

Hybrid Architectures - Media/Information Environments Bill Seaman

Architectures - Physical and Conceptual

Witnessing the ever quickening flow of technological invention from the shifting perspective of the present, one can project potential hybrid media/information environments involving state of the art communication systems, advanced Virtual Reality networks, speed of light transfer and retrieval of vast selections of information, as well as entirely new forms of art and entertainment. The city presents a concentration of nodes where users are informed and transformed through the identity and functionality of a series of layered networks, interfacing the physical world with the conceptual space of electronic interchange. The information architectures which facilitate this exchange are becoming increasingly palpable both in terms of "physical" world change and in relation to potential sensual feedback systems which serve to substantiate the illusionistic/metaphorical levels of potential interaction. As the projected inhabitants of these superimposed worlds become increasingly mobile, both in terms of physical and conceptual navigation, access to such a nexus will spread itself across and through an international data-space, making each node on the network a potential access/exchange center. Intelligent architectures both physical and conceptual will need to exist in a the state of continuous transformation to meet the needs of contemporary society.

The user of these systems will generate a set of specific needs which can potentially be projected and addressed in the planning and development stages of future generations of intelligent spaces. As an artist working with notions of interactivity, language/image/sound relations, and poly-linear poetic networks within the current information condition, I will address the nature and potential of this projected technological set of fields.

The information architects of this communication environment... "fine" artists, urban planners, architects, industrial designers, engineers, graphic artists, technological developers and programmers, will have to take on the increasingly important role of enhancing advanced communication through cross-fertilization of disciplines in order to facilitate the implementation of such advanced systems.

Collisions of Informations and Interfaces

If we consider where we work, how we currently exchange information, as well as how we experience art and entertainment, one can project a potential set of future interactions. As the use of computers proliferates through and across the entire environment, the nature of the computer/ human interface as well as the metaphors via which it operates, will surely go through a dramatic series of changes. Computers will become increasingly portable and powerful. The current buzzword is *ubiquitous*... One wonders if some of the research of Tesla might be beneficially applied to this field. The need for easy to access mobile connections of data storage will necessitate coherence between various networks for disparate purposes. The user of such systems will not be interested in plugging this cable into that, finding the correct adaptor, making sure one system can "talk" to the other etc. They will want, clean, quick, effortless, intelligent, transparent exchanges. Such international interactions will need to function across regional technological barriers and economic substrata.

Such changes will call for the proliferation of highly specific code architectures or software paradigms as well as new hardware to enable such intelligent intercommunication. It will also call for well designed and engineered physical spaces to house and empower such activities.

Physical Space / Media Space / Mind Space / Personal Space

In my artwork each new piece goes through a series of developmental stages. Increasingly these works are generated from fragments collected or generated in disparate parts of the world, across multiple cultural / language zones. They are digitized, assembled, edited, layered, programmed and finalized in various formats, utilizing numerous technological systems. Through this process one is constantly made aware of the limits of new technologies and the shifting nature of concepts related to interface metaphors as well as the aesthetic properties and physical constraints which are integral to human / computer interaction. One is also keenly aware of distribution formats and the nature of technological obsolescence. In relation to these factors one wonders if each artwork needs constant technological updating and reformatting.

These artworks are posited in numerous versions from the low to high end, as well as formatted for different levels of experience including initial development, interaction, promotion, storage and distribution. This set of states is relevant to numerous other practices. Often a number of projects are being researched and evolved simultaneously. How could such an intelligent environment help to facilitate this set of processes? Can these information architectures be designed to help users think laterally in relation to technological and artistic production. Can such systems be developed to facilitate the navigation of an infinite set of physical expanses and conceptual eddies, ebbs and flows? What kinds of technological advances will facilitate functioning global "Hybrid Architectures - Media/Information Environments".

Can we design language recognition systems to understand diverse jargons, highly specific useages, expressive body language, floating meanings, instant international translations...? Can systems be loaded with intelligence about the fluxuating peripheries of various cultures?

Thought Architectures - Where Spatial Architecture Meets Computer Based Media

Computer related exchanges of information via high end systems within real architectural spaces, both public and private, will become second nature across the digital media landscape. Such systems with all likelihood will carry sound, digitally encoded historical images, live digital video feeds, edited time based media, hyper-texts, interfaces related to various levels of interactives, networked virtual reality, collections of intellingent agents, databases, libraries, voice recognition systems, pattern recognition systems, and a vast entertainment application storage system including movies, music, games, as well as connections facilitating an international workforce, working within the distributed virtual office.

With the nature of contemporary media architecture in mind, the architectects of these actual exchange spaces or information nodes, will have many variables to take into account. Close relationships with both software and hardware developers will need to be fostered. Such systems will need to be implemented on both a personal access level for entry in the home, car, or isolated location, as well as on the level of contemporary cityscape. Imagine the telephone booths in certain centers of Tokyo - Shibuya or Shinjuku, where thousands of potential users pass per minute, How might a a future location succinctly handle the complexity of interactive poly-valent contemporary media. The architecture which houses such intelligent environments will need to accommodate frequent updates, qualities of specific light and high fidelity sound, common denominator interfaces, nested interfaces providing alternate functions, systems of exchange, flexibility related to technological change, international trade of information, ease of use, and dependability. Beauty and elegance should also be functioned into the equation although pure functionality tends to automatically generate a kind of beauty.

Intelligent Environments For Art Production

Contemporary artists often carry various formats of digital information. Digital audio files, text files, un-edited digital video files, digital stills, interactive interfaces for different projects etc. In the future one will carry a highly condensed portable form of memory. The computer one uses to house this memory will probably also function in itself as a recording device - both digital audio recorder and camera. One can project the development of a holographic optical storage system which would facilitate vast storage of data in a compressed space that can easily be accessed, transferred and manipulated. One can also project miniaturised parallel processing of data. The user will also be able to access very large, fast remote computers which will house high end applications and vast digital libraries. Such a storage facility will allow one to call up any of their past digital art works or documentation related to a given work. Other art works as well as an ever expanding database of historical selections will also be available to facilitate instant research related to specific content.

Localised Broadcast Interface Fields - Fields of Function / Connection

The user will not want to worry about connecting a portable apparatus to a larger network. Agents will facilitate this connection at particular environmental/architectural locations designed to seamlessly enable ubiquitous computing. One will access interfaces allowing them to place a particular device on an intelligent activated table or in proximity to a particular connection node. This connected vicinity will facilitate a direct link to the larger networked world. This connection may be achieved through a specific energy field which will allow for transfer of data without a physical connection. A system could be implemented today through parallel mobile phone lines as well as through infra-red transmission (some related products like the Apple "Newton" are already in use albeit with less functionality).

Physical connections could also be simplified / bundled into one connection which would allow the user to make all potential connections with one gesture. Wires will for the most part disappear being replaced by optical cable.

Immersive and semi-immersive environments will also become as common as headphones are today. Flat screens or sets of related fragment screens may replace walls and billboards, and even function as picture frames, or they could display appropriate functions shifted to the digital realm including the visualization of a particular interactive art work in an open ubiquitous window within a chosen environment. This suggests that a painting could be replaced by a flat touch screen interactive.

Transference of Information

An integrated system will allow for the instant transfer of and access to chosen data from any node connected to the set of networks. This means that users will be able to interface with this elaborate sprawl of information passage through increasingly portable and powerful mobile computer systems. In keeping with this transitory shifting world, the architecture of the intelligent environment will need to be conceptually and physically flexible. A map of users at any one moment of useage will be in a rapid state of flux.

Many countries are not moving directly to optical fibre thus the system will need to be rebuilt for the next generation of computing. International digital address systems will become an essential component of contemporary communication. Mobile phone companies are already moving in this direction with projected international service provided within the next five years. Thus specific addresses on individual mobile units will allow for international access. Such access code numbers (addresses) are currently available on a semi-international level with some mobile phone systems as well as with Email. One can imagine a kind of billing system based on the quality of the service accessed as well as the quantity of use.

With any new technological apparatus comes a new set of behaviors and uses of space. If we look at the proliferation of the mobile phone and the behaviors that have been engendered through its use, one can see a completely new set of interpersonal relations evolving from the use of hybrid intelligent environments. If we extend the visual characteristics and increasingly physical qualities of a new set of immersive and semi-immersive technologies, one can project both conceptual and physical collisions triggered through relationships within superimposed architectures. Elaborate - semi-immersive, portable interfaces which will enable virtual meetings to the benefit of both parties will also have the power of disrupting the various real spaces from whence they are originating. Currently students answer mobile phones in class. One can only imagine more palpable exchanges brought about through new technologies.

Portable mobile work or entertainment spaces will also enable access to the kinds of software environments mentioned above. One wonders about the effects of mobile semi-immersive VR and the quality of driving of the person wearing such a device. One can already witness a growing number of accidents caused through mobile phone use. There are already a number of research projects which explore computer driven robotic guidance systems. Such systems will truly free the user from navigational responsibility (except within the software environment). One can also project hacker related "accidents".

Artificial Intelligence Becomes Re-Embodied Intelligence

Artificial Intelligence might be better addressed as re-embodied intelligence. As computers begin to be able to apply information in a learning like fashion the term re-embodied intelligence might better reflect the personal level of code that will potentially be generated. The "intelligence" of such systems will grow constantly as the nature of exchanges will themselves be codified, analyzed and applied to future exchanges in a meta-machine manner. As voice and pattern recognition become cross-referenced with notions of meaning, syntax, context and grammar, computers via re-embodied human intelligence along with humans working in a first hand manner may interact on extremely intelligent and possibly quite "personal" levels. The abstracted anthropomorphisation of computers is already in evidence in all of the labs where I have worked. Computers take on the names of people, are talked to (even if they are not "listening", are described as tired or sick, etc. etc. Intelligent architectures will facilitate high end exchanges while simultaneously gathering information about human machine interaction and thus provide a potential "learning" environment in the process. Unlike a child who must pass through time and learn, a computer can instantly be loaded with accumulated information. If national and/or international collections centers were established gathering "knowledge" from various research facilities, an extensive data base could be continuously expanded dealing with a number of computer / human interactions. As storage becomes increasingly compact, the growing "memory" informed by an extensive body of knowledge related to voice recognition, pattern recognition, computer motion attributes, various translation systems, interactive levels of human computer exchange as well as knowledge of popular culture could all be instantly updated. Imagine if all children learned by a massive pool of all knowledge, instantly. As computers become faster and more powerful, real time (or almost real time) behaviors will be mapped, analyzed, and a computer will be able to trigger pre-programmed responses with re-embodied intelligence, without a noticeable processing time lag. Of course a margin of error exists in all communication. It will be interesting to note how such errors will be manifested.

Architectural Encoders / Decoders Pattern Recognition

Intelligent architectural environments will need to have encoders built into the architecture. A kind of universal 2D / 3D scanner - video/audio/text, input/output system will have to become public in nature to facilitate the advanced mobile nature

of projected high end information exchanges and ease of access. A 3D interface including multiple degrees of freedom could function in tandem with various navigation input devices as a control device for virtual movement in an immersive or non-immersive virtual reality. Such a storage and retrieval system would need to be able to initiate intelligent encoding related to the given subject. If requested and initiated, pattern or voice recognition could be utilized to facilitate a series of different operations related to this digital interaction technology. If one placed an item in the range of the scanner that included text - the software should be able to make it into a high resolution text object for encoding, storage, future word processing and manipulation. A look up table could facilitate the search mechanism for other related objects and their attributes as well as additional data of any kind of related object - historical, technical, schematic etc. The device could also function as an informed translation system coupled with the appropriate software.

Universal Format Scanner

Scanners will be developed having the potential to access and read any past format of digital recording. Robot fingers and scanning mechanisms may intelligently observe the nature of the recording medium, define the operating system and emulate it, and then retrieve and reformat all encoded information to function within the present operating architecture. Such systems will alleviate the need for keeping a version of every computer and every operating system, although such a technology would be initially quite complex to develop, its benefits would be enormous.

Meta Environments

Environments will be "aware" of their levels of functionality and communicate this to the user via her/his computer. High end functions could be available at all public interface stations but would probably cost more. A series of different ways of accessing the computer would allow for different user preferences - speech related, typed text, gesture recognition (sign language), iconographic systems etc. All of these examples could be facilitated based on an initial user preference code.

Smart Actors - Virtual Workers

If we combine voice and pattern recognition within a responsive artificial reality, one can envision personal, human like exchanges with computer generated entities. These visual and sonic human like encoded illusionistic "beings", kluged from 3D and 2D computer graphics, sampled snippets of video, still fragments and assorted gestures, might have specific triggered behaviors, based on "reactions" to specific speech and/ or visual patterns. Related "personalities" have been written about in Science Fiction for some time. The research exhibited at SIGGRAPH in Los Angeles in 1993 by Pattie Maes, MIT Media Lab, titled "Alive", showed interaction with a cartoon character, touched on the virtual surface of the potentials of this kind of interaction. Also at this SIGGRAPH was intelligent interaction with a virtual animation titled "Neuro Baby" by a Japanese woman named Naoko Tosa working at Masashino Art University in Tokyo. In this work a virtual baby would respond to auditory stimulus. Positive sounds would elicit a positive virtual response (or happy baby face). Angry sound would provoke a cry or un-settled demeanor. One can project virtual actors, interactive poly-linear cinema with characters that respond directly to the viewer. One day computer driven telephone operators will not only speak the requested information number, they might be visualized as well (as is now heard through digital fragments which "speak" the requested number and even query the person answering the phone if they will "accept the charges" for a collect call).

One can also project the remote triggering of a computer graphic object mapped onto the image of a real person. Thus one could enter a MU as a gesturing entity of ambiguous gender, and take on any engendered image imaginable. The Turing test takes an ambiguous turn... Thus navigation within an intelligent architecture might entail exchanges with numerous entities of this nature. Intelligent architectures should take these kinds of exchanges into account. Do human like exchanges make for

"naturalistic" interfaces? Would one rather type command "I" or ask an intelligent entity directly for what one is looking for, the computer listing a set of specific parameters. One can project numerous possibilities for such AI actors relating to theatre, dance, education, performance and entertainment of all kinds, not to mention sexual "workers".

The Agents of Agents

One can envision programs which might allow a user to interactively generate personal agents with specific behaviors. The identities generated with this system may take on quite an abstract form allowing the user an extreme degree of freedom in the creation of their personal image. VR systems would allow viewers to present a 2d and/or 3D image which they have generated to represent themselves. Systems designed for users to generate such identities interactively will become artworks in their own right (Poly-portraiture). People may also hire others to develop their "corporate image", especially because much business interaction will shift out of the "old fashioned" office into the distributed realm of the global information field. Some agents may go about their business without visualisation, beneath the surface at the code level.

Imagine the nature of research if a "entity" could collect and correlate data based on a set of specific parameters (and even make some suggestions about other parameters?) Imagine a world where for each person hundreds of such agents were running around - "find me a good apartment", "find me a job", "find me where I can get this book", "find this painting" etc. A "find" for every question. Find the meaning and reason behind a computer taking on the role of "Finding". Find some spare time...

As an artist researching the history of other artist's work and influences, one might address a question to these intelligent visual and sonic agents like "Who were Marcel Duchamp's favorite authors?", and "Who were the favorite authors of those authors?". Such a query might happen anytime and anywhere as long as one has interfaced the vast set of networks of stored information through an activated "field" of connection. One might even make a more specific query like "get me all of the sentences from those books which contain the word machine." The machine might ask "Which Books?" All of this could happen on any street corner equipped with the appropriate software and hardware to enable a connection between a personal system and a global one. One could even instantly access those "found" books on line and skim them on a very high resolution portable viewing apparatus. One can project an extremely high resolution screen which would emulate the qualities of light hitting paper. Such a portable screen would make reading from computer a more enjoyable experience than current screen access. These screens could have variable levels of resolution available via user selection - or the screens would automatically be set to the highest resolution encoded. Such a device may contain features which enhance or up the contrast to make low resolution scans easier to read.

Such a system might be trained to "watch" old films, television, or any time based medium, in order to find relevant material. This may also relate to current notions of art practice which utilize aspects of appropriation.

Art In the Intelligent Environment

There are many possibilities for art works to become a significant part of future intelligent environments, functioning in a responsive manner to viewer input, utilizing many of the systems described above. Such spaces will span both real and computer generated "realities". One can envision spaces which respond to the user in relation to triggering specific sounds and light, the flow of water, the movement of robotic objects or "dancers", color and space, language both poetic and didactic as well as the calling up of interactive spatial hypertext environments, allowing viewers to access assorted referenced visual materials, digital time based imagery, virtual actors

etc. Any combination of the above could be "brought to life". Such systems will be facilitated through various sensors and advanced interfaces. They will be accessed on a number of levels through assorted apparatus, from wall screens to immersive VR environments to portable semi-immersive interfaces carried by the viewer. Such spaces might include a multitude of potentially accessible works, alleviating the problem of a particular work becoming boring through repeated viewing. The branching and combinatoric structures of many contemporary works would also provide variety in terms of frequent interaction. In my work THE EXQUISITE MECHANISM OF SHIVERS the viewer can potentially spend a lifetime looking at variables without having the work repeat.

THE EXQUISITE MECHANISM OF SHIVERS is an interactive videodisc installation which combines poetic text fragments, modular music segments and image sequences (although a future system will function entirely in the digital realm). The work currently incorporates a videodisc and computer to facilitate the combination and re-combination of a set of specific word/image/sound modules. Each module is presented as a word (or words) superimposed over a related visual image, accompanied by a musical fragment. A linear video, 28 minutes in duration, edited to an audio recording consisting of 33 short musical 'movements', forms the foundation of the work. Each of the 33 sections presents a sentence comprised of 10 sentence fragments.

The installation functions in the following manner. The viewer selects "Words" from a poetic text on a Macintosh menu. This selection process is facilitated by scrolling through 10 lists of word variables. These words function as modular linguistic sentence fragments in a preconceived sentence template. When selected, these buttons trigger corresponding images and sound housed on a videodisc. The computer facilitates the instantaneous substitution of word/image/sound segments within the sentence template structure as derived through viewer choice. The viewer experiences the active navigation of a series of changing poetic audio/visual sentences. The work explores pluralistic meaning through the presentation of material in continuously changing alternate contexts. Humor, visual puns, word/image/sound play, modular musical composition, 'canned chance', as well as sense/nonsense relations are all explored.

The viewer can watch for as long as they wish, exploring the material at their own rate. The participant is presented with a series of options through various linked menus. They are able to explore the linear material as one option, a selection of linguistic variables from the template structure as another option, various sentences which they build through their selection process as a third option, as well as image/sound/language poetry which (if selected) is generated by the computer. This semi-random poetry is generated by having the computer randomly select one choice from each stack of specific sentence function variables, making sure to maintain the proper order, to derive new sentences. These word/image/sound modules are called-up from a videodisc for the poem generator using sets of random numbers tied to specific locations (segments) on the disc (one set for each segment's function in the sentence). The computer facilitates the instantaneous search and play of the appropriate text/image/sound fragments on the videodisc, maintaining the correct sentence syntax. A CD Rom version of this work has been published by Cantz Verlag in conjunction with the ZKM - the Center for Art and media Technology in Karlsruhe Germany.

The Architectures of Entertainment

Vast game worlds of a highly palpable nature will be available for access through this media/information architecture. If we consider the games which currently exist in arcades and on home game units and cast them in the light of high resolution virtual

reality coupled with sensual feedback mechanisms, one can envision the palpable nature of these intelligent architectures of play.

Light Conditions

Specific lighting conditions will need to be generated in conjunction with environmental lighting in order to optimize the visual quality of semi-public encoding and decoding. This might include variable or intelligent illumination. Such illumination systems might allow for voice activated change... "I'd like to light this object with a spot and a dim overall fill" or some other form of GUI sliders etc. to manipulate light conditions. If one is talking to someone else of importance and their image is being broadcast live, the user might want to have some control over the lighting of that image. Such a system would also allow for this situation. Numerous commercial applications might also be facilitated. Remote interviews might also be organized to happen in such a space. One might also call up a particular backdrop and key themselves into the image.

Noise levels

Localized sound will have to be optimized and focused for public exchange. As voice sensitive software becomes common, focused input and output of sound will become a necessity. Parabolic speakers and mics may answer this need or floating movable booms with both speaker and mic may be architecturally integrated. Soundproofing of an advanced nature will need to be developed, making adjacent spaces relatively quiet.

Privacy - Physical and Spiritual

An integrated system incorporating a number of the elements described above, tied into vast networks of storage and access will also allow to some extent, for others (those who administer such a system) to observe what is being accessed. Highly personalized encryption systems will be necessary to maintain both physical and spiritual privacy. If we consider the proliferation of surveillance cameras, not to mention those built into ATMs, one can already be under surveillance countless times during an average day in any city around the world. This might suggest another reason for personal encrypted "Identities" to be used withing and across this environment as opposed to the image of the self, not to mention the playful qualities which one might include in the generation of such entities.

Scattered Architectures - Contemporary Realities - Travel

If we consider where we actually live over an average year we might find ourselves in the following locations: home, apartment, airport, hotel, taxi, restaurant, summer home, vacation spot, in the air, on the road, on foot across a city, somewhere in the wilderness, or even in an office... An appropriately designed software transfer system would allow one to download any chosen high end application i.e. one might enter a high end digital video editing program in Tokyo, import digital audio recorded initially in NYC, edit an artwork and send it in close to real time to a digital gallery housed in Berlin all through an advanced networking environment.

In terms of accommodating high level functionality any number of different programs might be accessed on a temporary basis from any information node. Thus one wouldn't need to own the software, a user could just pay for access to a remote system where the software could be accessed. Artists use potentially numerous programs in the creation of their work. Software companies will realise that "metered" short term useage, from any international node, will be extremely lucrative. In the production of my work I use numerous computer programs, which tend to be accessed at various physical locations and times. This would include such programs as Microsoft Word, Sound Edit Pro, Photoshop, Painter, Hypercard, Macromedia Director, Pro Sound Tools, Quark Express, Sound Designer, File Maker Pro, as well as high end programs like SOFTIMAGE etc. etc. In this case the program would be temporarily downloaded to the users computer. Users could still purchase software if they needed long term use. Of course specialised equipment will still be accessed

but again miniaturization will allow for increased portability of much hardware as well as instantaneous transfer of large files as well as massive storage of data. Intelligent "entities" might help use new programs or assist in training related to high level application useage, as well as for explaining updates to current software or related intelligent messages.

I Ching Driving - Random Movement Through Information

Searching for locations to incorporate in video works at times I would enter the car and drive randomly not having a final destination in mind. I dubbed this kind of navigation I Ching Driving. This metaphor could be utilized in relation to navigation within the network, in relation to encountering VR worlds or any number of advanced applications. One might search a random book within a database. How such chance navigation could be facilitated within advanced networking structures could easily become an art work in its own right. Levels of "find a random..." in relation to particular categories might facilitate connections which could not have been foreseen.

Temporary Architectures / Shifting Functions - The Function Room

Large scale rooms connecting entire assemblies of participants might be orchestrated. Imagine a gathering like SIGGRAPH or a VR conference as a shared group virtual experience. A "Connected" multi-user "Function Room" might bring an entire group of people together with another group, allowing for high level exchanges as well as collective Q & A. Through interaction with linked versions of simultaneous hypertexts, large groups might be able to simultaneously enter a poly-linear hypertext environment. A networked virtual audience could attend specific live performances or could witness the gathering of a "scattered orchestra", bringing together a live virtual orchestra of the best musicians in the world in real time. Such an environment could also facilitate surgical demonstrations or the demonstrations of the latest gadgetry - nano-precise suturing machines, or hybrids of information user groups...(Sewing Machines on Operating Tables - DADA lives.). In terms of other art forms this could include networked virtual dance, theatre, as well as hybrid digital forms incorporating prerecorded audio and digital video running inside a VR world.

Access to the Information Networks - The Consuming Environment

Users will be able to access a myriad of international services from remote locations. The notion of locations for many businesses will become irrelevant. A user will "enter the digital realm" of the particular service and transactions on many levels will take place. Along with the physical changes will come economic changes as jobs increasingly shift to the home, remote or shifting locations. We will move from the notion of centers of industry to galaxies of distributed industry. Information can be assembled anywhere, reconfigured and packaged in another location, and accessed by the user wherever they please. Obviously new forms of encoded copyright will need to be established. i.e. why couldn't all music contain a frequency outside of the audible hearing range with a copyright code. If someone uses a fragment of the source, they could pay a particular royalty fee. This kind of hidden copyright information could possibly be incorporated in all forms of digital media.

In terms of art practice, I am currently working on the construction of an elaborate poetic virtual world. I am collaborating with a programmer who is constantly mobile. In working on the project I have been in communication with people in Tokyo, Silicon Valley, Melbourne, Sydney, Germany, Montreal, Cambridge, Karlsruhe etc. etc. In this instance the communication has been via Email, express (Snail) mail, telephone and fax.. In the projected new media environment, the enormous transfer of high level exchange messages between collaborators will allow for an intimate and effective interchange of ideas, images and code. Intelligent architectures which bridge physical and conceptual space will help to facilitate these transfers. Along with the exchange of work related information, play will also take place within highly diverse sites scattered

around the globe. Visual MUs and MUDDs will allow participants to encounter one another in a playful and abstract manner in networked virtual sites constructed by the users working in conjunction with intelligent Virtual Reality construction programs. I am currently working on the poetic implementation of just such a system.

Escape Architectures (Pleasurescapes)

The exploration of leisure time will drive the experience industry to new heights, combining architectures which incorporate physical feedback systems with exceedingly fast, high resolution digital rendering of elaborate leisure environments. Architectures which contain physical simulations: Skiing, Ocean Waves, Space Flight, Golf, Virtual Sex, will be facilitated by having the viewer enter a physical space. Thus interface designers working in tandem with architects and motion simulators will develop these high end pleasure related spaces. What would it be like to experience a "Bungee Jump" while simultaneously traveling through an alternate digital space. The experience of motion pictures may also become increasingly physical as various kinds of suits, furniture and sound systems will provide physical stimulus to enhance visual/tactile interactions. Certain experiences may be generated to work on a series of different levels and degrees of resolution. A game may be created which allows viewers to enter an architectural situation for an extremely high level version of an experience. The same experience may be scaled down, with lower resolution and limited tactile feedback and included in a home game unit. In terms of art work this can currently be seen in terms of high resolution videodisc interactives which have been remade to function within a lower resolution CD-Rom environment. As experiential information increasingly replaces the printed page including sound, video, elaborate graphics, and motion feedback/ physical stimulus, the "reality" of educational experiences will become increasingly palpable. These feedback systems are also used for physical therapy, applied physics, applied chemistry as well as other practical uses.

Access to the reproduction of a particular experience (i.e. the viewing of a painting) will potentially shift to a distributed digital version or encoded work. Agents could facilitate the finding of any number of encodings. With this in mind many artists will design their work for the digital realm as first hand experiences. In a related sense video artists made works which contained experiences, images, texts and sounds that could easily be broadcast or express mailed around the globe. The new digital environment will allow for the transfer of these past works (re-encoded) as well as works which explore Artificial Life, Virtual Reality, Virtual Interactive Cinema, etc. As long as appropriate digital formats can be read, system emulation can be achieved across various platforms. As in digital video, the reproduction is the original. We are now talking about works which are originated with the specific attributes of this kind of intelligent architecture in mind.

History/Museums

When vast digital libraries house particular works both digitized and/or constructed for the digital realm (as well as related historical informations about particular works), the function of the museum will shift. Many museums will continue to house the kinds of objects and artifacts which they currently do. Along with this tradition will come both the purely digital museum or gallery as well as hybrid architectures which allow for the combination of real space; physical objects, advanced sculptural interfaces, installations etc. which meld with digital components of such works, entered from a particular physical space. Historical works may also be encoded to be viewed within a virtual space allowing the viewer intimate scrutiny of a high resolution reproduction. Related historical information will also be available from such systems permitting any current museum to be digitized and housed in a virtual space, facilitating access to viewers in remote regions which might never have encountered that chosen particular site (as long as they have access to the system). Such museums will allow for the translation of relevant information into various languages for the intelligent access of

international viewers. There are currently a number of such projects under development internationally.

Virtual Architectures and Interfaces

The construction of intelligent architectures will call for the fabrication of different kinds of interfaces for entry into virtual worlds. A number of problems arise in relation to this. At this time there is no one set of standards for interface design. Currently there are a number of modes of VR interface: Immersive VPL Eyephones, Crystal Eyes 3D viewing glasses, semi-immersive / semi-transparent glasses, Fake Space Boom, standard computer monitor with related mouse (or joy stick) and keyboard, data projection systems, laser eye projection. One wonders which system will become the universal VR interface - or if different architectural locations will provide different modes of access. One must also consider portable access modes. It may be that each user will provide their own interface carried with them which will intelligently tie into a system when "entered". If a system is to be publicly utilized for immersive VR then the Fake Space boom seems to be the most robust choice at this time - or one could utilise non-immersive screens. The challenge will be to develop an international team which goes about creating a set of standards for these projected systems including refresh rates, resolution, as well as formats for networking and transfer. Will such systems become available in phone booths? The movie 2001 as well as countless other science fiction films have projected videophones but the nature of VR is slightly different: one can move around, and bodily interact, physically engaging the system. This suggests slightly larger environments with a somewhat private atmosphere (padded cells?) to allow for movement, action, gesture and privacy. Movement within immersive VR can be somewhat embarrassing if viewed by a party from outside the interface...

It is interesting to note that an emphasis is currently being placed on the artistic "content" of a particular interface, in terms of its relationship to a specific work of art. Each work has a specialized interface designed for the work (although one can see certain paradigms begin to emerge). I personally believe that common interfaces are just as viable for the creation of artworks. Thus CD Rom becomes a new delivery for interactive works.

Where do the computers lie?

The question of housing computers within buildings, ease of access; networked connections to larger networks; the breakdown, maintenance and repair of such systems; workers hired to maintain these environments; the upgrading of software and hardware; the backing up of pertinent data; protection from viruses and marauding hackers; as well as the physical up-keep of interfaces in terms of cleanliness and graffiti vandalism, are all aspects related to intelligent public architectures which will need to be considered. Connections to vast storage libraries will be facilitated with ease but where will these libraries exist? Who will become the official digitizers of history? Such digital libraries may exist in a distributed form although one can imagine storage systems consisting of now unheard of magnitudes. Library servers might centralize information maps which guide the user transparently to numerous sites where information is being entered, stored and updated. Agents may go and retrieve information and place it within a computer "learning" facility... where computers are taught particular responses for "intelligent" interaction with users. It is likely that people will digitize material with varying degrees of resolution and quality. This material may become available to anyone on the system at any access node.

Media Architectures

In terms of cityscapes, signage could be a static or presented as a motion loop in a digital node on the network (or as part of some library system). Active digital sites might include advertising messages, public service announcements, visual and sonic

programming, News, Weather, Sports or even public art works. The closest example of this kind of sign usage is in Shibuya Tokyo. One could imagine virtual clocks whose design would change from time to time. Interactive public art works could also be facilitated to be presented in the context of networked signage. Such signage becomes the surface of a building. Where media designers become architectural renderers. Thus the building becomes a broadcast and projection site intelligently mirroring the information environment. Such a use of exterior has long been in evidence in relation to vernacular structures - sides of buildings with painted signs. It is the scale and quality of such signage which begins to take over the notion of traditional design. Can architects work with the nature of this change and use it to expand contemporary architectural practice. It certainly is expanding notions and contexts of contemporary art practice, as well as concepts of public art.

Dangers

Along with the benefits of these elaborate exchange systems will come numerous dangers. The nature of privacy and of control over personal information will become a focus in such an intelligent media architecture. With "agents" acting on our behalf, what assurances will we have that viruses (or specific injected code) will not shift their function. With such elaborate systems, what means of "policing" will be used to maintain the legitimate uses of these massive networks. Will we be happy to be "surveyed" in some instances, for our own protection? With such an all inclusive system, who will determine the content to be encoded? Will history become shaded? Will black market networks spring up carrying alternate information?

Radiation / Cancer

One also wonders about the ramifications in terms of health. Will we see a rise in particular cancers due to the use of ubiquitous networks? Will the sedentary nature of computing produce a generation of people whose only exercise will be that of keyboard, mouse and navigation in VR. Will new interfaces be developed which provide for exercise while computing? Will navigation in cyberspace cause accidents through lack of attention to the real world? How can systems be designed to maximise the health and safety of the user.

Return

The creative use of "Hybrid Architectures - Media/Information Environments" will give the contemporary artist a number of new ways to address content. Technologies and the various devices/systems which house them, will provide an exciting realm for exploration. The systems described above will engender a new "architecture" of creation and distribution for artists, defining new "intelligent" forms and in turn bring about a paradigm shift in artistic production. Such forms will focus all potentials inherent to computing in a resonant manner. These "intelligent" attributes will also bring about alternate forms of entertainment, educational systems, access to information and interpersonal communication. The intelligent hybrid architectures which will enable all forms of information exchange are still in the puny process of being defined. The above discussion is meant as a conceptual catalyst to address some of the potentials of this new hybrid space which is presented through the intersection of computer related and physical architectures.