



Grantmakers in the Arts  
2003 Conference

## THE EDGE

### Proceedings from the Conference

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W Hotel  
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### ARTS ON THE EDGE AN AGE OF DISTRIBUTED CULTURE

*Off site: University of Washington, Kane Hall*

We are poised at a moment of shifting ground at the edge of a Network Age...an age of distributed culture. We have witnessed a reorganization of the social, political, and economic infrastructure of our world around electronic networks. This session will explore how artists and their communities have been transformed by the Network Age. Leading new media curator Steve Dietz and JC Herz, former New York Times writer and author of the seminal book *Joystick Nation*, will be joined by virtual panelist Ann Doyle, manager of arts and humanities initiatives for Internet2. She will participate in this GIA session via Internet2 from her base in Ann Arbor, Michigan and introduce us to Internet2's work in the performing arts.

This session was followed by a demonstration of the new Super High Definition Television technology being developed at the University of Washington.

*Session Designer  
and Moderator:* Joan Shigekawa  
*Rockefeller Foundation*

*Panelists:* Ann Doyle  
*Internet2*  
Nili Tannenbaum  
*Internet2*  
Steve Dietz  
*YProductions*  
JC Herz  
*technology writer*  
Michael Wellings  
*ResearchChannel*  
Kathleen McMonigal  
*ResearchChannel*

*Welcome:* Martha Dietz, Ph.D.  
*University of Washington*

*October 20, 2003, 3:00 p.m.*

**M. DIETZ:** On behalf of the University of Washington I would extend the heartiest welcome to you here today. My name is Martha Dietz. I manage the Corporate Foundation & Relations office here at the University of Washington. I am delighted that you chose the University as a venue for your meeting.

We are an arts venue in the city of Seattle. As you know this is a wonderful arts town, and on campus, we have the Henry Gallery, Meany Performing Center for the Arts, the Jacob Lawrence Gallery, and a number of places.

We have an interesting institution called CARTAH, which is the Center for Advanced Research, Technology and the Arts and Humanities. You'll find them on-line at [www.washington.edu/cartah](http://www.washington.edu/cartah). There are wonderfully innovative things going on here at the interface of technology and the arts, and I think it would be worthwhile checking out this site.

So welcome, we hope that you'll return to the campus and visit any and all of our arts venues.

**SHIGEKAWA:** Over here we have, in this order, Steve Dietz, Kathleen McMonigal, from the ResearchChannel, and Michael Wellings. They're going to speak in that order.

Many of you know Steve, he's a former curator of New Media at the Walker Art Center, and he is now teaching at Carleton College as a Distinguished Artist. He's a pioneer in media art and launched some of the most groundbreaking exhibitions that we have seen in this arena. Steve is going to give us his take on network culture.

We should introduce Ann Doyle, who is our virtual panelist, who is coming to us from Ann Arbor, Michigan; and she is the Head of Arts and Humanities for Internet2.

**DOYLE:** Hello everybody, and I'd also like to introduce my colleague here, Nili Tannenbaum, manager of the Internet2 grants and partnership program.

**S. DIETZ:** Thank you for inviting me here, Joan. I would just like to add that this report on *Beyond Productivity* is an extremely detailed and far-reaching look at the intersection of art and technology and I highly recommend it. A lot of what I'm going to say today for the next fifteen minutes or so is around this report and also related to the article you have in your hands.

"For the last twenty years, neither matter nor space nor time has been what it was from time immemorial. We must expect great innovations

to transform the entire technique of the arts, thereby affecting artistic invention itself and perhaps even bringing about an amazing change in our very notion of art."

The author goes on to talk about music, and specifically two ideas around music that are going to be important in the relationship between art and technology. One is to make a piece of music instantly audible at any point on the earth regardless of where it is performed; and the other is to reproduce a piece of music at will anywhere on the globe at any time.

This may be an introduction by Nicholas Negroponte for talking about the Internet2. But, in fact, it was Paul Valéry, writing in 1928, about the idea that in a networked world, music and art could be available at any time anywhere. One of the important things, from my point of view, is a lot of these ideas are not completely new. There is a history to them, and not that they are not important, but they don't come without a history.

Clearly, what Valéry was talking about has come to pass. We can listen to music in real time in many different places around the world, and we can play almost any piece of music anywhere.

But he may have been thinking about something that happened a little bit earlier than he was writing. In 1907 *Scientific American* reported on the very first telephone opera. A Hungarian entrepreneur, who invented the telephone switching system, Theodor Puskas, set up an opera listening room in Paris. Here you can see, in the top left and right, people listening to the opera being transmitted from the Paris Opera to a room at a fair in Paris. There's the network diagram of how it happened. Sixteen people or so could listen at one time.

He then went on to found a telephone newspaper. Subscribers of the telephone system could listen to the newspaper almost twenty-four hours a day. There were thousands of subscribers to this. They had 200 people in a room like the one on the left, preparing news; and then a number of speakers like the room on the right, speaking the news.

The point I'm trying to get at here is that a lot of times when we see new technology, we think we know what it's about, but we don't necessarily know how it's going to end up being used. There was this idea of the radio, but he was using the telephone system. And so what is Internet2? What are new media art and technology going to end up as?

In 1922 László Moholy-Nagy dictated a painting over the telephone to a manufacturer in Chicago,



one of the very first instances of art over the Internet.

A very important event in 1977, and it relates to a lot of current applications going on, Kit Galloway and Sherrie Rabinowitz worked with NASA to use satellite video delivery to have dancers on both coasts, on the West Coast in Mountain View, and on the East Coast at Goddard Space Center, do a performance, as they say, with the images in place. "Everyone would see themselves all together, standing next to each other, able to talk with each other and alas," and also "performing together." I don't think they mean alas there. But maybe they do.

So, again, the idea of distributed performances has a history. It can always get better, and there can be new kinds of things happening; but these things don't happen without history.

One of the obvious things that should be noted about networks is that there are many different kinds. We happen to think a lot about the Internet. But there are social networks. There are transportation networks. There are networks in the way that disease gets extrapolated through a population. There are things like Friendster, which are Internet versions of social networks. So it's one thing to keep in mind that networking is not coterminous with the idea of the Internet. It's a larger kind of topic.

I certainly am not an expert in network theory, but this is an early graph by Paul Barans, one of the conceptualizers of the Internet, and he's looking at three different kinds of networks, one being a centralized network, a decentralized, and a distributed.

One of the models of the centralized is, of course, television. You have a broadcast studio, you have NBC, and from one spot it goes out to all the receiving households.

A decentralized network you can think of as like, maybe Google, or different kinds of hubs of information where there are significant hubs in the network that then point to the different individual pages of information.

Finally, there's the idea of the distributed network, which is the idea of point to point. The telephone is a point-to-point network. But you can only go from one point to one point, you can't go from one point to any point. That's a significant kind of difference.

An example of a point-to-point network is Napster. What I'm trying to get at here is the notion that kinds of networks have different

ramifications for kinds of information and the way people can use them and they can get used by people. So Napster, besides bringing up significant intellectual property issues, raised the idea of getting around the producers or the marketers of music and using each other as sources for information, sources for delivery. It remains a significant kind of network, even if the intellectual property issues are being worked out in a different way.

One of the ways that I look at networks is through the eyes and works of artists. During the seven years that I was at the Walker Art Center, and before that, the Smithsonian, we would look at an artist's project and it would seem interesting but a little bit crazy. Then two, three, four, five years later it became a standard way of looking at network culture in the museum context, or in the cultural context. That's one of the reasons that I'm interested in looking at this work.

Keep in mind that there are different ways of looking at the resources of the network. One is through highly sophisticated technology; brand new, cutting-edge technology; technology that has a lot of resources behind it. One of the beauties of the Internet is that it's a fairly open system and with fairly low technology, you can do some pretty interesting things.

What's on the screen here is a project by John Klima, keeping up with the music theme, who created a site, and a project, that allowed people to upload whatever kind of music they wanted to play. Then it became one of the nodes on this globe, which you can rotate in three dimensions. Depending on how you rotate it, it will play different kinds of sounds and it becomes an interface for a distributed performance piece that is happening in real time, but it's using the regular Internet process. Looking at more of a point-to-point idea where individuals can put up their work, and you don't have to go through the Central Music Organization or the New Museum.

These ideas of networks get hybridized a lot. In a project I did at the Walker, called the Translocal Channel, in an exhibition called "How Latitudes Become Forms," we produced essentially a 24/7 streaming show of content.

One of the ways I produced that is I commissioned artists from Singapore, Mexico, Philippines, Brazil, India, New York, and South Africa to each curate their own set of content and then present that through the Translocal Channel. So it was distributed in the sense that the local organizations on the ground in these different countries could create the content that



they wanted to present. It would come into the Walker lobby and be a node there for this set of distributed, curated projects. It was also streamed out over the Internet. So it was a hybrid set of networks.

One of the things I think about a lot is that networks are ubiquitous. One of my touchstones for this is in 1978, the French social scientists, Simon Nora and Alain Minc, wrote a report that in English is called "The Computerization of Society." And in it they coin the term "telematic."

Essentially what they were saying was that the combination of networks and computing was going to change everything. Basically they were right. The networks and computing has changed everything, but that doesn't necessarily mean that that's the focus of every artistic endeavor. It's the background of contemporary society. For me, that's one of the main reasons we're looking at networks and technology, because it's one of the main ways that society is working right now.

Networks don't always work the way we like them to work. In this quote, taken from the *Beyond Productivity* report, there is the idea that you can do things with music, online, in a distributed way, with people who aren't necessarily your next-door neighbors. But at the same time, there's this warning, "Technology and social infrastructures have to be developed carefully to avoid jeopardizing social interactions in which people learn how to play with each other in groups." In other words, what I would argue is that for every positive of the network, there's also a negative or a warning sign or a trap that can be fallen into.

For those who are much more informed about this, there's this growing science of networks where people are postulating that there are actual laws around how networks in general work, and things like "the rich get richer." Which is to say that once you have a strong node, like Google, or like the Getty, more and more people start adding into that node and the nodes that aren't connected to that become less viable.

Google, when it came out, got rid of Alta Vista as a search engine because as it became and more used, more and more people used it, which made it more and more useful. You get this sense of potential participants in the network space being forced out by the dominant player because of the network tipping effect.

There are other things like that. These maybe are not laws, but characteristics of networks that in the same way a network can enable individual preferences in what you're looking at, how you

want to shop, all kinds of places. It's also the same technology that allows for the surveillance in extremely minute detail of everything you're doing.

The idea of a potential virtual community can also mean that you are isolated from the people who are physically around you because you're always on the rock, paper, scissors Web site, and no one in your family really likes to play rock, paper, scissors anymore.

Data mining, the idea that when you go on Amazon.com, you should look at this book because the other people who bought that book also bought this book. Does that lead to a top ten mentality where at the margins of the culture, that work isn't being represented because it's always about the top sellers? So it becomes this potential for popularity over depth and breadth.

All of these databases and all these networks are interconnected, or at least potentially interconnected. The one that you are specifically interacting with, the University of Washington, Rockefeller, Walker Art Center, may have very strong privacy policies or policies against surveillance. But in the connected network, in a sense, the weakest policy still inflects everything that happens to you in a connected situation. Do you see what I'm saying? That you may be dealing primarily with a trusted source, but because they're all connected, it becomes potentially an untrusted link of network. That's the background to some of the ways of thinking about network.

One of the main ways I think about it is through the artist's practice. The artists' group MTAA, based in New York, had this simple net art diagram, suggesting that one of the things about net art, or network-based art, is that it happens in the network. It's not transmitting a picture of something that's in a gallery; it's not about people in a physical space necessarily.

When I was at the Walker, we started a space for this kind of work, a so-called space called Gallery Nine. Christiane Paul has also done a similar thing with Artport at the Whitney, and there are other organizations like Rhizome and Thing, etc.

They're looking at the network as a platform for network-based practices. That's one of the places that funders can be (A) looking to interesting work, and (B) locating platforms to be funding to support this kind of culture.

I'll just show you one brief example of a kind of net-only project. This is by Mark Napier. It's a classic of the Web, from maybe five years



ago; and it's called "The Shredder." This is his Web site, [potatoland.org](http://potatoland.org), which was, of course, created around the time that Dan Quayle was vice president.

You can enter the URL of any location, or we'll just pull up an existing one; and behind a Web page, of course, is code, called HTML. The conventions of commercial browsers display that code in a certain kind of way. Mark is taking that same code and taking a collage approach to it, and shredding it, and creating a different visual.

And so (A) there's this history of collage; (B) there's the notion that it's only something that exists on the Internet and happens in real time; and (C) it gets at the point that what we take to be the natural environment of the Internet (the browser, the desktop, the computer manufacturer) are, in fact, all constructed situations. And you can deconstruct this through these artists' projects and think about how there are other ways to do the Internet.

One of the things about the Internet in general is, how do you map it, it's so vast? I just wanted to mention a really fascinating project by a computer scientist/artist at UC Santa Cruz named Warren Sack, who created a project called "Conversation Map." Once you get past some of the formal characteristics like The Shredder project, the collage project, one of the natural questions is, what is it about? What's the content?

Warren created a visualization system for looking at conversations in Usenet, which is like a huge AOL chat room or set of chat rooms. There are different ways of mapping how across different conversations people may be talking about the same thing. So, in other words, there's all this information out there but how do you create connections between it? "Conversation Map" was one kind of project around that.

At another level, I think it's important to recognize that, at least for now, most of us are not jacked directly into the Net like Steve Mann, a computer scientist now at Toronto, who, in the 1980s at MIT, would walk around with this helmet set up recording and broadcasting everything he was seeing. What's interesting is, you see it over the course of his career into now, that same setup is now more or less embedded in a pair of sunglasses. Still, it's not quite an implant with a direct connection to his visual cortex.

Until we are able to jack in directly, physical interfaces matter. I won't show you all these projects, but I did an exhibition called "Telematic Connection" in which the network was an integral part of it, but so was the physical

presence. This was a project by the Bureau of Inverse Technology, which set up a guerilla radio network that we'll get into a little bit later.

Ken Goldberg and collaborators created a project that took live seismic data from the Berkeley Livermore lab and mapped that, on the right, as a kind of EKG. This is actually the movement of the Earth in more or less real time. It's actually about a forty-second offset.

Then he created a large installation that you walked into in a spiral and had this very visceral, booming experience. It was a beautiful example of taking both the network and transmitting information in real time across the network and then creating a physical experience at the end of it as an example of the intersection of network and physical interfaces.

Another project which some of you may have seen, just opened at Times Square, a project that I commissioned when I was at the Walker, called PD Pal. It uses PDA devices to allow people to create their own stories about Times Square or anywhere, potentially where a map could exist.

Right now we think of the Internet and the networks as being this computer: its having a screen, existing at your desk or in special places. Over time the network's going to be in many, many, many places: Times Square, on your telephone, in your toaster. We really have to think out of the IBM box about what the network is and will be.

"Translation Map" is a new project by Warren Sack, and the point here is he's hooked up about seven major different databases, all the languages in the world, all the cities in the world, all the chat rooms in all the cities in the world, the CIA fact book, to allow you to send a message through social chat rooms in any language to anywhere in the world, based on Stanley Milgram's six-degrees-of-separation idea. The point here is he's hooked up a lot of disparate databases to get to a certain kind of end result.

Networks are asymmetrical. The individual person can then transmit to a very large audience. So this is a group called Surveillance Camera Players who did a performance in Times Square called "Amnesia." Basically Bill Brown, the person you can see in the photo there, stood in front of an EarthLink camera in Times Square that anyone on the Internet could look at, and played these eight cards which say: "I have amnesia." "You are watching me." "All day everywhere I go." "Maybe you can help me." "Who am I?" "What's my name?"



It's by an Australian playwright. It really gets at this notion of taking the surveillance network, or in fact, any kind of infrastructure, and re-purposing it for your own kinds of needs.

In a similar kind of move, you're probably all familiar with the Total Information Awareness Project that was briefly flirted with by Admiral John Poindexter following 9/11. It was the idea of hooking up all these databases: credit cards, travel, Social Security, etc., so that you could create a profile of a potential terrorist around that.

Ryan McKinley, a graduate student at MIT, has created Government Information Awareness Project, where he's tied together the databases of national, regional, and local politicians. Who they voted for, what party they are, what church they belong to. The idea is that the people can watch and be aware of what their representatives are doing, who's donating to them, etc. There's also this notion that you can say, "I saw so-and-so, Mr. Politician, talking with Mr. Fat Cat, at this restaurant. What were they up to?" kind of thing.

Again, it's this idea of an asymmetrical relationship. The network potentially gives the individual a lot of power in relationship to the traditional panoptic vision, or the traditional view from the center towards the margins.

I think I have one minute left. So I just want to mention something else. The network, of course, is a distribution medium. That goes back to what Valéry was saying, that one of the things that was probably going to happen is this idea of The Conquest of Ubiquity, which was the title of his essay. Eventually this will be everywhere. That may be one of the most profound effects, because Peter Shohalsky's project is not actually network-based, but it's network delivered. That's not a small thing.

There are a few places that support this kind of work. The Thing – these all happen to be New York-based organizations – Turbulence, Rhizome. And then I would also bring up a project that I worked on with Neal Cuthbert at the McKnight Foundation. Part of the point about this project is that it's not about network-specific art. It's actually a platform to support any and all artists based in Minnesota.

So, in summary, we can think about networks as having a history that didn't just start with the advent of the Internet. Certainly it didn't start with just the advent of the World Wide Web. Lots of different kinds of networks. Different topologies. They're ubiquitous. They have intended and unintended consequences. Distribution is critical. They are these born-

digital things. This idea of using the network to do things that have never been done before, like some of the art projects I showed you. They can be hybridized.

How do we support this? This is one of the critical issues that I'm asking all the time as a curator, as a producer of cultural events, as a person involved with institutions; and hopefully you can too, and that is the relationship of the platform to the public sphere.

This diagram is called a power law. It's not exactly the opposite of a bell curve. So if you think of the fact that a few sites over on the left have millions and millions and tons and tons of users, like AOL, Microsoft, etc. They all want to be one of those three or four or five sites.

But I think the point about culture is it's all over here. Or at least a lot of culture is all over here. It's never going to be, and it never wants to be, and it never should be this whole mass consumption issue. For me part of the issue is how do we create platforms that can support this smaller scale kind of cultural effort? Altogether more people visit museums than go to sporting events, but that's not true for the individual museum. How do we create a situation online and in the digital public sphere that allows for a public culture to exist that isn't only a mass culture? Thank you.

**SHIGEKAWA:** If anyone would like some of the URLs that Steven mentioned, just give me your card and I'll make sure that Steve gets it. And maybe he can do us a favor and generate a short list of really prime spots where you can go and look at some of this stuff. Kathleen.

**MCMONIGAL:** Hi, I'm Kathleen McMonigal, and I'm introducing Ann Doyle of Internet2. In case you didn't hear earlier, Ann's in Ann Arbor, Michigan. Thank you, Ann.

I've had the pleasure of observing and attending two of the very large events that Ann has put together as executive producer, and at the last Internet2 meeting several people mistook me for Ann and came up and thanked me. It was wonderful! And started talking to me about arts and humanities projects and new ideas, and so I keep directing people to Ann for those. Ann herself is an artist and a musician, and she's going to talk about the role of Internet2 now.

**DOYLE:** Thank you sister Kathleen. You had a wonderful camera person who kept showing me the audience while we were listening to Steve. Can you still do that for me? I'm still trying to learn how you work a crowd over video



conferencing. Wonderful! There you go. If I get too dry, I can tell this way.

Interestingly enough, one of the funniest problems we have bumped into and have not solved with Internet2 is time zones. At the member meeting that we just hosted last week in Indianapolis, we had hosted a dance event with Korean dancers, Brazilian musicians, and dancers in Florida, and then a live dancer in Indianapolis. And the rehearsal times with the Korean dancers and the time zone in Indianapolis... We keep having this wonderful ability to bring people together, but people have to get up at two in the morning to come together. So that's our next challenge.

I have with me here Nili Tannenbaum, and I'm sorry that we couldn't be there in person this evening because Nili has been involved in working with many of our Internet2 members on grant proposals and helping them think through activities that might be viable for funders and might also have sort of a creative new spin to them. So she's been very involved in all of this.

I wanted to give an overview of Internet2 and talk a little bit about our arts and humanities initiatives. I will talk quickly because there's a lot of ground to cover.

The biggest point to make for those of you who don't know about Internet2 is that we're a not-for-profit consortium with our main members in the higher education community. We have 204 university members at this point. Our mission was to advance the Internet primarily for research and education, but everything that we learn in advancing the Internet through our project with Internet2 can also be shared back with the commodity Internet as we know it today.

We have regular members, which are our U.S. institutions of higher education; we've got corporate partners and sponsors and members; and we also have affiliate members that are probably of more interest to you.

The dots on the map here represent the institutions of higher education, the members around the nation. Just to give you a sense of where we are clustered.

Additional participation is with our corporate partners, our affiliate members. We have over thirty international partners, and what we had with them are memorandums of understanding that basically say we'll agree to use the same underlying networking technology so that we can seamlessly trade traffic and interact. We've got a project, sponsored education group participation,

which is a way for states to sponsor their K-12 system to be involved with Internet2's networks.

I boldfaced on this some of the more performing arts- and museum art-oriented organizations: Cleveland Institute of Music, the Cleveland Museum of Art, Manhattan School of Music, New World Symphony, the Visual History Foundation in Los Angeles, the Survivors of the Shoah.

This is a quick glance at our international partners just to give you a sense of which countries we're working with. I get a lot of calls from performing arts departments around the country that want to collaborate with people internationally. They want to do master classes with international artists with their students. This has been very big for me in the arts and humanities arena at Internet2.

The states that are highlighted in red are the states that have sponsored their K-12 system to have access to Internet2's network.

This is a rough map of the Abilene Network, which is our main underlying network. It is a private pipe that our affiliate members and university members and corporate members have access to. Our northern tier, as you can see, is probably the worst hole in the project, and we're working on that. That's been a tough arena. But pretty much we span the U.S. fairly successfully.

For those who care, we operate at a ten gigabit capacity nationally. And I won't go into more depth than that for now.

Indiana University was one of our very first projects. They had decided to put all of the required listening for their music students online. They discovered that the audio fidelity, when they tried to stream music over the commodity Internet, was not good enough quality, especially for music students who would notice the difference.

So they put this whole project up on Internet2, and their students are able to pull up the pieces of music and also pull up the score so they can watch the score while they're listening to the music. That was a project funded by IBM.

**TANNENBAUM:** This was a neat project that Gallaudet University in Georgetown collaborated on. The feeling of the faculty at Gallaudet is that no written transcription can possibly convey the beauty of American Sign Language.

So they put up a server and it's streaming media. This is Clayton Vouty, and he is signing a poem that he had written. You can go to that and stream and watch sign language.



And the idea that a university faculty could have access to this server, and in the middle of a lecture pull up examples of dance works performed by different dance companies to compare and contrast styles and historical trends, I think would be wonderful. That would be my vision.

**MCMONIGAL:** It also offers a great deal of potential for the creative person. Up to now the bandwidth, the resolution, the lag, the latency, all of that was not good for the performing arts. There were some possibilities for the visual arts.

Here you get what's going to be an affordable medium, ultimately. Resolution is better than 35mm feature film. It's a digital file that can be streamed, that can be on people's laptops, on their PDAs, on their cell phone screens. You have a possibility for interactive creativity that we haven't seen yet in this society.

Once the resolution gets up there, and once the sound quality gets up there, and once the speed gets up there, once it becomes affordable, and if this technology follows the technologies that have come before it, as prices come down, then the ability for people to work remotely with each other, to use all kinds of digital techniques to create art, is amazing. And that's one of the things that this book talks about. That there will be new formulations of art of a kind that we haven't seen before.

The fact that it's a computer file and can go into a network situation, as Steve describes, means that many people, just as is currently true of the massive multi-player online games, can interact with the thing and change the thing itself. One of the challenges which Steve can speak to with Internet art is, when is the piece ever done?

It's an interactive thing with input from folks on the Net who are observers and then observer-participants, and then makers. What will that new form of art be? That's where Steve's expertise has been in the forefront, both situated in a museum and online.

This is a session about tools and what has been, and the tools of the future. It's also a session about exponential expansion of creative participation so that the multiplier effect – the strength of the network – is totally in the number of people who are on it, and then what you do with it. So we see what happens when it takes off and runs away as in peer-to-peer file sharing and Napster and so forth.

One of the reasons that they're filing lawsuits against 12-year-olds is because they're terrified about what's going to happen to visual medium

with sound when there are no longer movie theaters and it's a digital file with the movie that comes out on satellite and there's no film camera at all. These are all the tools of the future that are being invented in places like the University of Washington.

Right now they're really expensive, and they're requiring incredible amounts of computer ability and technology to drive it. But if it follows the same development curve, it's going to be on your PDA, and you're not going to have this code to do it. That's the point of looking at what might be possible.

It's like a peek into the future, but the future's not so far away from what Michael is saying, and all of your panelists are saying, too. So I think the line of questions would be to push the envelope about what the future may be for the creative community, because I think that's where the interest is for us as grantmakers.

The other question is how do we play a role? What do we need to do to enable this to happen for the creative community before it gets totally taken over by the commercial community?

Right now it's in the academic community, it's in the research community. The idea was to give folks a chance to see it while it's still in prototype stage, so that we can think creatively about how we can support new forms of expression.

This is hard for grantmakers; grantmakers have had great trouble dealing with twentieth century technology. Film and video has lagged very badly in terms of funding support from arts grantmakers. I don't know how well we're going to do with this new technology. This is to surface the challenge, talk about it a little bit.

**AUDIENCE:** I'll just start in the academic sphere. This is paralleling that, obviously. Is there a physical thing that this is? Are there new wires that are being strung? Is the Internet2 a new thing, and how does this also relate to wires? In other words, it's a question about relating to wireless communication and are there new wires and infrastructure being put in to make this higher bandwidth work?

**WELLINGS:** The answer to the question about the wires is that in order to do this high bandwidth stuff, it's all going on fiber. No other communication medium that we have, no other piece of electronics, can do as high a bandwidth transmission as fiber can. In the case of the Abilene network, the fiber has been there since the beginning, but the electronics have been updated.



The same is happening with the commercial networks. The commercial network backbones are going up to ten gigabits per second too. They provide a lot of the network infrastructure that we use under contract in other deals, but it's the connection to the home that's lagging way behind.

In Korea, for example, you can get five, ten megabits to your house right now. It's very wired. I was just in Pusan in South Korea, and it's extremely wired. It's just amazing the things they can do. They can exchange video files like we exchange audio files.

The question about wireless networking is, it is a local area network solution only. Currently running at ten megabits per second. The next implementation of that, the fifty-four G, runs at fifty-four megabits per second. At 54 Mb per second you could do high definition video like I showed you.

In my hand I have a little 256 M USB memory module. It costs about sixty dollars, you can buy them at CompUSA. This will hold two minutes of high definition video as you saw on this screen over here. This is considered a small one now. The prices on these are dropping. So we'll see all sorts of ways to deliver the kind of content that we've been talking about.

**AUDIENCE:** I have a question for Steve. First of all, are the artists that you know that are working with the Internet aware of all this new technology? What are the implications for their practice? How are they looking at it and thinking about it? Because it's a little Fascist. It's oppressive, almost.

**DIETZ:** I would say two things. It is primarily right now in the university setting.

For instance, at UC Berkeley there's a new initiative, the Cal IT2 initiative, which is designed to work with Internet2. It's collaborating with UC Irvine, UC San Diego, and maybe one other campus. And they're building an innovative game lab at UC Irvine. It's that conjunction of using the game lab stuff and then looking at I2 and seeing what kinds of things are happening and providing a platform for it.

That was what I wanted to say in relation to Joan. How can we create platforms, either for the individual artists or for the institution? Not every single place needs to have the infrastructure. As the research network shows, the infrastructure is here but there are organizations all over the country, or at least all over the area, that are using it to deliver their content.

But at the same time, I think you're also asking, is it sort of elitist? How many artists can get at this? No? Okay.

Most of what I have seen and know of has to do with the performing arts, so Ann, maybe you can speak to that. I think the I2 hasn't really propagated beyond that extensively at this time.

**AUDIENCE:** Is that because they're not aware of it or just they don't have access to it?

**DIETZ:** You saw the nodes. The nodes are literally in twenty-seven institutions around the country. Then you have to figure out how you can work with that.

In this ITCP beyond productivity, there is this issue of how can you create collaboration between the computing sciences and the creative arts? It's hard enough on any campus to get those two departments to talk to each other.

If funders can seed that, frankly, then conversations start to happen. It starts to take on a life on its own. There's a question of priming the pump, and then does it become an emergent system where we don't know exactly how it will end up? But can we give them some tools to start playing with it?

I keep looking at you, Ann, and maybe what other kinds of instances are you working with?

**DOYLE:** I have a couple of thoughts. In terms of who has access, there certainly has been a lot of what I call "town and gown" collaborations, where pretty much any city in the U.S. at this point has a university that's online. Oftentimes, within a university town, as it were, artists and musicians, there's usually a strong collaboration between the university presenter organization and the artists in the town, so I have certainly been encouraging that.

The artistic community has high needs for good quality visuals and good quality audio and they tend to be very inventive people. One of the things I'm seeing is that there's a lot of inventing, and then it is a community of people that seem to care enough to evaluate whether this is or isn't worth doing.

For instance, when Gary Galbraith choreographed the piece between Cleveland and Los Angeles, he first was curious to know if he could even do it. Then he was curious to evaluate whether it's worth doing now that we know we can. If it is worth doing, for which purposes? For educational purposes? Is it actually viable as an expressive way of presenting performing arts?



There have been some other interesting things. An event we did a handful of years back had an artist stream virtual scenery for us. He created scenery back in his lab for an event we were producing, and we streamed that across the Net as a prototype to see what we could do with set design work.

I've seen some fascinating collaborative "cave art" where you're in the three-dimensional cave world where artists are literally interactively creating digital art together with two caves that have been streamed. So it's hard to fully answer your question.

What I will say is that we have a commitment, if you go to our Web site, [www.internet2.edu](http://www.internet2.edu), or if you just go to [arts.internet2.edu](http://arts.internet2.edu), which is my section of the Web site, you'll find that many of the things we've invented we have also captured as best practices documents. So we're committed to, as we learn, as we evaluate, to put out there what we've learned so that people aren't reinventing the wheel.

This is just a brand new horizon, and I can't say yet where it will go. There will be a lot of inventing and then a lot of going back and saying, is this worth doing, or not? Some of it will absolutely be worth continuing and some of it won't.

One of the things I would say to a funder is I hope, with a sense of adventure, we can enable some of these creative thinkers to do the experimenting and the exploring, but wedge in there the need for evaluation so that we can think about what we're doing and whether it makes sense.

**DIETZ:** I had just one quick thing, just so that I don't give the wrong impression... The International Society for Electronic Art is having a festival in 2004, and the theme is wireless, wearable computing and mobile computing. I'm reviewing 300 applications for it, half of which are really worth looking at and really interesting, and ten percent of which are going to be really great pieces.

You can imagine that those things that may not have that fullest bandwidth capability, as that comes down, as it becomes more accessible, those are the additional kinds of applications that will be happening.

So there's lots of work that's going into using network applications for different, creative, new and experimental uses. They're just not necessarily all right now or have the access to this higher capability infrastructure.

**ALLISON:** One of the things that I think might be useful for us as funders, and I want you guys to help me out with this, is to look at the different ways that artists engage with new technologies.

As I understand it there are a group of artists who get deeply, deeply engaged in like the guts of it, like of the writing of the programs, and they consider that their art form is to collaborate with the scientists and technologists.

Then there's the group of artists that apply the technologies that exist. They consider things like public art on the Internet, and how you make work exclusively for the Internet. But they're not in there in the guts of it. They're using what's already there.

Then there are artists like you were describing, the scene maker, or choreographers, or dancers, who work in other forms, but they can use these new technologies to help them.

Someone described a multinational collaboration to me. I said, "What use was this to you?" And they said, "We couldn't get funding for the rehearsal and development process, so we did that by telecommunication with each other. When we got in the same room together, we could hit the ground running and be ready to present the project."

As funders, we need to get aware of the way that artists are engaging with this at different levels. Maybe you guys can illuminate us even further on those permutations and fine tunings, so that we can figure out how to look at the artists and work with them from the funding point of view.

**SHIGEKAWA:** There's a continuum of practice from the artist coder, and there's going to be more and more of those. Kids who are born digital, who code, who hack, who think about art projects and are artists, all the way through to having the interface and using the applications for a variety of practical things like scenery. I think we are going to have that continuum, and I don't think that we have successfully engaged in that continuum very much yet.

At Rockefeller we just added a category to our traditional film/video fellowships, and it's new media fellowships. There is a continuum of practice, and for us it's partly a question of our guidelines. How do we craft guidelines and set up a process through which we can evaluate proposals, so that we can make good investments in the future of this art?

We use panels, and, in fact, we struggled for awhile with the media panel. We have the new



media in with the media panel, thinking that everyone would get up to speed because people had gone easily from film to video. Not so much to video art. That was a challenge. But that it would evolve.

We watched the panel go through it. In the end, even though they were fascinated by some of these artists, they didn't vote for them. They went to the standard, great documentary, or the terrific experimental film, or the narrative, or the museum installation piece, which they understood.

It didn't matter that there were new media artists on the panel who were explaining it. When the vote came down, the new media artists did not win. So we broke the whole process out into a subset so the nominators are new media curators and artists and the panel is knowledgeable.

In fact, the first panel that we did this way was so tough on the artists, big names were just crashing like trees! Oh my God! This is too much! But, in fact, it's evened out now into an even-handed process.

But it's interesting. We couldn't hold it all in the analog world. We had to move it, part and parcel, to the digital world. But as grantmakers, we don't have very good tools, and that's a whole other conversation that we need to have.

**AUDIENCE:** I work in the technology side, and long ago I used to develop user interfaces. The first thing that would happen when people would test them for me is they would do things that I hadn't thought of.

So we can talk about some of the new technologies that we think people can use for collaborations or for surgery pavilions, or to put on new things. But you're going to have people that think of things that we had no idea that the technology could be used for, and we hadn't thought of. So you're going to see proposals like that.

**DIETZ:** I think that this is a really critical point, and this may not be the place to discuss it at all, but the way I see it is there are two different issues being raised here, and it's really important from my point of view to see them as different.

One is what's your domain in terms of granting? Does digital animation better belong in film and video? Or does that belong in new media? Funding institutions have to decide what their domain is and how to put digital in and out.

There is becoming a less interesting difference between digital media or new media and film and performing arts. So that's one thing.

The other question you are asking is, people working in new media as coders, as producers, as choreographers, as someone distant, as collaborators, I sometimes describe my role as curator as being a professional agnostic.

I mean it's not to say that John Simon, who's a coder, is a better new media artist than Victoria Vesna, who works within a collaborative team. Within that domain, it comes down to Ann's question, what's the quality of the proposal? What's the quality of the ideas?

If we can jump from the individual artist to the collaborative as a possibility for making art, then you get away from having to say coding is a better form of art than collaboration. No one's saying this here, but it comes up in discussions.

So domain is one issue, and then within that, I call it the powers of ten. Someone's low level coding is someone else's high level coding. That's always going to happen, and that's okay.

**AUDIENCE:** This is mainly a question for Steve but other people probably have things to add. This is a reaction to your "gee whiz" factor. Having gone to graduate school at MIT, I was very much surrounded by a lot of the sort of "gee whiz" techno utopianism school of how you deal with sociopolitical issues around technology.

You referred in your presentation to about how it's neither good nor bad, nor is technology neutral. Some of the most interesting things I've seen that deal with things like privacy are from the artistic side in ways that maybe some of the legal advocates haven't been able to get to.

Now we're going into this world of wireless, ubiquitous, embedded. There are huge social-political implications from this. Are there artists who are exploring these kinds of ethical, value issues that you would recognize?

**DOYLE:** If there are, I don't know who they are right now. You're raising a very interesting question.

When I was talking about the "evaluate," I didn't mean the quality of the artwork, I meant exactly what you're talking about, which is to evaluate what we've created, both socially and aesthetically. What are the implications of it?

I would love to see somebody submit a grant that includes a social scientist on the project. I'm not sure I'm seeing enough of that yet, and maybe it's just that everything is so new. But I think that's a point really well taken.



That's probably my biggest takeaway that I'm going to ponder from our conversation this afternoon. When I form these working groups, it would be interesting to think about forming an Internet2 working group with social scientists, artists, musicians, and really put some creative thought into what are we creating here, and what are the implications?

I'm always struck, when I sit in an airport and everybody around me is talking on their cell phones. Ten years ago you sat in an airport, your flight was delayed, you made friends with the person sitting next to you. You ended up having some bonding experience. And we don't anymore! We all sit and talk on our cell phones!

I'm struck that we have created a dynamic. We have really changed our public space dynamic with the invention of cell phones. We invented, but I'm not sure how much thought has been given to how much that invention has changed our world. I could obviously go on, but I think you're raising a very interesting question.

**SHIGEKAWA:** But there are artists who are...

**AUDIENCE:** That's what I was trying to ask you, Steve. Who are the artists and what are the kinds of things? What you're talking about or what it sounds like is really the loss of the private on a universal scale at the same time as individual isolation in a funny way is increased.

I have an 18-year-old son, and I see this on a daily basis. I wonder about it, and I wonder how artists are dealing with it. My first thought would be to subvert the whole thing immediately. But I'm very interested in how we as funders can go where the artists are going follow them.

**DIETZ:** I actually think that one of the richest veins of artwork is around criticality about the medium and about the technology and privacy in particular.

The show called Open Source Art Hack, which showed at the New Museum, had Knowbotic research, fantastic Swiss group, who is doing really important work around data privacy. Critical Art Ensemble lately has been working around genetics, but has important history around issues of technology and politics. Ryan McKinley, who is doing his project at MIT, has really a thing about privacy.

If you do a search on Rhizome and their art base around privacy and surveillance, you'll find lots of projects. Julia Scher is clearly working around surveillance, as is Paul Garrin, David Rokeby. David Rokeby's brand new project is a

way of using just a camera to sort people through motion capture and then dividing them up by basically skin color. It's a way of talking about the Patriot Act, and how our desire for safety is creating these other kinds of problematics.

There's a really long list in this area, and I would be happy to send you some URLs, or post them or somehow get them to you if you want. I don't think that there's any lack of artists working in this arena.

**SHIGEKAWA:** So that's two things, Steve, we'll do, if you leave your business card. Okay, who was next? Do we have any other questions?

**AUDIENCE:** Since nobody else has any questions, I'm having anxiety about the fate of Net art because everything that we saw on this ultra-broadband network was traditional analog forms being distributed very quickly. Net art as a phenomenon arises because of the limitations of the Internet as it's built, right? Projects like Friendster only make sense in that context. I wonder if in ultra-broadband will the bandwidth be taken up by operas and musical theater and films rather than artwork that reflects on network effects?

**WELLINGS:** Based on the experience of the network as it is right now, the bandwidth will be taken up by sharing files illegally and pornography. Seriously, the greater the bandwidth, the higher the applications will show up to do it.

But most of the network usage is for slow bit stuff anyway. We're out there trying to figure out how to do higher bit rate things. If you think of the capability of the network, not so much as the medium itself, but what could I do if I could collaborate instantaneously with people? What could I do if I could see them really, really sharply and crisply without any delay? Or, if I could transport a representation of something quickly across, or make something, make a piece of artwork available to billions of people at once?

One of the things we've done with this archive here is that we have attempted, and we're still working on, trying to get the Siggraph animation archive and host that. We haven't been successful with it yet, but we would love to do that. There's all this cool stuff out there that we need to make available to everybody to see.

That's one of the uses of the network: it's a network. People are all connected to it. The idea is you can then get to this stuff and look at it or watch it or experience it.



One of the things is the experience, sharing the experience. Another is interacting with other artists instantaneously.

**DIETZ:** I think definitely that's true, but in relation to Net art in particular and this issue of it being forced out, my guess is it's not so much a bandwidth issue. I have two conflicting senses about it. One is that there will always be network-specific and network-exclusive works. That won't go away because there's greater bandwidth, they'll just figure out more and more ways to do that. Net art certainly thrived on some of the limitations, but I don't think those were requirements for that.

The other thing that is happening is the network literally is going everywhere. More and more network projects will have this environmental component, and in that sense may become more complex.

At one point when Net art was a brand new platform or a really interesting space, that space is becoming hybridized. And so will the applications.

I don't think there will be this same sense of exclusivity for everyone, although it will continue. The additional thing that will happen will be just broader space. That will create complications for funders because is it installation? Is it network? Those are hard questions to parse.

**AUDIENCE:** I think this may provide an easy out for funders to say, "Oh, thank God I can fund Internet art, and it's opera like I know."

**DIETZ:** That's a really critical issue, and I'm glad you raised it. That's a really, really good point.

**SHIGEKAWA:** I'd like to thank Ann and Kathleen and Michael and Steve for this introduction to this brave new world. Thank you very much.  
*[Applause]*

**END**

