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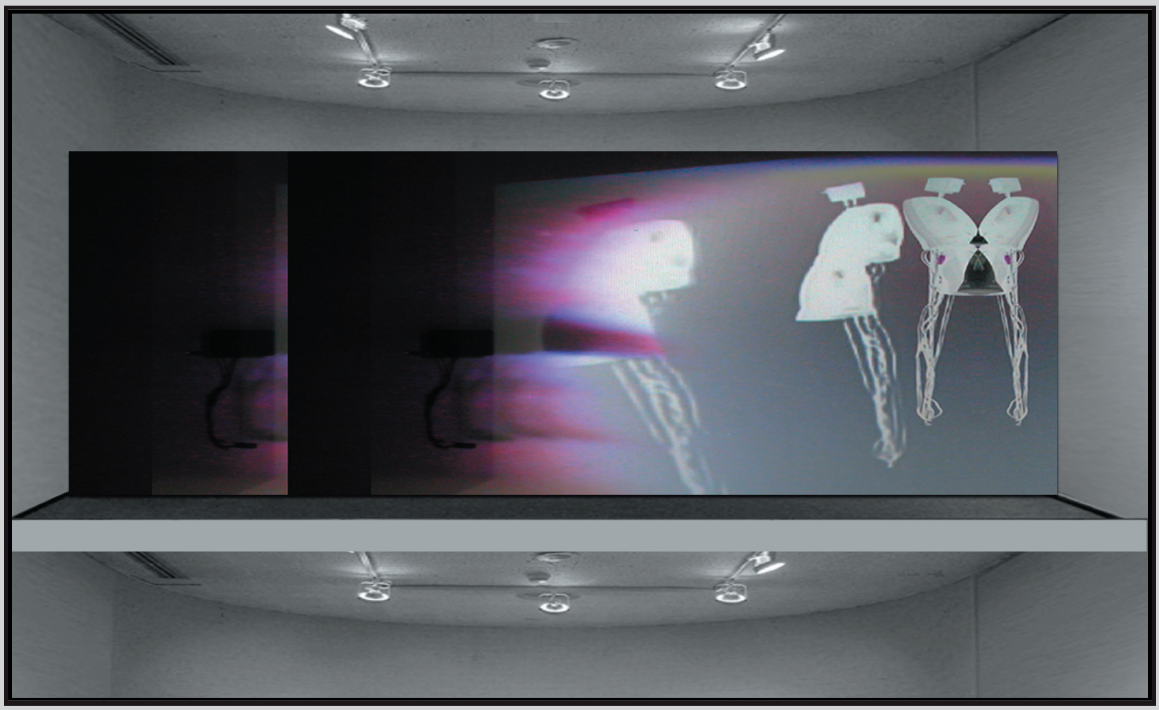
FALL 2004

THE INTERNATIONAL DIGITAL MEDIA & ARTS ASSOCIATION

JOURNAL



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SUBMISSION GUIDELINES: Articles on digital media and art related topics are welcome at any time. An abstract of not more than one page should be submitted to the editor via e-mail (cgleber@mailer.fsu.edu).

Upon review, authors will be advised of acceptance for submission. The Journal will include a section for invited and refereed articles. While length will vary from issue to issue due to themes, articles will generally be 1500 to 4000 words. Any author preferring a peer review will automatically have the submission considered for the refereed section of the Journal.

While the Journal will normally appear in electronic form (PDF), at least one print version will be published annually.

All new Journals evolve and the iDMAa Journal is no exception, please refer to our web site www.idmaa.org for updates.

Submit articles by mail to:
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Editor's Note

This is the second issue of the International Digital Media and Arts Association Journal. It signals the beginning of efforts to sustain the vision that established a place where academics from emerging areas of study can exchange their expertise and participate in critical collegial discussions.

Digital media and art programs are complex initiatives that represent a merging of various academic disciplines. The goal of the **iDMAa** editorial and advisory boards is to make the Journal a useful tool for **iDMAa** members. It should facilitate networking among peers and initiates, encouraging the sharing of experiences and changing perceptions as they work to create and maintain viable digital media and art programs. These programs are rich and full of potential, and rather than attempt to oversimplify, the Journal intends to reinforce the diversity and complexity of the field.

The online publishing of the Journal affords some important opportunities. Besides the obvious cost savings, an online journal can provide illustrations, references, links, sound and motion graphics that fulfill the promise of web-delivered content. In addition, the online Journal is available at the website (www.idmaa.org/journal) for download as a PDF file. It has been formatted as a layout for offset or copy machine printing and can be output as a bound copy similar to printed issues. It makes for easy reading and documents participants' professional activity in a way that a solely online version cannot.

In this issue the Journal is publishing papers in three categories. The first category presents two papers selected from the refereed submissions accepted for the 2003 conference. The second and third categories are program reviews of a wide range of digital media and art initiatives and reports from several workshop sessions held during the **iDMAa** 2004 conference. These two categories will be regular features and are meant to promote the development of digital media and art through sharing experiences and dialog.

Creating and maintaining a digital media program always begins and lives at the edge. Although the vision of the potential for digital media is easy to see, the vision of how to make it fit and grow among the silos of the academic landscape requires more savvy. It's usually an uphill climb and there is a certain militancy, in the form of dedication and perseverance, that's required to put the ideas into motion. But how do you plan for what may be on the other side of the hill? Reviewing the examples offered by colleagues who have established successful digital media and arts programs is one of the best means for planning new program initiatives currently in the works.

Jeff Rutenbeck reviews the history of Digital Media Studies at the University of Denver and gives us insight into how faculty from different departments asked the hard questions that would eventually lead to an undergraduate and graduate program with more than 120 students. And while many obstacles have been overcome, there are even more challenges on the horizon.

James Oliverio and Patrick Pagano of the Digital Worlds Institute at the University of Florida provide us with an in-depth sequence of events that led to the establishment of their program. They also describe how the facility supports multiple disciplines from within the university and from around the world to become collaborators and innovators in digital media and art.

Mat Rappaport and Jonathan Adams have given us their reflections and insight

into the process of maintaining and growing digital programs that are part of established departments. One in a School of Communications (FSU) and the other in an Art Department (UWM).

Two other programs, one described by David Ferguson, The Center for Media Design at Ball State University and the other by Michael Schmidt, The Center for Multimedia Arts at the University of Memphis, offer an overview of how collaboration is a critical component of digital media. Partnering with corporate, professional and community participants is the basic rational for exploring and defining new and engaging paradigms.

In keeping with the perception that talking and sharing our ideas is the most important thing about a conference, **iDMAa** 2004 created a set of intensive workshops that offered an alternative to the usual sit-in-the-dark-and-listen sessions. To reinforce the conference design this is sue of the Journal includes reports that summarize the session work. The documentation will give non-attendees an idea of the results of the workshop and, in some cases, will provide an incentive to develop research topics that could become special issues of the Journal in the future.

Session leaders have reported on the discussion and resolutions from workshops on finding money, professional development and digital media education. Scott Olson and Mat Rappaport led the session "Finding Money for Digital Media Projects." Roughly 80 people attended, and together they developed a list of attributes that make digital media attractive to potential funders.

Professional development is a critical issue for many new faculty and will likely be a regular conference workshop topic. Some of the reasons were reviewed and listed in a report from Gail Rubini and Conrad Gleber. The session participants contributed their ideas to create a list of responsibilities that faculty should be obligated to fulfill whenever their digital media projects are under scrutiny. In addition the group put together an action list for **iDMAa** that would help achieve standards for professional development.

A survey answered by 35 attendees from 25 institutions before the conference helped to prepare Chris Blair and Jeff Rutenbeck for a workshop that explored in-depth the way media and art programs were evolving. Questions and discussions about curriculum development, professional development and pedagogy overlapped to provided a revealing look at the myriad ways digital media and art is taught.

A special thanks is due to all the authors for their efforts at making this the first online issue. We are excited about our organization and this journal and invite you to share in its evolution. Your comments ideas and participation will always be welcome.

Conrad Gleber
Editor

Conference Papers

Design and implementation of accessible digital media classrooms and studios: facilitating both interpersonal and intercontinental collaborations

James Oliverio, Director
Patrick Pagano
Digital Worlds Institute, University of Florida

@wake: Interface and metaphor in digital installation art

Daniel Freer
Lansdown Centre for Electronic Arts
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Design and Implementation of Accessible Digital Media Classrooms and Studios: *Facilitating both Interpersonal and Intercontinental Collaborations*

Submitted By: James Oliverio, Director
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Abstract
A variety of traditional disciplines are now using tools and techniques developing within the convergent field of activity referred to as "Digital Media" (DM). While numerous industrial and commercial entities engage in DM initiatives, the focus of this paper is purposefully constrained to the development of Digital Media environments (both physical and virtual) suitable for education and research. As professionals with backgrounds in Art, Architecture, Computer Science, Communications, Education, Engineering, Journalism, Humanities, Liberal Arts, the Sciences and other fields attempt to harness and utilize elements of DM in academic environments, a number of unique challenges have arisen. The specific challenge discussed herein concerns the design and implementation of affordable, functional, scalable and updateable spaces in which educators can utilize the increasing variety of DM tools and techniques across not only academic domains, but across grade levels as well.

Keywords
Distributed Education, Digital Media, Classroom Design, Distributed Virtual Reality, Virtual Interaction, Networked Virtual Reality

1. Introduction

The implementation of real-time distributed interaction between researchers, educators and students has often been limited to "talking head" forms of interaction, even when cutting edge distributed virtual environment and co-presence technologies have been employed [1], [2], [3], [4], [5]. Understandably, educators in specific domains are usually concerned primarily with the content and practices of their own domain. So it follows that their approach to the use of new media in educational settings, whether live or virtual, will tend to follow the traditional form

prescribed by their core discipline. In the view of the authors, this prescriptive approach can be augmented significantly with new tools and techniques to foster a more effective and engaging environment for learning. A number of experimental media events, techniques and environments have been developed at the University of Florida's Digital Worlds (DW) Institute over the past three years. These developments indicate that both interpersonal and intercontinental collaborations can be effectively facilitated and enhanced with new tools being developed across the diverse disciplines that are converging around the nascent field of Digital Media.

2. Related Prior Work

In the spring of 2001, a computer scientist invited one of the authors to the Physics building at the University of Florida (UF) and gave a brief introduction to an emerging technology called the "Access Grid" (AG) [6]. The author foresaw an immense potential for the AG system beyond its initial adoption by the scientific research community. A proposal was subsequently submitted to the 2001 global SuperComputing Conference (SC2001) to showcase real-time collaboration between artists and engineers located across two continents. The resultant project, entitled "Dancing Beyond Boundaries" (DBB) joined master percussionists in Brazil with musicians and dancers at the University of Florida, a choreographer and dancers in Minneapolis and dancers performing inside a three-walled virtual environment on the SC Conference floor in Denver. The resultant premiere at SC2001 garnered the award for "Most Creative and Courageous" use of the high-speed network in the High-Bandwidth Challenge. This initial effort received substantial exposure in both the research and commercial world [7], [8].

Building upon the technical success of DBB, Australian media artist Kelli Dipple undertook a residency at the UF Digital Worlds Institute in Fall 2002. Working in the DW NAVE Lab, Dipple and students in the Digital Arts and Sciences program created and premiered a three-continent collaboration uniting performers and technologists in Australia, Florida and England entitled "Navigating Gravity." To facilitate these distributed collaborations, a host of specialists from traditionally disparate fields were required (i.e., network engineers, digital animators, computer scientists, theater designers, audio and video technicians, television producers and directors, camera operators, composers, musicians, dancers and choreographers).

Although these initial projects focused on collaborations in the performing arts, it became apparent that the underlying distributed col-

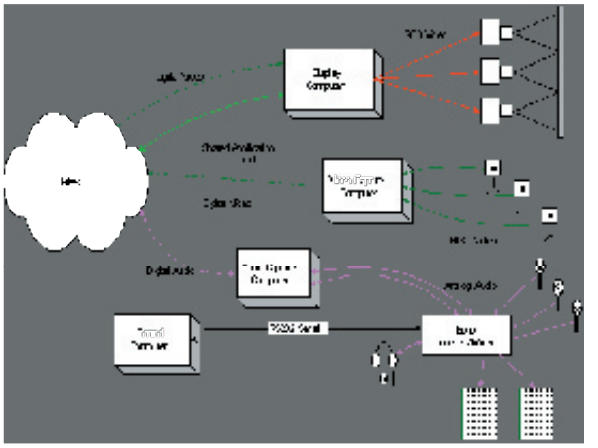
laboration systems and resultant techniques developed at Digital Worlds had tremendous potential for effective real-time group interaction across the variety of domains converging around the field of Digital Media.

3. Underlying and Enabling Technologies

Although educators have been quick to adopt video conferencing as a classroom technology preferable to other communications devices such as the telephone, late twentieth century quality of service issues (including lack of bandwidth and inefficient video compression /decompression (CODEC) schemes) initially created usability problems in early deployment scenarios [9]. As bandwidth increased and CODECs have matured, distributed collaboration in the sciences has become more commonplace with the proliferation of high-speed backbone networks like Abilene, STAR TAP, DANTE, GWIN. Centered in the United States, the Internet2 consortium supports various initiatives including the Access Grid (AG) [6], the Virtual Rooms Video Conferencing Service (VRVS) [10] the Virtual Auditorium of Stanford University [11] and the new Global Conference System [12].

Because of its ability to support multi-perspective inter-nodal communication, the Access Grid (AG) has been used by DW as the primary means of linking geographically divergent partners during its initial distributed collaborations. The Access Grid is an ensemble of resources used to support human interaction across the Internet. It consists of multimedia displays, multipoint bi-directional audio, cameras, and shared virtual "venues" for presentations and interactions. See Figure 1.

FIGURE 1. A Basic Access Grid (AG) node configuration



A distinguishing feature of the Access Grid is its ability to capture up to four video images simultaneously and transmit them to all of the other

collaborating locations. This multi-cast capability enables each node to see and talk to each other (as in a standard point-to-point teleconference) with the added feature of multiple perspectives shared across multiple nodes simultaneously. This enables participants (whether across campus or across the world) to interact in a naturalistic fashion, compared with systems that relegate participants' images to avatars or other abstracted iconic representations [13], [14]. The depth of communicative cues offered by real-time realistic video has been incorporated into a number of projects aimed at facilitating more effective distributed collaboration. Indeed, one of the more promising developments is the ability to composite multiple persons into a shared virtual environment simultaneously, while at the same time retaining the individualistic expressions and gestures of each of the participants [4].

An ongoing development at Digital Worlds is Patrick Pagano's work on a low-cost tool for compositing live humans (whether teachers, performers or students) into virtual or realistic environments as a means of heightening the effectiveness of the video imagery transmitted across the AG. While there are a number of commercially available real-time video compositing tools, they tend to be very expensive and/or require complicated hardware systems to operate. Pagano's solution is based on the initial work of Mark Danks [15] with the Graphics Environment for Multimedia (GEM). GEM was originally written to generate real-time computer graphics, especially for audio-visual compositions. Because GEM is a visual programming environment, users do not need any experience in traditional computer languages. Pagano's implementation is currently running on Mac OSX, linked into the AG as though it were simply another camera input.
This solution is at once affordable and scalable especially when used in learning environments where immersive visualization can heighten understanding of the lesson (i.e., examining multiple perspectives from within a complex dynamic system or moving around inside ancient structures for an anthropology or history class [16], etc.) . See Figure 2. Additionally, it is easily inserted into standard video conferencing systems (whether point-to-point or multi-cast) for educators working in a variety of domains.
Access to high-speed networks at educational institutions is becoming more prevalent; therefore it is assumed that the use of these enabling technologies can only become more widespread as the availability of bandwidth increases.

Figure 2. P. Pagano in the VPS (top) and at two subsequent virtual

"beaches": Brighton, UK (middle) and Miami, USA (bottom).

4. Design and Implementation of Flexible Digital Media Space: the REVE as prototype

While institutional access to raw bandwidth is on the increase, oftentimes the physical location of video-and virtual-conference systems create lack of access situations for persons not involved in the department that "owns" the facility. For example, high-end virtual environment

systems are often located in Computer Science or Engineering units, and may not be readily accessible for educators from other departments. And although there are now nearly 200 Access Grid nodes deployed worldwide [6], these nodes have often been built in rooms that can seat only a dozen or so people at a time, if that many.

Observations such as these were key considerations in the design and implementation of the Research, Education and Visualization Environment (REVE) at the University of Florida. The REVE was purposefully designed to facilitate activities within one contiguous 5,500 sq. ft area with the following features:

1) A large green screen environment for acquisition of live video
2) Integrated production and post-production of digital media content
3) Ready access to Internet2 for real-time distributed collaboration (with live or pre-rendered components)
4) Flexible immersive classroom/studio space with large-scale visualization for up to 50 people
5) Interconnection of all of the above resources
6) Availability to educators and researchers for use across domains
7) Modular design so that the image generation and display systems can be readily and inexpensively upgraded as new technologies emerge
8) Research on Pedagogy, Interaction Design and Learning can be conducted onsite

A number of traditional and emerging models were examined and subsequently utilized in the design of the REVE. Several of the functional components for this facility were found in the broadcast industry (as well as film and television post-production studios) of the twentieth century. Another contributing model for the REVE design was the convergence of high-speed networks and distributed collaboration tools (i.e., virtual and augmented environments) found in computer science and engineering research labs. Additionally, the proven social paradigms of the Classroom (where students and teachers gather face to face to engage in learning) and the Theater (where people gather to view and engage in performing arts – whether "real-time" or "pre-rendered") were also incorporated into the facility design.

The final design of the REVE, which opened in Fall 2003, sought to integrate the creation, processing, distribution and presentation of digital media into one flexible physical location, and to make it accessible to practitioners from a variety of domains. Thus the entire community of researchers, teachers, artists and students are able to reserve and utilize the capabilities of the facility.

The primary functional sections of the REVE are:
1) Polymodal Immersive Theater (PIT)
2) REVE Image Generator (RIG)
3) Virtual Production Studio (VPS)
4) Digital Media Suite (DMS)

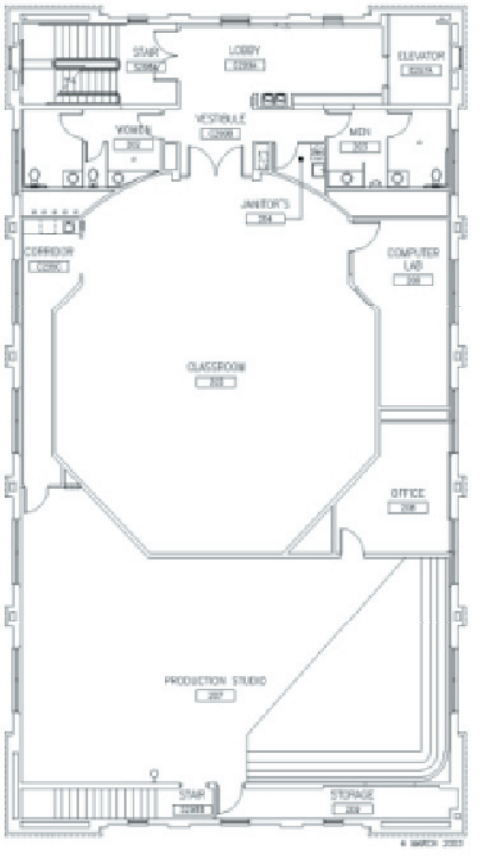


Figure 3 The Polymodal Immersive Theater (PIT)

The Polymodal Immersive Theater (PIT) in the REVE was designed to not only facilitate large group interaction at the local level (i.e., classroom of up to 50 people) but to also facilitate real-time connection across campus and around the world over the AG and other video conferencing tools.

Researchers in the field of Education have offered a number of

observations and subsequent theories on the effectiveness of electronic interaction in the classroom [18], [19], [20]. [21], [22]. A number of these studies have been confined to the paradigm of one or two users "shoulder to shoulder" in front of a desktop computer monitor [23], [24]. While the interpersonal skills developed in two-person teams is certainly useful, this model does not allow for advantageous group work [25] often found in the traditional classroom setup. In addition to use as a classroom or conference room, the PIT can be configured for live performances, with or without a local audience.

4.2 The REVE Image Generator (RIG) is a secure machine room where all of the computers and devices used in rendering the projected graphical elements are located. Current image generators are an SGI Onyx2 "Reality Monster" as well as a cluster of Dell PCs. A partnership with Trimension/SEOS has resulted in the acquisition and development of a real-time layering and compositing device (code-named SCORPION RT) which allows images from separate sources to be joined together seamlessly across the PIT's 52 foot wide screen. Thus videoconferencing feeds and other live video sources can be superimposed into animated virtual environments, PowerPoint presentations, DVD playback or any number of sources.

4.3 The Virtual Production Studio (VPS) is a flexible space that can be used for classes, rehearsals, performances, receptions and live video production. Its feature set includes a two-walled green screen, a video projection system, Internet2 /AG connectivity and a dedicated production entrance.

4.4 The Digital Media Suite (DMS) is a secure space located contiguously with the VPS. The DMS contains a variety of post-production tools, ranging from audio, animation, compositing, editing and DVD mastering tools. Direct network connection to the RIG allows fast transfer of media production elements and finished presentations for viewing in the PIT.

The most complex use of this facility to date was an international collaboration created for showcase at the Fall 2003 Internet2 meeting, held in Indianapolis, Indiana (USA). This project was entitled "NON DIVISI" (an Italian musical term meaning "not divided"). South American percussionists performed live with an ensemble of North American musicians located at the REVE, accompanying dancers in Seoul, Korea performing synchronously with dancers from Miami and UF and the dance soloist located at the Indiana State Museum (the Internet2 meeting venue).

"NON DIVISI*" brought into focus a variety of technical, artistic and cultural challenges inherent in real time distributed collabora-

tion across half of the world's time zones (including logistics across the international date line). See Figures 3 and 4.

Figure 3. Multi-window views from Indiana

Figure 4 . Multi-window views from Korea

*http://www.digitalworlds.ufl.edu/research/nondivisi

Figure 5. Images from the REVE spaces

Thus the REVE provided a functional convergence of the models upon which it was built, and was able to share the resultant international col-

laboration as both a real-time event and a subsequent multi-channel DM production.

For this DM presentation, all of the spaces of the REVE were linked together to form a synergistic environment incorporating:
- 5 live performance spaces (2 onsite at the REVE and 3 virtual)
- intercontinental multicast distribution
- a live audience at the REVE
- documentation and subsequent post-production of a DM artifact
- See Figure 5.

As a result of the partnership forged in "NON DIVISI" a number of new projects and initiatives have been proposed. All of these projects are multi-continental in nature and would not be able to be realized without the technologies and techniques explored at the REVE for the Fall Internet2 meeting 2003.

Another international event facilitated at the REVE was produced for SuperComputing 2003. Entitled "Use of Collaborative Technologies: Artistic and Cultural Instincts," the event joined researchers and participants from around the world and utilized the PIT projection screens to form a large-scale immersive conference environment. See Figure 6.

Figure 6. Large-scale AG Display at REVE PIT

5. Current Initiatives

We view the REVE as a prototype for a new generation of affordable, functional, scalable and updateable DM classroom/studio spaces. To utilize the flexible structure of the REVE across domains, a number of current DM initiatives are currently underway.
- Collaborators from BioMedical Engineering, the McKnight Brain Institute, the Center for Pre-Collegiate Education and Training, the Digital Worlds Institute and the University College of Education have formed a team to study the "Development and Assessment of a Polymodal Learning Environment." This team has proposed using the REVE as a virtual laboratory to study not only the design and presentation of digital media in a classroom setting, but how polymodal input activates various neural mechanisms underlying the learning process itself. This team has submitted a proposal to the National Science Foundation as part of its "Science of Learning" Centers initiative.
- Collaborators from the fields of Mechanical and Aerospace Engineering are combining both virtual and augmented reality systems in the DW NAVE and REVE to assist in the design and development of autonomous Micro Air Vehicles (MAVs).
- The REVE is being utilized as part of a study sponsored by the Ronald McNair Foundation, seeking to investigate how color and sound interact in the perception of mood in virtual space.
- Surgeons and researchers have created a proposal to investigate how virtual environments and related digital media techniques can be used to enhance both surgical practice and education. Extensions of this work will enable students to observe remote surgery and integrate virtual models and simulations with the live action footage from the operating room.
- Current DW international distributed collaborations are focussed on creating real-time interactive performances to study the potential for the use of gaming techniques and practices in classroom and virtual education environments. Digital Worlds' partners in this developing initiative include researchers at the Korean Advanced Institute of Science and Technology (KAIST), the Doncaster Education City (DEC), the Red Universitaria Nacional (REUNA), and the Royal Melbourne Institute of Technology (RMIT).

6. Future Research Trajectories

As DM systems become more complex, it becomes increasingly important to be able to differentiate whether discrete and aggregate system components are contributing to the desired result, or are creating undesir-

able “noise” in the system. To this end we are partnering with colleagues with expertise in interaction design and experimental assessment to determine the effectiveness of the various modalities used in DM-enhanced education and training. Parameters to be studied and assessed in relation to polymodal DM systems include:
- perceptual enhancement with localization of audio via multi-channel playback systems
- use of stereoscopic video display to enhance presence, focus and understanding
- relevant social factors in the design and implementation of DM leaning environments

7. Acknowledgments

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@wake: Interface and Metaphor in Digital Installation Art

Submitted By: Daniel Freer
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1. Overview

@wake is a digital-physical installation which explores several themes. The issues I wanted to address with this work are the creation of a very separate and distinct physical space within a gallery space, the creation of a sense of connection between the current participant and previous participants, the use of foreground vs. ambient information, and the development of artwork-specific forms of interaction.

Figure 1 - Overview Picture of the Installation

@wake is presented as a coffin. By using a dark, largely soundproof box, the participant is physically isolated from the gallery space. The coffin metaphor further enhances that sense of separation by making use of the participant's strong feelings about death and the afterlife. Behavior is heavily affected by environment: just as visitors to a church do not behave in the same way they might behave at a football game, participants feel able to behave inside the coffin differently than they would in the gallery space.

2. Description of Installation

The @wake installation consists of a purpose-built wooden coffin which incorporates speakers, a microphone and a video camera directed at the face of the occupant. The speakers and microphone are connected to a hidden computer while the video camera's output (an infrared view of the occupant's face) is displayed on a visible monitor in the main gallery space. As the participant enters the coffin and closes the coffin lid, a concealed button is triggered, beginning the experience. The participant is in complete darkness.

After being given a brief spoken introduction, the participant is asked a series of questions reflecting on her life – some yes/no, some open-ended. Answers to the yes/no questions are interpreted by speech recognition software. Based on these answers, the system selects open-ended follow-up questions. For instance, if the participant answers 'yes' to the question, 'do you have children?' she might be asked a question about her relationship with her children. This open-ended question can be answered in as much depth as the participant wishes. Once the system detects silence for a certain length of time, it assumes that the participant is finished answering. That answer is then saved as digital audio files for later use and a new question is asked. Each participant is asked approximately 8-10 questions and the experience generally takes about three to four minutes.

Like the classic 'psychiatrist' program ELIZA [B7], @wake's questions are chosen based on the user's input, although ELIZA uses keyword and grammatical structure to determine its responses while @wake uses a more linear branching structure. An installation piece titled Sex, Lies and Binary Logic, created by Mark Winstanley & Michael Guida, uses a similar technique of question-and-response, but it takes a much more aggressive tone, playing on the user's fears. 'You bring in your own fears, in this case fear of lying.' [B3] The fear of technology is also addressed as the installation toys with its user. 'Its aggressive gamesmanship becomes deeply disturbing.' [B2] @wake's

aim is not to antagonize, though. Its questions invite introspection but are not confrontational.

The answers which are recorded and saved will be played back during subsequent sessions, allowing participants to hear fragments of what previous people have said in the coffin. These replayed answers are played back with digital echo and reverb effects to give them an ethereal quality.

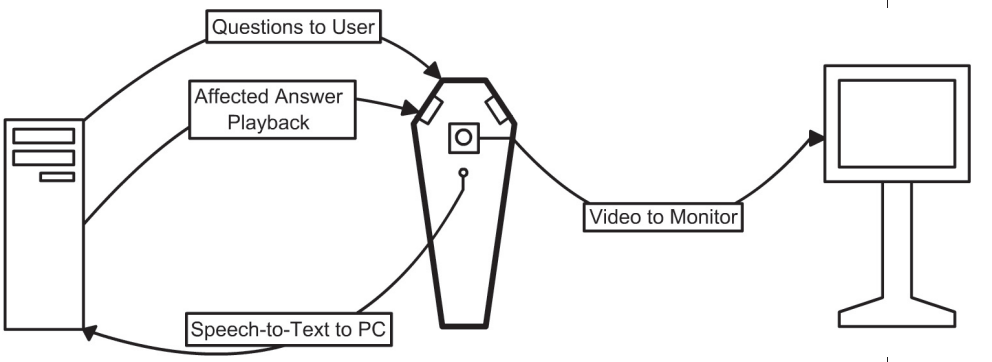

Figure 2 – Diagram of @wake's Processes

@wake's software was written using Macromedia Director and its scripting language, Lingo. This was used to detect the closing and opening of the coffin, to integrate two pieces of audio software – Game Commander and CPS, and to control the recording and playback of audio. After experimenting with two standard commercial speech recognition packages, I was unable to achieve reliable results. After a short period of training, which enables the system to recognize a wide range of words when spoken by a particular user, both packages are very effective for a single user. They are not, however, practical for use with a variety of users issuing single-syllable commands, as they depend heavily on training as well as sentence structure and context. The most effective package for recognizing simple 'yes' and 'no' commands was a piece of software called Game Commander designed primarily to add simple voice command shortcuts to computer games. Game Commander's vocabulary is completely configurable, which allowed me to reduce it to only two words – 'yes' and 'no'. Given such a limited vocabulary, it had very little trouble distinguishing between the two very dissimilar-sounding words even when spoken by a variety of different voices.

The audio effects applied to the playback of previously recorded answers are provided by CPS, an audio 'plug-in' for Director. By using CPS, I was able to keep all of the processing on a single laptop computer rather than having to use multiple computers or hardware audio effects units. CPS's Director integration and low processing demands made it ideal, as it allowed the opportunity to manipulate audio effects in real-time via Director's scripting language.

During the experience, anyone standing near the installation is able to see a live video feed of the participant's face from an infrared video camera mounted in the coffin's lid. This video is the only connection between the coffin and the outside world. The coffin's interior is padded, effectively preventing sound from entering or leaving the coffin. The interior of the coffin is completely dark.

3. Coffin as Metaphor

I chose a coffin and death metaphor as a means of emphasizing the distinction between the space in the coffin and the space outside the coffin. I wanted to create a very separate and distinct place for the participant in order to give a feeling of isolation. Although the gallery space is on the other side of 2 inches of fabric, foam and wood, I hoped the participant would temporarily feel transported to another place. I felt that by creating this distinct location and mood, participants would be more willing to give honest, thoughtful answers. It would not have been as effective to simply use a plain wooden box or booth. Although a plain box would have been functionally almost identical, the participants would be less likely to answer personal questions. By utilizing the ideas of death and the afterlife, the participant may unconsciously suspend disbelief and offer answers which she might not otherwise.

4. Participant Reaction

@wake was exhibited for six days at The Loading Bank Gallery in Brick Lane, London along with a variety of digital exhibits by others. I was very pleased by the reaction from participants. Perhaps most impressive were the length of time spent in the coffin and the quality of answers given. Many users stayed in the coffin well beyond the conclusion of their participation in order to listen to previously recorded answers. The answers themselves were surprisingly sincere and personal, I think largely due to the mood created by the installation. The questions asked were under the pretense that the participant had recently died, though this fact was implied not explicitly stated. They revolve around regrets, life-evaluation, and so on. Consequently, the answers tended to be of a confessional nature, often going well beyond what I expect

someone would tell a complete stranger under other circumstances.

Allowing participants to leave something behind for future visitors creates a sense of community amongst those who have entered (and will enter) the coffin. Unlike participatory works such as Yoko Ono's Wish Trees [B9], in which visitors are encouraged to write wishes on bits of paper and hang them from a tree, the thoughts left behind in @wake are not accessible to casual observers. Because the previously-recorded answers are only audible from inside the coffin, participants can feel a sense of exclusivity – a private connection through time with past and future participants. Both the human desires for voyeurism and self-expression are exploited. Non-participants (those who only watch from outside the coffin) are given a hint of the experience via the infrared video display, but must enter the coffin to fully experience the installation. The external video display is primarily a means of tempting observers with a preview of the experience. It is also a tool to encourage crowds to form around the installation. Visitors seemed to be much more likely to enter the coffin when other visitors (particularly friends and family) were there watching. This gathering of viewers around the coffin is strangely reminiscent of mourners at a real funeral.

The issue of foreground vs. ambient information arises in relegating the playback of previous users' comments to the sonic background. Much like MIT's AmbientROOM project [B5] which allows its user to perceive information either as a primary or periphery source, @wake's previously-recorded answers are designed to intensify the experience even when they are not the participant's primary focus. Like the ambient displays of AmbientROOM they convey information, but in so doing serve as much to create a mood as to tell the user anything in particular. During the experience, those comments are often unintelligible either due to distortion (echo/reverb) or because they are drowned out by the foreground audio (the questions being asked). Even though the participant is not always able to understand the voices speaking in the background, she is still aware of their presence. With a conscious change of focus, she can generally move away from the foreground information and have a more detailed understanding of the background. Once the user is satisfied, the primary audio interface can once again come to the foreground of her attention.

Most computing systems cater only to the user's primary focus of attention [B4] – the video display. It is increasingly recognized however that humans are capable of accepting information from periphery sources as well as their primary focus [B6]. The fact that humans can accept this periphery data while simultaneously focusing on

a primary data source allows us to create a much richer experience by taking advantage of 'ambient displays' – sources of information which not necessarily meant be the primary focus of attention [B6].

Because I was able to both build the physical components of the installation as well as write all of the necessary code to run it, I had complete control over all aspects of the finished work. This control allowed me a great deal of freedom to change and fine-tune everything from the physical appearance and functionality of the coffin to the delay between questions and amount of reverb applied to audio playback. The ability to make subtle changes was crucial to the installation's success.

5. Non-Command Interfaces

This installation piece utilizes a type of non-command interface. Rather than having to issue some sort of command to the computer system, the user only needs to close the coffin lid to begin the experience. By entering the coffin and closing the lid (both part of the overall experience), the user unknowingly activates a trigger which alerts the computer system to begin. To end the experience, the user needs only to open the lid and leave the coffin. The process is intuitive and automatic, never requiring the user to consciously 'start' or 'stop' it. After watching users interact with the project, the only part which seemed to confuse people was realizing that they could enter the coffin in the first place. I had assumed that the open coffin would be an adequate invitation, but some visitors did not realize that they were meant to get into the coffin. When exhibited in a gallery dominated by screen-based exhibits, this was not entirely surprising. The keyboard/mouse/monitor computing paradigm is strongly entrenched. It may be difficult for many people to immediately recognize that a different sort of interface is, in fact, an interface at all.

6. Customized Hardware Interfaces

Both personal computers and video game systems have, over decades, settled into standard, multipurpose interaction devices. With few exceptions, computer users are restricted to the mouse and keyboard. Similarly, the vast majority of video game consoles are controlled by generic gamepads for everything from driving games to sports games to role-playing games. A game-specific (or application-specific) device such as a steering wheel controller is often much more effective [B8]. Following this approach, like Shaw's The Legible City [B1], @wake uses a non-standard means of interacting with a computer system to increase its effectiveness. Shaw's work uses the metaphor of bicycling through a city while @wake uses a funeral, tailoring the physical

experience to the metaphor. Just as The Legible City would lose much of its appeal if the user were forced to maneuver using a joystick rather than by peddling and steering a bicycle, @wake's appeal would be diminished by anything reminiscent of a standard computer interface.

7. Future Works

For future showings of @wake, further work is needed on three aspects: enticing participants to enter the coffin; increasing the accuracy of the speech recognition so that the participant is as unaware of the mechanical aspects of this as possible; and developing greater subtlety in the routines by which the participant's responses guide the 'conversation'.

Other works now in progress will continue to explore the themes addressed by @wake, combining specialized digital and physical components to create unique interactive spaces.

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Program Reviews

The Center for Multimedia Arts
FedEx Institute of Technology
The University of Memphis
Michael Schmidt, Director

The Center for Media Design
Ball State University, Indiana
David Ferguson

Digital Media Studies
University of Denver
Jeff Rutenbeck

Interactive and New Communication Technologies Program
Florida State University
Dr. Jonathan Adams, Director
Dr. Steven McClung

Thoughts on the Launch of a Digital Media BFA Program
University of Wisconsin, Madison
Mat Rappaport

Case Study: **The Center for Multimedia Arts**
FedEx Institute of Technology
The University of Memphis

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The Center for Multimedia Arts (CMA) is a research, professional services, and engaged scholarship center recently established within the new FedEx Institute of Technology (FIT) at The University of Memphis in Memphis, Tennessee. A joint venture of faculty from over a dozen departments and schools, the CMA formed around one desire shared among the Center's founders: to collaborate as members of multidisciplinary teams on projects of social value. And so the CMA has built several unique teams from its "Expertise Core:" our cadre of more than twenty professors, professional staff, and community members presently engaging clients such as The National Civil Rights Museum and initiating projects with STAX Music Academy, STAX Museum, and St Jude Children's Research Hospital. Furthermore, the CMA is quickly becoming a popular hub within the University for faculty who wish to connect with colleagues from other purviews on causes of mutual interest, particularly health communications and community development.

The CMA seeks to improve communication, enhance comprehension, and enrich human experiences through new media applications and collaborative scholarship.

By August of 2004, just ten weeks into its operation, the CMA had netted over twenty projects, funds to support its first and second years of operation, two directors, three graduate assistants, and an assistant director for development. Unlike most of the University's previously established research centers, no grants, endowments, or general University dollars were available to initiate operation. Instead, first-year start-up funds were cobbled together from the College of Communication and Fine Arts' small discretionary fund and the

University's Advanced Learning Center, which shared a portion of its external grant funds and general operating budget to cover course buyouts for the two directors—both graphic design professors from the Department of Art. The directors then invested their time in outside client services to generate funds for a second year of course buy-outs, grad assistantships, and capital purchases. Other faculty, too, approached the CMA for collaboration and expertise, writing the Center into their research grants.

During this same period, the CMA tapped into available resources on campus to provide the facilities it could not afford, such as a large television studio and state-of-the-art classroom facilities. Equipment, however, was tough to get, so much so the directors donated their own office workstations and even brought in video decks, a TV, and a printer from home.

CNMA connects with colleagues with mutual intersts.

While we initially wanted to focus exclusively on research and creative activities, the business of building the CMA as a self-supporting University department within the first 9-12 months presented itself as the foremost project, especially since our start-up dollars were specified as non-renewable. Furthermore, we found ourselves in the curious position of being the poster child for all the "good" community-focused research our urban University loves to tout while being pushed to the margins by the growing drive towards fast cash from big grants, defense contracts, and corporate salesmanship—indicative of the turn our public institutions have been forced to take in light of decreasing state support.

In the months to come we will work to build multidisciplinary teams of researchers to meet the challenges of projects from informed medical consent for parents of children with cancer to interactive learning tools for kids to the legacies of Civil Rights and Memphis Soul music. Somehow we will learn to do this while surviving the "show me the money" agenda of the University administration, the lack of funds or space for expansion, and the general challenges faced by any and all of us who balance teaching with research. Our motivation, which has helped us cope with many challenges thus far, comes from the amazing experiences we have every week as we work with our colleagues and community members. We get to see our city from the vantage point of its bravest residents, its most caring custodians, and its most intelligent minds. And therein lies the beauty of what we can do and experience as researchers and educators when we network our resources.

Center for Media Design
Ball State University

THE CENTER FOR MEDIA DESIGN

Submitted by: David Ferguson
Ball State University, Indiana

THE CENTER FOR MEDIA DESIGN (CMD) is an R&D facility at Ball State University in central Indiana that is focused on the creation, testing and practical application of digital technologies for business, classroom, home and community. The Center grew out of a $20 million initiative through the Lilly Endowment Inc. called "***iCommunication***." CMD has targeted questions surrounding how the consumer society wants to engage the digital media world. To address the questions, the Center has developed collaborative, interdisciplinary teams that explore digital media content creation, and testing and assessment of that content.

Some of the areas of active investigation include:

- Immersive, interactive models of higher ed media products including what could be described as "the next electronic text"
- Interactive television content experimental development
- Convergent news
- Assessment of interactive television advertising
- The Digital Home test and demonstration facility
- Middletown Media Studies - benchmarking of comprehensive media use in society
- Digital Middletown - deployment of ultra-high broadband wireless (30 mgb/sec) to homes, schools and businesses in Muncie, Indiana as a test bed for research
- Student Technology Incubator for new student tech businesses

The approach at CMD is to focus on the '1 to 5 years out' timeframe and to engage applied research that may have immediate, meaningful impact on industry and society. An economic development focus with an eye toward new opportunities for commercialization creates a climate where collaboration with corporate partners is easy and comfortable.

Focusing on the creation, application of digital technologies.

Case Study: Digital Media Studies

Submitted by: Jeff Rutenbeck
University of Denver

The cross-campus, interdisciplinary discussions that led to the creation of the Digital Media Studies undergraduate and graduate programs at the University of Denver began in the Fall of 1994. Early conversants included faculty members from Communication, Business, English, Engineering, Computer Science, Art, Anthropology, Religious Studies, Philosophy, Languages and Literatures, and many more. This eclectic group wrestled with this central question: "In what ways, if at all, should our disciplines and departments respond to the theoretical, curricular and pedagogical challenges posed by increasing digitization?"

As the conversations progressed over the next 18 months, a curricular vision began to develop and a core group of individuals emerged. With approval and support from senior administrators at DU, faculty members from the School of Communication, the School of Art and Art History, the Department of Mathematics and Computer Science, the Department of English, and the Department of Engineering worked to develop a curricular approach that recognized the interdisciplinary and integrative challenges posed by the increasingly broad reach of digital media.

What came to light was the need for a curriculum based on three distinct, yet interconnected, areas of study: aesthetic, technical and critical/cultural. The cross-disciplinary mandate became obvious – no single unit, discipline, facility or department could effectively deliver undergraduate and graduate programming across all three areas. It also became obvious that not only would the new programs require non-traditional approaches to curriculum design, they would also need to be developed and supported through non-traditional administrative structures and support facilities.

The Board of Trustees at the University of Denver gave final approval in the Spring of 1996 to launch cross-disciplinary B.A. and M.A. programs in Digital Media Studies. Overseen by a part-time director (tenured member of the faculty) and a faculty committee made up of representatives from Art, Communication and Computer Science, the DMS program is now in its 9th year of operation. Enrollments grew very quickly in the early years of the program. There are now 100-120 undergraduate majors and 20-30 graduate students.

The DMS curriculum has expanded to include more than 40

different courses, many offered only through DMS and many offered as cross-lists with traditional departments. At the undergraduate and graduate level DMS courses and requirements are grouped into three areas: design, technical and critical. All undergraduates are required to take foundation courses in each area.
- Design: Introduction to Visual Meaning, and Fundamentals of Design.
- Technical: Technical Foundations of Digital Media.
- Critical: Critical Approaches to Digital Media.

Graduate students are required to take graduate-student-only courses in Digital Design Concepts, a two-course sequence in Technical Foundations of Digital Media, Critical Approaches to Digital Media, a DMST Research Methods course, and then complete an M.A. Project or Thesis.

Students (both graduate and undergraduate) are also required to take at least one additional course in each of the three areas. Examples in the design area include Identity and Branding, Net Art and Design, Digital Video Art, Typography, Designing Social Awareness, Site-Specific Design, etc. Examples in the technical area include Introduction to Interactive Media, Web Building and Site Management, 3D Modeling and Animation, Field Production and Editing, Digital Audio Production, Web Application Development, Authoring Tools, Rich Internet Applications, Advanced 3D Modeling and Animation, etc. Examples in the critical area include Innovations in Mass Communications, New Media Law and Regulation, Computing and Society, Advanced Critical Approaches, Religion and Contemporary Media, Seminar in Internet Communication, Designing Digital Learning, Digital Noesis Seminar, Heidegger Seminar, etc. While most DMS classes are cross-listed with one of the three main units of Art, Communication and Computer Science, some of the critical courses are cross-listed with Human Communication Studies, Religious Studies, Philosophy, Education, and English.

The DMS program is administered with its own distinct budget, which includes tenure-track faculty lines, the adjunct and overload pool, technology, faculty development, support staff, marketing and promotion and supplies and expenses. The DMS director manages the budgets, class schedules, facilities (development, maintenance and upgrading), recruiting and marketing, alumni relations, fund raising and grant writing, community outreach, study abroad, and curriculum development. There is also a director of graduate studies within DMS who reports to the DMS director and manages all aspects of the graduate program. A full-time Director of Internships within the School of Communication

coordinates all DMS internships.

The facilities available to DMS students include three primary computing classrooms (2 Windows, 1 Macintosh), two 24-hour student access labs (1 Windows, 1 Macintosh), 6 non-linear video editing suites, and one digital audio suite. DMS students also are able to check out cameras, light kits, audio gear, etc. from both the Mass Communications Department and the School of Art and Art History.

Graduates of the bachelor's and master's programs have gone on to productive careers in various aspects of digital media: multimedia production, graphic design, educational technologies, online journalism, advertising and marketing, web development, corporate communication, law enforcement, film and video production, and some have started and continue to maintain their own digital media companies.

There are great advantages to a cross-disciplinary design/technical/critical approach, and there are also significant challenges. Strengths include the benefits of the dialectic tensions between traditional disciplines and emergent ones, making both stronger together than they would be by themselves. This approach improves communication both to and from traditional disciplines, and innovation can emerge from both within a traditional discipline and from the "outside." This multi-faceted cross-disciplinary approach also provides students with solid foundation for building their own advanced digital practices.

However, the cross-disciplinary approach is more complex. It requires diverse functional relationships that must constantly be reinforced and reconstituted. A program like this does not fit neatly into established structures at the University. The tenure and promotion processes are, at this time, untested. Given that faculty appointments are made to traditional departments, more work needs to be done to ensure that DMS priorities are honored as the candidates are evaluated for tenure and promotion. It is also difficult to achieve meaningful integration among the distinctly different areas of design, technical and critical approaches.

As Digital Media Studies approaches its 10th year of existence, some important questions loom. What might be lost or gained as various curricular and institutional approaches are reified and replicated? More importantly, should Digital Media Studies aspire to achieve "discipline status" and, therefore, more institutional legitimacy? Or should it continue to operate as a meta-discipline responsive to the constantly shifting sands of the digital landscape?

Jeff Rutenbeck, Ph.D., associate professor, is the founder and current director of the Digital Media Studies program at the University of Denver (http://dms.du.edu).

Interactive and New Communication Technologies (INCT) program

Submitted By: Dr. Jonathan Adams, Director
Dr. Steven McClung
Florida State University

The graduate program in Interactive and New Communication Technologies (INCT) program at Florida State University is a professional program that focuses on theory, application of theory in production practices and professional development. The goal of the INCT master's degree program is to prepare students to be competent in the production and management of digital communication solutions and products within an advertising or marketing environment. Completion of the degree program typically leads to professional employment in project management or digital media production positions in a wide range of public and private sectors.

The theoretic studies within the program include the study of marketing communication or how an organization targets, shapes and maximizes the impact of messages to a specific market. This aspect of the program requires an understanding of systems and processes in organizational, educational, governmental and marketing communication contexts. In order to foster this aspect of the program, a variety of communication theory and research courses are required components of the program. Specifically, the program focuses on digital media literacy, in order to provide context; theory, in order to understand best practices; and research to promote a disciplined, rigorous approach to extending their knowledge. Through these offerings students have the opportunity to develop critical thinking, organizational and analytical skills needed to effectively use written and digital media communication.

One of the most important aspects of the program is digital media production, or learning how to apply theory in practice. This emphasizes an in-depth examination of human-computer interaction from a theoretical perspective and how those theories are applied in production practice. The program requires a minimum of six credit hours in production, although students may register for twelve credits in the core and take an additional six credits in electives. Students take courses from a wide range of academic programs including Integrated Marketing Communication, Fine Arts, Information Systems and Instructional Systems Design. While many interactive students do take electives in other departments, the technical courses in the INCT program are popular across campus.

Thoughts on the Launch of a Digital Media BFA Program

Submitted By: Mat Rappaport
University of Wisconsin, Milwaukee

The development of new technologies have continually changed and challenged our perceptions of cultural contexts and their resulting representation. From Leonardo da Vinci to EAT [Experiments in Art and Technology], artists have utilized the technology and media of the day to explore, process and express their world view.

Within the development of a digital media and technology program two key issues serve to define our curricular focus. The first issue is an analysis of the function of media within culture and the second is a definition of digital media. In Marshall McLuhan's 1964 essay, "The Medium is the Message," he posed a significant paradigmatic shift from a focus on the content that media disseminate to a focus on media and new technologies as shapers of social organization and interaction within the culture. This new social interaction was the 'message' of the medium. While McLuhan was mostly referring to television, his emphasis on social structures can be applied to new technologies and specifically digital media.

Defining digital media is crucial for understanding how and why digital media's structure shifts its direct application and its resulting metaphors. In particular it is important to parse the unique aspects of a medium that so often appears in the form of traditional analog media. Lev Manovich has been instrumental in defining principles of digital media. Manovich underscores how digital information, while representing text, image, video, audio and code is all constructed from the same binary language. Because these elements use the same language one can sample, combine and process the elements into new forms. The structure of digital information allows for the easy development of multiple variations, nonlinear access, and the use of databases to access the same media elements in a variety of contexts.

With so much new media and new technology being processed and produced digitally, once disparate fields and their resulting data/information have become easily exchangeable. For artists this has resulted in a range of new metaphors, strategies and structures from which to develop new works. These strategies include the sample, the remix, the mash-up, distributed networked projects and mediated interactive

environments, just to name a few. In addition, digital media have enabled distribution that allow for both localized and global audiences, participation and dialogue.

It was with a focus on the unique opportunities afforded by the study and application of new/digital media that in the spring semester of 2004, the University of Wisconsin-Milwaukee's Peck School of the Arts launched an interdisciplinary Digital Media BFA program called Digital Interactivity, Visualization, Animation and Sound [DIVAS]. The program is a partnership between the Departments of Film, Music, and Visual Arts. The inspiration for the program emerged out of the recognition that digital tools have facilitated a convergence in production, distribution and discourse for what had once been largely separate disciplines. Through the sharing of expertise and facilities we have created a program that offers students a structure in which to produce digitally mediated creative works. Now in our first year, we have twenty-two enrolled students.

PROGRAM GOALS:
In developing the new curriculum we had five core concerns.

01: The program should emphasize an open and expansive interpretation of digital media, to include screen-based work, interactive environments, sound, robotics and other emerging technologies.

02: We wanted the program to have a research focus to center projects in content, the solving of problems and an awareness of cultural contexts. Students are constantly required to cultivate topics in other academic fields through the development of research bibliographies, writing assignments and reading groups.

03: We wanted students to engage with both programming and commercial software. We believe that students should have experience manipulating code directly because programming teaches students about the underlying structure of data and its metaphors. Later, this knowledge can be used to extend the capabilities of commercial software by developing unique scripts and programs for a variety of contexts including web, interactive environments and stand- alone applications.

04: We wanted students to have an awareness of media and critical theories. Students should be aware of their cultural context and engage in the dialogues of response and responsibility when making works for public consumption.

05: We wanted to encourage teamwork, collaboration and social net-

working so that students could develop and extend their own community of makers to serve as a source of information, inspiration and support.

The resulting DIVAS curriculum is a self-directed, research - oriented BFA in which students select studio and academic courses based on their areas of interest. Students use these courses to develop conceptual and technical skills to complete a sequence of independent capstone projects. During the second through final year of the program students participate in the DIVAS Forum class in which collaborative learning, projects and research are encouraged.

PROGRAM DESCRIPTION:
The curriculum has been divided into four levels.

LEVEL ONE::
The first level gives students an introduction to the practices and histories from each of the core disciplines. The courses are Introduction to Experimental Film and Video, Digital Arts: Culture, Theory and Practice, Fundamentals of Music and one course from either Dance or Music. Students must obtain a B- average or better to be considered for level two.

LEVEL TWO::
Level two is a sequence of courses in which students develop skills and projects to be used for the entrance portfolio review. The courses include, Typography, Web Design, Intro to Computers and Music, Basic Elements of Video.

PORTFOLIO::
Students submit a portfolio which includes a web based project, a video, an audio composition, a work of their own choosing in any media, and a statement of intent. Portfolios are evaluated equally on the quality of the work as well as the statement in which students are asked to discuss their interest in the program as well as their anticipated trajectory.

LEVEL THREE::
Also called the DIVAS core, level three is comprised of an array of classes that get organized by loose categories of Two Dimensional, Three Dimensional, Four Dimensional, and Programming. Students are required to take a minimum of one class in each of the categories as well as an additional 4 courses. The intent is for students to develop self directed competencies to be used for their Junior and Senior Independent Projects. In addition students are required to take a minimum of 6 credits in Theory and Context.

LEVEL FOUR::
Junior and Senior Projects are student directed independent creative projects. The Junior Project is evaluated at three credit hours and the Senior Project is evaluated at six credit hours.

DIVAS FORUM::

The DIVAS program was started with a single new hire. As such, most of the courses that students in the program take are preexisting advanced courses within the host departments. The DIVAS Forum was designed to foster a sense of community, to collect common resources, and to facilitate student exchange and collaboration within the program. Forum is a one credit hour course that students take each semester from their second year through graduation. Additionally, students are encouraged to find internship opportunities both in industry and/or within the arts.

CONCLUSION:

In describing the DIVAS program it is my desire to engage in the larger dialogue of how new media, digital media and art and technology programs are being structured. The DIVAS model is like a hypothesis that is just beginning to be tested through having our first group of students move into the program. It is my desire to report about student response to the program as they move through it and complete the curriculum.

Any curriculum and program development is a group process. The DIVAS program was inspired by faculty from the Departments of Film, Music and Visual Art and the Peck School of the Arts Administration. Through a shared enthusiasm for digitally mediated art and technology and the need to integrate theory and practice the faculty and administration came together to shape and implement this curriculum. The following people were integral to this effort. Leslie Bellavance, W. Robert Bucker, Rob Danielson, LeeAnn Garrison, Lane Hall, Steve Pevnick, Jon Welstead, Rob Yeo and Richard Zauft.

More information about the Digital Interactivity, Visualization, Animation and Sound program can be found by selecting the Interarts link at http://www.uwm.edu/PSOA//

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Conference Panel Summaries

Quest for Firewire: Securing Funding for Digital Projects

reported by:
Scott Olson
Matt Rappaport

Professional Development: Fitting Digital Media Arts into the Academy

reported by:
Gail Rubini
Conrad Gleber

Digital Media and Arts Education: A First Look

reported by:
Chris A. Blair
Jeffrey B. Rutenbeck

Quest for Firewire: Securing Funding for Digital Projects

A workshop at the 2004 iDMAa conference on Digital Media and Art

Reported by
Scott R. Olson, Minnesota State University
Mat Rappaport, University of Wisconsin, Milwaukee

Searching for funding for digital media projects is like a romantic quest. In a quest, a hero has a vision for a better world and sets off to achieve it knowing that there are many pitfalls along the way, and knowing that many back in the village assume the quest will fail. Along the journey, the quest defines itself and the vision changes, improving itself into something better and more needed. In the end, the hero is transformed by the quest in ways unforeseen. So it is with the quest for funding: the journey will change the idea, and it will change the person who had the idea.

Unlike a romantic quest, however, the quest for funding for digital media projects offers no magic rings or arrows. Those reading this expecting it will provide the names and phone numbers of wealthy donors and foundations that are dying to give them money may be surprised by the actual content of this article. But if that is what they think, then this is the right article for them, so they should keep reading. The article will help them with their romantic life, too.

On this quest, there is no magic arrow. The arrow is an insight into the process. Then we can all talk about our successes and frustrations. We often come to the problem of finding resources in the following way: "Here is what I want to do … now who will give me the money to do it?" This approach will only work by accident.

Think about yourself. How would you react if some stranger called you or rang your doorbell, told you about some crazy idea, and then asked you for a check? You might give $5. But this is what we usually do when seeking grants, or gifts, or earmarks, or capital bonds. We suffer from "anonymous grant" syndrome. We did too! We find an RFP, write a grant or case statement in isolation, send it out, then hope and pray

This leads to an "apply and retreat" strategy. Not being funded leads to discouragement and resignation, and we do not learn from failure, which is, after all, the best way to learn.

The heart of success is relationships. This is true not just of grants, or gifts, or earmarks, but it is also true of life. So, what defines a good relationship?

Generally speaking, it is:

- Listening;
- Mutual concern;
- Shared values; and
- Genuine affection.

In a good relationship, the focus should *not* be:

"What do I want, and what can you do to help me get it?"

… but rather …

"What do YOU want, and what can I do to help you get it?"

When Ball State went after $20 million from the Lilly Endowment, it studied their pattern of giving, met with their leadership and listened, used Ball State students to tell the story, went through a period of "courtship," and moved progressively toward an ask, which was refined and further refined.

What Lilly wanted was apparently not what Ball State wanted, or was it? What they cared most about was brain drain and building Indiana's national reputation in high technology industries. Those concerns could just as easily result in funding for Biotech, Genomics, or Info Tech, and indeed it did just that. So, Ball State needed to frame its desires in terms of Lilly's desires, to show how the match would uniquely help each fulfill its goals. Ball State offered to help Lilly do what it wanted to do, by promising to create more jobs in Indiana, retain more graduates, focus on content, and get Indiana a reputation in digital content. What made it successful was that Ball State found the point where its interests and Lilly's interests overlapped.…which is just like we would do in any relationship.

In order to build the relationship, though, digital media programs need to be attractive. In our discussion at the iDMAa 2004 conference, we tried to define what the major selling points are for digital media. In discussion, a group of roughly 80 university professors and professionals felt the following attributes were all salient to digital media's attractiveness to potential funding sources:

1. Accessibility and commonness;
2. The tool-oriented focus of digital media provides a "hook" for brand-name partnerships;
3. Digital media fit well into the context of liberal arts education and contemporary learning and pedagogy;
4. Students are profoundly interested in it, so attracting them is easy, and it makes other aspects of their learning more engaging;
5. The interdisciplinary nature of digital media makes it appealing to many fields;
6. The possibility for innovative digital research, which creates the possibility for developing new digital research centers;
7. Its ubiquity;
8. It points to the future and has "cutting edge" appeal;
9. Digital media content appeals to a broad audience;
10. The implications of convergence for the media industry;
11. The relationships between content and effects.

There was a sense in the discussion that narrative storytelling forms the heart of digital media, and therefore the heart of the funding relationship. But, it is difficult to focus on aesthetics, narrative, and ethics in an environment so focused on the technology and the tools. There was a sense that technology should not be the focus, so there is a need for developing new manifestations of the media.

Community development needs emerged in the discussion as an excellent opportunity for partnerships. Equipment, expertise, and funding are community needs as well as academic needs, and the ability to locate synergies is significant. This might, for example, lead to Title 3 funding that targets the under-funded or underprivileged, and also meshes with the global need for individual talent. This means that there is a need for a revolution focused more on creativity than on employment, coupled with a quicker response from academy to create faster change. There was broad agreement that humanists need to be in charge of the revolution.

These ideas do not constitute a magic arrow for this quest. It requires patience, practice, and sincerity, but the arrow will eventually hit the target. With all the anxiety, with all the fear of rejection, the awkwardness of getting to know each other, dating can still be fun – the romance of expectations. When on a quest, patience, practice, and sincerity are the dispositions necessary to reach the Holy Grail.

Professional Development: Fitting Digital Media Arts into the Academy

A workshop at the 2004 iDMAa conference on Digital Media and Art

Reported by
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There are many activities and expectations that are important parts of professional life in the academy. In this discussion about 25 participants wrestled with defining the role of faculty and the changes that impact professional development. Professional development was defined as the activities that improve, innovate, and solidify an individual's place and contribution to the field of practice and their fit in the academic institution.

The activities of faculty and the expectations of the academy in new and emerging digital art areas often do not meet on common terms. Part of this problem is due to the way a new learning area develops in the academy. The best way, albeit an uncommon practice, is for a new media area to be given autonomous funding, control over the design of the curriculum and staffing support. Within this context, the area of practice defines professional development and the academic unit can define standards and review measurements to be sure they are in alignment with the new digital media areas.

The most typical occurrence is also the most difficult to innovate. Programs that emerge within a traditional well-established allied area grow up using the standards and measures that are well established in the home base area but do not fit the work required to establish and practice in digital media technology areas. It was from this perspective that the discussion focused on defining questions and listing suggestions for understanding professional development in digital media and art.

The responsibilities and expectations for faculty in new media technology areas involves a significantly greater investment of time and energy than is required in other pedagogy areas. The primary reason for this is the emerging and expanding technology that is the basis for practice in the field. Electronic media are changing constantly. Continual technical obsolescence requires faculty to be constantly rewriting their curriculum, learning new technologies, identifying new critical issues

and developing new aesthetic concerns. Each new semester brings new students and new programs. The only apparent constant is the concept of "new" itself. This discrepancy is a permanent feature of digital disciplines and defines a difference that requires we review how professionals will meet their obligations to the field and continue to evolve a meaningful practice.

Incorporating a new media technology curriculum into a traditional curriculum that did not rely on technology has many problems, and the discourse illustrates the growing complexities. Regardless, new media technology curriculums are an essential part of teaching artists and professionals their role in the information society and student demand for new media technology areas continue to grow. The current, most common and critical issue in the area is how to incorporate rapidly changing technology into coursework without sacrificing the conceptual framework. This means re-examining the standards and measurements used in professional development at the academy and setting realistic goals for the faculty to insure their continued growth and contributions to the field.

The academy relies on the concept of "outside review" as the primary tool for setting standards. It relies on the concept of "hero artist" for the measurement tools. Whether you are talking about journal articles, exhibitions, collaborations or product development, the value is placed on the interpretation of these concepts. This means that the digital media faculty should feel obligated to:

- explain how their projects fit into this type of process;
- explain the scope and process of development of a digital media production;
- explain the individual responsibilities for collaborative productions;
- explain how time is spent developing digital work;
- explain the audience for the work (especially their role in interactive environments);
- provide accessible documentation of the work and its presentation.

Another big problem facing the digital media faculty is the significantly higher expectations of service activity. Faculty in the area often have a higher level of responsibility in the service activity area when compared to faculty in other fields. Ultimately, this is a funding problem that can be solved when these areas begin to have more au-

tonomy in the academy. Until then, it becomes the responsibility of the digital media faculty to develop "outside review" processes that can be clearly described and justified in any letters or reviews that are part of the promotion and tenure processes in the academy.

The strategies for professional development are improving as these areas in the academe take hold. Recently published books and journals in the field continue to foster the critical dialogue necessary to refine traditional measures. The immediate problem at hand is to build a long-term faculty base in these areas at the institutions where these areas exist.

Here is what **iDMAa** can do to become a supportive resource for faculty as well as a resource for institutions in the development of digital media technology areas in the academy.

- help to develop the ongoing critical dialogue using the iDMAa journal
- develop a list of members willing to serve as mentors for junior faculty;
- have a yearly conference that includes a workshop to discuss professional development and other issues in digital media technology areas;
- produce a publication that provides guidelines for standards and measurements that can be used in developing and maintaining digital media technology areas;
- develop on-line resources to exchange information regarding challenges facing established and emerging digital media areas;
- review digital media programs to provide varied examples of curriculums, standards and measurements and how they work, don't work and why.

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Digital Media and Arts Education: A First Look

A workshop at the 2004 IDMAa conference on Digital Media and Art

Reported by
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Digital Media and Digital Arts programs have grown from a few fledgling programs to hundreds of successful programs and departments around the world in the past ten years, and more are being developed every year. The digital umbrella encompasses a variety of programs with diverse origins, structures and curricula. The primary distinction among these programs is reflected by the name of this journal—The International Digital Media and Arts Journal—some programs have their roots in the Fine Arts and some programs have emerged from the humanities or the sciences. Many programs, however, manage to bridge these divisions and combine elements from the fine arts with elements from the humanities and the sciences, especially computer science.

In preparation for the Digital Education workshop at the First Annual International Digital Media and Arts Conference (March 2004), workshop participants were surveyed via e-mail concerning their programs. Of 45 surveyed from 25 different institutions, 78% responded before the conference (n=35). Within these responses, we found that Digital Media and Arts programs are being offered: (1) within traditional academic departments (40%), (2) as interdisciplinary programs (17%), (3) as separate Digital Media or Digital Arts departments (20%), and (4) as separate centers for internal departmental use (1%). Traditional departments offering Digital Media and Arts programs within our survey included departments of: Art, Communication Arts, Communication Studies, Journalism, Mass Communication, Math & Computer Science, Telecommunications, Studio Art, and Visual Arts & Dance. The departments working within interdisciplinary Digital Media and Arts programs included: Architecture, Art, Art History, Business, Communication Arts, Communication Studies, Computer Science, Engineering, Graphic Design, Journalism, Music, and Theatre. Stand alone Digital Media and Digital Arts programs were well represented and showed the diversity of

their offerings through their different department names, such as: Graphic & Interactive Communication, Digital Media Technology, Multimedia/Web, Media Arts & Digital Technology, Digital Media Production, and Media Arts. This initial survey illustrates the great diversity in the structure and curricula in Digital Media and Digital Arts programs.

Yet, despite the diversity within the origins and structure of these programs, the workshop revealed a unity in the challenges the faculty face and the opportunities they see within their various programs. The discussion at the Digital Education workshop centered around four major themes: (1) program development and curriculum, (2) academic structure, (3) business relations and career paths, and (4) pedagogy.

The primary challenge in program and curriculum development is defining what Digital Media or Digital Art truly entail, and gaining consensus among faculty and administrators, and eventually in the greater academy. The lack of a clear definition made it possible for faculty at different universities to develop unique programs that exploit the strengths of their departments, allowing them to be seen as innovators by the administration and faculty. But the lack of a clear definition and clear boundaries of a field of study also led to challenges in terms of evaluating these programs, determining qualifications for new faculty, and providing guidelines for promotion and tenure. In defining "digital," some have focused on the delivery of digital content, while others have focused more on the skills necessary for creating something digital.

One university defines digital media as "the binary intermediary used for the creation, storage, and transmission of content." Another university emphasizes the desired learning outcomes for their digital media students, which included problem solving, versatility, adaptability, multitasking, and creativity. We're still left to contemplate the meanings of "digital media" and "digital art." The answer to this question will drive many of our program and curriculum decisions, and this line of inquiry will produce ongoing discussion within the field and within the iDMAa.

The question of these definitions also influences the academic structure of digital programs. As the workshop survey showed, the majority of Digital Media and Digital Art programs are housed within an existing, established academic department, but there is no consensus as to what department should house digital media or digital art courses.

Interdisciplinary programs are even more diverse, involving many different departments within a given university. Some universities combine Art, Communication Arts and Computer Science to provide a curriculum focused on digital media creation, while others combine Music, Computer Science, and Business with a focus on digital media

management. Lack of consistency in the academic structure seems to create problems when approaching professional development, training, budgeting, and promotion and tenure. It is quite possible that Digital Media and/or Digital Arts will eventually evolve into an independent department on most college campuses, similar to the way many Journalism departments evolved out of English departments and many Mass Communication or Radio-Television-Film departments evolved from Speech Communication departments. If digital programs follow that pattern, however, it will take many years until a stable field of study and academic structure is established.

Another area of discussion in the workshop explored the use of industry advisory boards in digital education and the opportunities and challenges created by such business relationships. A number of schools have successfully used industry advisory boards to provide internships, travel funding for faculty, visiting professors, and seminars with professionals. Yet there are concerns that when private-sector businesses give money, they will want to determine how to spend it, or that they might expect something tangible in return for their investment. Industry relationships can be very beneficial for all involved—with universities receiving much needed funding and valuable industry experiences for their students, while the companies involved receive a much stronger potential hiring pool of students ready to work. But fear of excessive outside involvement remains. There appears to be a consensus that colleges and universities cannot let industry forces drive the educational decisions in Digital Media and Digital Art programs.

The final area of discussion in the workshop centered on questions of pedagogy, specifically what courses should be offered and how courses should be taught. While there is great diversity in the types of courses offered at different universities, most participants agreed that faculty should be focused on teaching concepts and not technology. Several faculty expressed frustration with the pressure from students to teach specific software programs and the struggle with trying to keep current with software versions that are updated frequently. Some universities have shifted to requiring zero-credit courses to develop and maintain proficiency with various software packages.

So, for example, before students could take a course in Interactive Media, they would be expected to pass a proficiency exam in Macromedia's Flash and Director. Whatever the specific solution, digital education must move away from a process-based model of education, more prominent in Computer Science programs and formerly common in Broadcasting programs, and move toward a more outcome-based

approach that focuses on the creation and evaluation of media and art rather than over-emphasizing the methods available for such creations.

The workshop on Digital Education provided a starting point for discussions in curriculum development, professional development, and pedagogy. One of the goals of the iDMAa is to develop these discussions into tangible expressions that can serve as common ground for further growth and refinement of Digital Media and Digital Arts programs around the world. To that end, iDMAa is currently drafting a working promotion and tenure guidelines in Digital Media and Digital Arts document, is developing a syllabus sharing service, and will conduct a broad professional information sharing survey this year. This survey will collect data on all known Digital Media and Digital Arts programs, paying particular attention to their academic structure, faculty and professional development, curriculum, and external activities. The results will be presented at the 2005 iDMAa conference, March 16-19, in Orlando. These documents will serve as a catalyst for further discussion and prove to be a useful resource for those involved in digital education.