expression has been successful. By creating an installation viewers no longer view what is being presented passively. Also in contrary to conventional film and animations, the duration of the piece is not fixed and is in fact determined by the viewers themselves.

The films and animation presented in the installation became part of the environment and hence transformed into something new altogether. This enabled viewers' participation in the installation whereby they physically immersed into the environment in contrary to the "cinema situation" as mentioned in the beginning of the report. Additionally the attempt to incorporate digital and physical elements in order to generate a new space was well received by the viewers in the exhibition. However one could criticise that the installation should only consist of computer graphics elements instead of also using filmed footages for the intention for the project i.e. to take computer graphics out of the passive setting. Nonetheless one could also argue that the installation was mainly created with the use of computers and all the imageries were digital and hence already a form of computer graphics[12]. Also the filmed footages were used to blend with the computer 3D model of

[12] **Definition computer graphics:**
-Pictorial representation and manipulation of data by a computer. [34]
-Noun. (used with a sing. or pl. verb)
1) The set of technologies used to create art with computers. 2)Art or designs created using such technologies [35]

the installation with artistic intentions. Nevertheless this could be considered as the less successful aspect of the project as to whether more computer animation should be used to fulfil the initial intention of this project.

I have really enjoyed this project as it enabled me to fully experiment artistically. I feel that I have developed new approaches/techniques such as using the reflections on the window to create new space and fragmenting projected image using objects and furniture to create something new. These techniques have given me many new ideas to present future animated work differently. This exploration has opened many doors for me to explore and apply computer graphics in many forms of artistic expression and not just tied to animated film. It has allowed me to explore the creation of artworks which could lack narrative or meaning and this itself was also a personal innovation. Additionally the process of creating an installation has shine a new light on the way of viewing an environment and the concept of space and to use them in an artistic manner. I would if given the opportunity in the future to explore further into creating installation artworks with the incorporation of computer animation.

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> OuLiPo, the "Ouvroir de Litterature Potentielle" or “Workshop for Potential Literature,” was co-founded in Paris the early 1960's by mathematician and writer Raymond Queneau and Francois Le Lionnais. Oulipian writers impose constraints that must be satisfied to complete a text, constraints ranging across all levels of composition, from elements of plot or structure down to rules regarding letters. (cited from http://myweb.lmu.edu/pharris/oulipo_definition.htm [Accessed March 2005])

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Appendix:

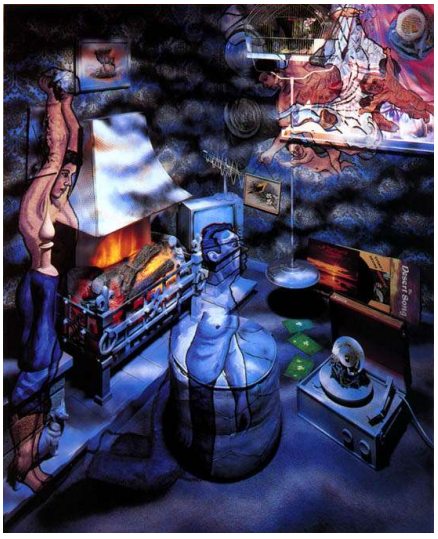
-Works by Calum Colvin
-Description of installation displayed in exhibition
-Comments from viewers

Works by Calum Colvin: Scottish artist, photographer

A Caucas Race (1999)

FragmentV (2003)

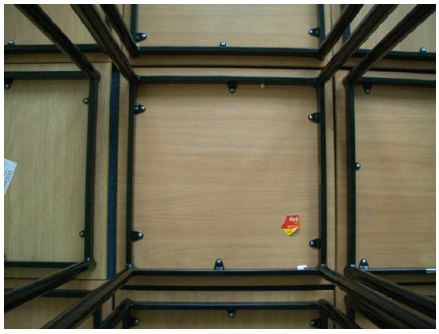
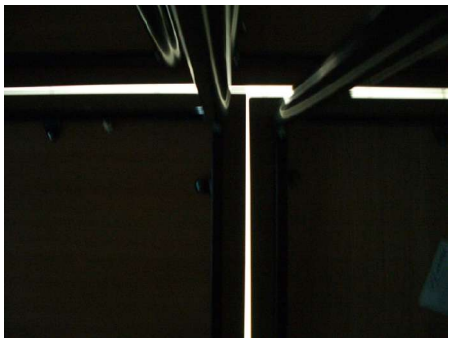
Mute Swan (1996)



Stoning of St Stephen (1998)

Images obtained from http://www.calumcolvin.com/

For more information on artist visit http://www.calumcolvin.com/

Bettina Fung – CLASSROOM SPACE

23 February 2004

This installation was created as part of the BA Computer Visualisation and Animation third year Innovations project, exploring innovatively the potential of the computer in the development of new ways of artistic expression.

Classroom Space incorporates the use of computer technology to create artistic expressions and explores the alternative way of presenting computer graphics and video, integrating them into the physical space of the classroom. It attempts to incorporate digital and physical elements to generate a new space that is open for interpretation.

The installation is site and time specific belonging solely in the space of the classroom P425 and only to be viewed in the evening.

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