i. project overview

We will create a video instrument that has two parts:

1. controller(s) for the purpose of integrating audience participation into rhinotopus live performances - electronic / sculptural artifact developed, along with the development of Max components to facilitate its ability to manipulate the video (Paige)

2. video component with capabilities of real-time video compositing and editing, aesthetically pleasing graphical manipulation, enabled by Max/MSP and Jitter (Allison)

The responsibility of the two portions of the project will be split among the collaboration. We will meet every week to discuss progress and new goals, as well as to share growing knowledge foundations and creative development.

Paige's Controller Overview

The band rhinotopus has always been inspired by creating an immersive environment for our audiences to experience. Of course, budget and time has dictated many of our limitations, and so while our shows utilize a visual component comprised of video I have edited, rhinotopus has always wanted to increase the level of that immersion, while adding more audience interactivity and show spontaneity. The three members of rhinotopus, Steven Taylor, Gabe Hines, and I, have in the past been primarily visual artists, who have had equal passion for music and auditory stimulation. This being said, it stands to reason that we would want any new tools for augmenting the rhinotopus live shows to be as visually striking as the output of the shows themselves.

This project concept allows us to create such a tool, one that

1. allows and encourages audience interactivity with the show.
2. does not require any learning to use it, but by virtue of its design, encourages play.
3. will allow each show to be unique, in that the live audience interaction determines the spontaneous, real-time editing and transformation of the video.
4. is an artistic and arresting piece of its sculpture in its design and aesthetic.
5. allows for the possibility of the assignment of personality and animation to the controller.
6. utilizes video components that have substantial and emotive properties (instead of being merely “eye-candy”), while concurrently being engaging and exciting.
ii. aesthetic / inspiration

laurie anderson
meat beat manifesto
brain opera
blue man group
sigur ros
flaming lips
duran duran
radiohead

Allison's thoughts:
Paige has described the theme of the band as being playful, dark, pop, science fiction, an evil force that encourages play. Along those lines, I am looking at these references:

Gameboyzz orchestra project -- http://gameboyzz.com/
Camille Utterback -- untitled 5 -- http://www.camilleutterback.com/untitled5.html
Chicks on Speed -- Trans festival -- Max MSP use for both visuals and sound
Fluxus -- integration of the audience participation
Stephen Beck -- Beck Video Weaver

The visuals should be abstracted enough to represent the origin existing primarily from the screen, it should not feel too forced (not overly literal) - think silk paintings on pillows. The visuals will have a layering effect that varies depending on the participant's interaction with controller. The video will change and move between different planes, composed of drawing, flash, and video.

The visuals are to change with elements that are present in the music created:
Tone [color], rhythm, pulse [Stroke], beat [weight], octave [gesture], tempo, bass, deep, staccata, syncopation, discordant in the same time, flow, watery, fluid, hard-edged, metallic.

"Artists working in the [video] medium are exploring the perceptual and conceptual implications of the process in a manner that is specifically directed both towards the breaking down of the specialized and categorical nature of art experience and to the creation of a holistic view of art activity as a generalized case of human communication." [1].


Paige's thoughts:
Squeezebox -- http://www.reverberant.com/SB; tactile computing example effecting video through user interaction
Super Cilia Skin -- haptic input device; tangible.media.mit.edu/projects/Super Cilia Skin; animation of rhinotopus through vibro-tactile motors, potentially interplay between visuals and controller, and how they can influence each other's behavior
Artificial Changelings -- www.funnygarbage.com/dove/tech.html; interactive movie by Toni Dove; how interaction can change not only look and feel of video through color, filter, etc., but also can allow audience to move through layers of narrative and perspective

After thinking some on what I read in The Cyborg Manifesto last week, I envision the rhinotopus as being a human-configured art cyborg, even though it won't have its own self-actualized intelligence. Based on this concept, I want the central hub to be some sort of acrylic dome with an eye, a single horn, and either a sleek robotic style or an amalgamated, robotic "mad scientist" style (haven't decided yet). The tentacles, of which in the project's final incarnation there will be eight, will be of a contrasting, organic style, fashioned in silicon, with suction cups coming out of the fleshy-feeling controller. More sketches to come.

I think that this design construct will visually exemplify our band's mission, one in which we use electronic gear to create our music and video, but in this process, we don't wish for the final show to become a cold, sensory-overloaded, rave experience. That's where this rhinotopus physical contraption can come in handy as a manifestaton of our modus operandi, while in turn having a multi-faceted identity that is humorous, bizarre, sleek, sinister, and other-worldly all at the same time. With its user interface, when the final eight-legged version is complete, eight lucky audience members will get to be part of the rhinotopus consciousness for awhile.

On the next few pages are pictures and a short list of bands/performances that inspire the concept and aesthetic of the rhinotopus.
ii. aesthetic / inspiration {continued}

the octopus
the rhinoceros
iii. concept

The rhinoctopus controller will have a central "hub" (the metallic, robotic component), which will connect to the laptop, enabled with MAX/MSP / Jitter. The internal structure of the hub will incorporate some sort of MIDItron, Teleo, or ICubeX interface, whichever one will work the best for this application. There will eventually be eight controls designed after the look and feel of a tentacle, but for the purpose of this semester, I believe I'll only have the time and materials to create the initial prototype of a single tentacle. Sensors will be embedded within each silicon tentacle. In the final implementation, each tentacle will control a discrete facet of the live video mix, but in this initial prototype, we might be able to have pressure and stretch sensors each control a different video aspect within the same controller. Each controller should be able to be plugged in, and removed as necessary, to facilitate the portability of the apparatus. It will be both futuristic and hard-edged, but also organic and primal.

I also thinking about the rhinoctopus interface as it relates to the Dourish chapters we've read recently, and I have determined that I want the rhinoctopus controller to be:

1. both "ready-to-hand", in that the tentacle controls are intuitive (the bending or twisting creates a readily available and visible change in the projected video); but also "present-in-hand", because it will be such a unique visceral experience that elicits, for the most part, unintelligible gut responses -- not gross, but maybe a little primal, or even uncomfortable, depending on the person interacting with it (Heiddegger).

2. definitely designed to be an example of tactile computing, because the final iteration of the controller will convey an aesthetic sensibility that is visual and can be processed through the sense of touch. However, it possesses a quality of what social computing is all about, since the users are in a social environment with other individuals, with whom they are collaborating in order to re-invent various aspects of their shared surroundings.

I pulled out some pertinent Dourish quotes that further develop the concept, design, and implementation of this project.

**Awareness in collaborative systems may arise**

**Directly:** through the visibility of other people's actions, or
**Indirectly:** through the visibility of the effects of actions on objects of work

**Feedback loop:**
- as part of the interface:
  - way in which the system displays information to me about how the application is responding to my actions
- as part of the artifact:
  - my actions are transforming the artifact, and I can see that transformation take place

Thinking about feedback as a transformation of the artifact leads naturally to the shared feedback approach; in a multiuser application in which the artifact is shared, then naturally all users will see the results of an action because they all see the same artifact.

*From Where the Action Is, Paul Dourish, chapters 5 and 6*

I have been envisioning the suction cups having LEDs coming out of them, but I hadn't specified what signal might be triggering them to light up. Maybe proximity sensors within the tentacles can change their light, allowing the user's distance from the tentacle be the variant factor in the LED's controls (on/off, varying degrees of intensity depending on how close a user is to the sensor). Matthew and I also had a conversation today (9/30) about the LEDs responding only the participant's interaction through strictly from an ON/OFF standpoint, but perhaps in a future iteration, I could get some more sophisticated LEDs that would be able to respond to user interaction by displaying more specific RGB information.
iv. how it works

Hub will either be implemented either
A. using a sleek, acrylic form, or
B. designed in a "makeshift" manner where components' combination is not seamless
( will be determined at a later date)

Tentacle:
Silicon
Will need to make a mold for the tentacle (what will I need for that?)
Coloring for the tentacle
Suction cups
LEDs
Conductive thread
Vibro-tactile motors (in the instance that we proceed with the tentacle's "twitching")

Sensors: stretch sensors, pressure sensors, Hall magnetic sensors (check w/ Matthew) -- as Matthew informed me, stretch sensors only work when bent in two directions (at least the ones he has worked with), so I'll need to address that; also, with the pressure sensors, I'll need to put them close to the surface for users to be able to activate them.**Must research best sensors to use for this, but these are my initial ideas.

All necessary wires, etc. to create the circuits that will connect to the tentacle/laptop interface.

Hub:
** TBD -- not for this semester

MIDITron

MAX/MSP and Jitter

Video in Jitter responds to user interaction in real-time

Laptop with MAX/Jitter

(Vide can simply run on a laptop, but for purposes of a performance, video will be projected.)

v. technical needs

Tentacle:
Silicon
Will need to make a mold for the tentacle (what will I need for that?)
Coloring for the tentacle
Suction cups
LEDs
Conductive thread
Vibro-tactile motors (in the instance that we proceed with the tentacle's "twitching")

Sensors: stretch sensors, pressure sensors, Hall magnetic sensors (check w/ Matthew) -- as Matthew informed me, stretch sensors only work when bent in two directions (at least the ones he has worked with), so I'll need to address that; also, with the pressure sensors, I'll need to put them close to the surface for users to be able to activate them.**Must research best sensors to use for this, but these are my initial ideas.

All necessary wires, etc. to create the circuits that will connect to the tentacle/laptop interface.

Hub:
** TBD -- not for this semester

MIDITron

MAX/MSP and Jitter

(These are the needs I know I'll need so far, but I'm sure other items will reveal themselves as I learn about the building of such a beast.)

vi. conference submission

http://www.siggraph.org/s2005/

SIGGRAPH 2005: 31 July - 4 August 2005, Los Angeles Convention Center
### vii. Schedule

<table>
<thead>
<tr>
<th>DATE</th>
<th>Allison</th>
<th>Paige</th>
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<tbody>
<tr>
<td><strong>WED, 13 OCTOBER</strong></td>
<td>Jitter tutorials 1-10</td>
<td>Review of MAX tutorials 1-12</td>
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<tr>
<td></td>
<td>Develop patch &amp; video playback model</td>
<td>Range of motion for control developed</td>
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<td>Start collection of video assets</td>
<td>Acquisition of MIDITron/all sensors</td>
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<tr>
<td><strong>WED, 27 OCTOBER</strong></td>
<td>Jitter tutorials 11-26</td>
<td>Work with Matthew on development of relevant MAX controls &amp; applicable tutorials</td>
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<tr>
<td></td>
<td>MIDI Control of Video</td>
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<tr>
<td></td>
<td>Initial video / graphics developed</td>
<td>Refined controller developed</td>
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<td>Beginning Jitter effects on video</td>
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<tr>
<td><strong>WED, 10 NOVEMBER</strong></td>
<td>Jitter Tutorial- Alpha Channels</td>
<td>Data testing with controller</td>
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<tr>
<td></td>
<td>Video portion finished</td>
<td>Form studies/ materials testing with silicon</td>
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<td>{Interaction between controller and video established}</td>
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<tr>
<td><strong>MON, 22 NOVEMBER</strong></td>
<td>Video / graphics refinement</td>
<td>Controller circuitry fitted with silicon casing</td>
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<tr>
<td></td>
<td>{Interaction between controller and video revised/improved}</td>
<td>Design of poster to elaborate on future implementation {both Allison &amp; Paige will design}</td>
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<tr>
<td><strong>MON, 29 NOVEMBER</strong></td>
<td>{Initial prototype finished!}</td>
<td>Poster printed</td>
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