VR / RV : a Recreational Vehicle in Virtual Reality

Peter d'Agostino © 1993/2020
Video Installation: 11min loop Edition: 5+2 AP

Preview [peterdagostino.com/VRRV.html]

On a drive in a recreational vehicle (RV) through a virtual reality (VR) theme park, VR/RV explores the displacement and disembodiment of a technologically determined culture which co-mingles video games and computerized war. Floating within this immersive computer generated electronic superhighway, video billboards serve as staging areas for utopian visions and dystopian nightmares- the atomic bombing of Hiroshima and 'smart bombs' of the Persian Gulf War.

Selected Exhibitions

Banff Centre for the Arts, Canada,1994.*
Prix Ars Electronica, Linz, Austria,1995.
National Gallery of Art, Washington, DC,1999.
Krannert Art Gallery, University of Illinois, Champaign,1996.
Lehman College Art Gallery, New York,1999.
New Museum, New York, 2001.

* Premiere: SGI Onyx Reality Engine, NeXT, HMD, VPL DataGlove

Selected books, catalogs, tech, drawings – 32p attached. Contact: pdasite@aim.com

Selected books, catalogs, reviews:

Digital Art, C. Paul, Thames & Hudson, 2008-2023.

Art and Electronic Media, E. Shanken, Phaidon Press, 2009.

Video Art, M. Rush, Thames & Hudson, 2007

Peter d'Agostino: Interactivity and Intervention, 1978-1999,
R. Atkins, Lehman College Art Gallery, New York,1999.

Pennsylvania Council on the Arts Fellowships, 1997.

Der Prix Ars Electronica, Linz, Austria,1995.

InfoArt, Gwangju Biennale, South Korea,1995.

Pennsylvania Council on the Arts Fellowships, 1997.

Prix Ars Electronica, Linz, Austria,1995.

New Light: The Electronic Cinema,1965-1994, National Gallery of Art, Washington, DC, 1995.

Art as Signal: Inside the Loop, Krannert Art Gallery, University of Illinois, Champaign, 1993

Angles of Incidence: Reflections of MultiMedia Artworks, Banff Centre for the Arts. 1993.

Peter d'Agostino: COLD / HOT-Walks, Wars & Climate Change, Martin Art Callery, Allentown, PA, 2018.

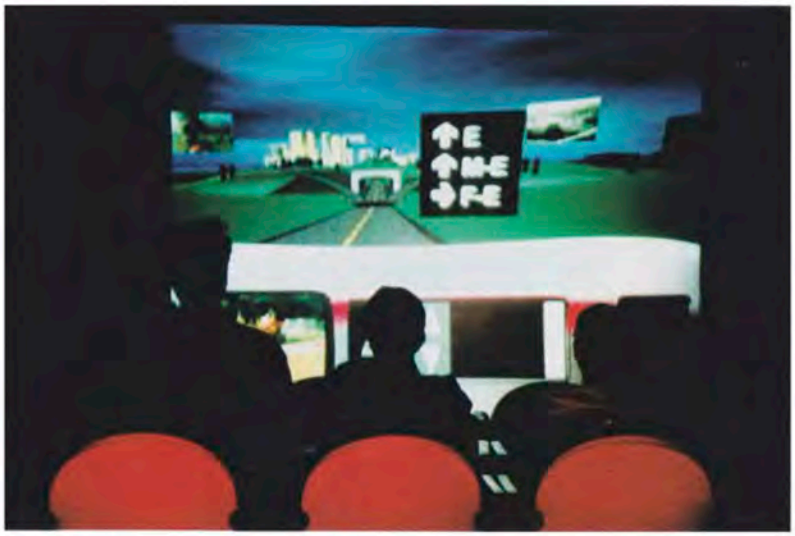
Peter d'Agostino: A-bombs / Climate walks, Transmission Gallery, Oakland, CA, 2020.

"Running the Imaginary Highway" *Edmonton Journal*, Sep 18,1994.

"Peter d'Agostino at Lehman" *New York Times,* H.Cotter, May 7,1999.

DIGITAL ART

Christiane Paul



The juxtaposition of simulated worlds in a political context also becomes a core element in Peter D'Agostino's *VR/RV: A Recreational Vehicle in Virtual Reality* (1993). D'Agostino has been working in video and interactive multimedia for decades and created numerous works addressing issues of politics and identity. *VR/RV* is a projection of a 3D world that simulates a travel along the electronic superhighway (in the literal sense) by joining scenes from Philadelphia, the Rockies, Kuwait City, and Hiroshima – experienced from the inside of a computer-generated car. Mixing the scenery with the 'soundtrack' from the constantly scanning car radio as well as CNN broadcasts, the project becomes a reflection on the increasing mediation of our world and the way it is shaped by technologies. Hiroshima and Kuwait, in particular, point to the military use of technology, which again is closely connected to the mediation of war. In both *Beyond Manzanar* and *VR/RV*, virtual reality is not used to create a seamless alternate world but to create a clash of the 'realities' of physical location and perception. The investigations of these projects and of immersive virtual reality in digital art may still be in their beginning stages – where the state of the technology lags behind the concepts being explored – but they point to a probably not so far future where virtual reality may become a second nature that profoundly challenges the basis of our concepts of perception and the dualism of 'flesh' and 'spirit'.

114. **Peter D'Agostino**, *VR/RV: A Recreational Vehicle in Virtual Reality*, 1993

Edmunton Journal (Canada) 9-18-1994

Photo illustration by Steve Simon

What is it? Currently, virtual reality is the highest form of electronic communications combining sight, sound and, in some instances, touch.

Where was it developed? The military is responsible for most VR research and uses it for things such as flight, tank and battle simulation.

How can civilians use it? The three main areas expected to benefit from VR are entertainment, education and medicine. In medicine, for example, doctors could theoretically guide miniature robots through patients bodies using VR simulation.

Do you need a helmet? While you have to wear a helmet with goggles and earphones in most setups today, the University of Chicago uses what it calls caves. They are rooms where all the walls are covered in TV screens.

How powerful does a computer have to be to create VR? While difficult to compare, the $500,000 Silicon Graphics computer used for virtual reality experiments at the Banff Centre has the combined power of many powerful desktops. It uses 12 microchips or processors each much more powerful than the ones in any home computer. And they all work together.

Is it part of my future? While no one knows what it will look like for certain, virtual reality will likely be transmitted to your home someday in the form of a multimedia package to replace your phone, computer and television.

How far can it go? Some people see the holodeck from *Star Trek: The Next Generation* as the ultimate goal of VR. It's a digital dream, completely duplicates any world you can imagine, from the Battle of Waterloo to Sherlock Holmes's England. While most of the technology might eventually be possible, some scientists say the cost of creating it would be prohibitive and unnecessary. In other words, if you want to interact with a tree, go outside.

Running the imaginary highway

Virtual reality pioneer Peter D'Agostino

Disembodied, I speed down a cartoon highway in a recreational vehicle.

Ahead: a street sign pointing to different routes.

Do I travel to Hiroshima or Philadelphia? With the laser beam attached to my hand I choose the Japanese city.

A small screen on my dashboard shows scenes of the atomic aftermath — old black and white newsreels of the devastated city. A billboard on the side of the highway plays an atomic mushroom cloud. Robert Oppenheimer's voice interrupts: "Now I am become Death, the destroyer of worlds."

Inside Hiroshima's Peace dome, I float up and out of the RV. A Bhuddist chant echoes around me.

I then fall back into my RV to continue my trip.

It's no co-incidence that '60s LSD guru Timothy Leary is a spokesperson for virtual reality. But these disjointed meanderings aren't a psychedelic flashback, nor a wild and vivid dream. They are part of a journey into the high-tech hallucinations of the computer universe. They're today's high-end of cyberspace.

For the month of August, a team of six computer programmers in the Rocky Mountains labored, laughed and cried with frustration while putting artist Peter D'Agostino's vision of the future together. It was his road to Hiroshima I travelled.

The Temple University professor came from Philadelphia to the Banff Centre's New Media Research lab with a loose sheaf of notes and a name for the piece: VR/RV as in virtual reality/recreational vehicle. He didn't bring detailed plans. He thinks they stifle creativity.

D'Agostino has worked in high-tech art since the '60s. He started with slides, moved on to video, experimental TV with PBS in New York in the early '80s and interactive CD-ROMs.

VR/RV was his first experiment with virtual reality and he wanted to break the mould of what had been accomplished before.

D'Agostino created a pessimistic look at the future, where the mind experiences society's primary reference points of the last 50 years, from the killing fields of the first bomb to the Gulf War.

"I thought I had to work in technological areas as opposed to painting because I felt our culture was technologically driven," he says.

"Language and body are gone in this world. They are no more."

It's all built into a $500,000 Silicon Graphics Onyx computer performing 40 million calculations a second. The astounding graphics of *Terminator 2* could have been constructed on this computer. In the case of that blockbuster movie, as well as *Jurassic Park*, similar computers toiled for days to produce scenes lasting a few seconds.

In virtual reality, the computer puts you within a world and then instantly changes it according to your reactions.

When you turn your head to the right, a sensor attached to your helmet relays the message to the Onyx which instantly gives you the view to the right.

Kevin Elliott is project leader of Banff's virtual reality team. Over the past couple of years the lab has collaborated with many artists, each breaking new ground.

The purpose is to develop new uses and challenges for the technology. Some day Elliott predicts it will become as common and affordable as a box on your TV set.

"We're doing very high-end stuff here," he says. "It's very esoteric and very few people get to see it or use it ... but I'm not worried about that because I think if I do my job right and other people do their jobs well, this quality of technology is going to be available and it's going to be easy to use."

Jeff Holubitsky

Second in a three-part series on cyberspace

■ **Monday:** Losing touch with reality

Most virtual reality systems today depend on head mounts, two-kilogram plastic helmets fitted with headphones and miniature TV screens. Unfortunately, for cybernauts or electronic travellers, they are also clumsy and have poor optical resolution.

In many ways, virtual reality has been an isolating experience. D'Agostino's work included separate TV screens to allow others to simultaneously view your travels, but really, you do things on your own.

The ultimate goal, says Elliott, is for people to travel in virtual reality together, sharing the experience, communicating ideas.

Educational psychology professor Glenn Cartwright foresees something like the holodeck on *Star Trek: The Next Generation*. Scientists dispute that society will ever have the resources to make such technology practical, though in some form it could be technically possible.

In this futuristic machine you're actually put in the middle of a computer created environment — complete with touch, smells and a sense of chance.

If Cartwright was teaching history, for example, he could theoretically stick his students in the middle of the Battle of Waterloo.

"Right now, virtual reality is presented through headsets and the single glove and we're sort of almost handicapped when we enter cyberspace. That's not going to be true in the future.

"Probably the next step will be full body suits and lightweight visors that one could wear," he says from his McGill University office in Montreal.

"If we can't bring the price low enough to give people a home unit then we'll be able to deliver it over cable television. But one way or the other it's getting into the home."

Cumbersome helmet

ART REVIEW

Way Up in the Bronx A Hardy Spirit Blooms

By HOLLAND COTTER

Art in the Bronx, like the sprawling borough itself, is a resilient, clamorous, multifaceted thing, cosmopolitan in outlook but imbued with a spirit of place.

It embraces forms from video installations to virtuosic aerosol-spray murals. And it turns up in unexpected places: in school hallways, hospital lobbies, courtrooms, subway stations, living rooms and — officially, unofficially and often heart-liftingly — on building facades.

Exhibition spaces designed on the white-cube Manhattan model are relatively few and far between. But they are determinedly there, and so are artists, lots of them, some well known, others up and coming, living and working throughout the borough.

Their creative presence is tonic to a part of the city that has suffered more than its share of political and economic sabotage over the years and still battles stereotypes promoted by Hollywood films like the 1981 "Fort Apache, the Bronx" and books like Tom Wolfe's 1987 "Bonfire of the Vanities."

There is no question that the borough remains a vulnerable organism, but amazing things are in progress. The South Bronx is being resurrected. (And the Grand Concourse remains pretty grand.) Grassroots community ventures of all kinds are flourishing. And so is art, particularly in a handful of tenacious institutions, large and small, that have settled in to stay. A few of them are considered below.

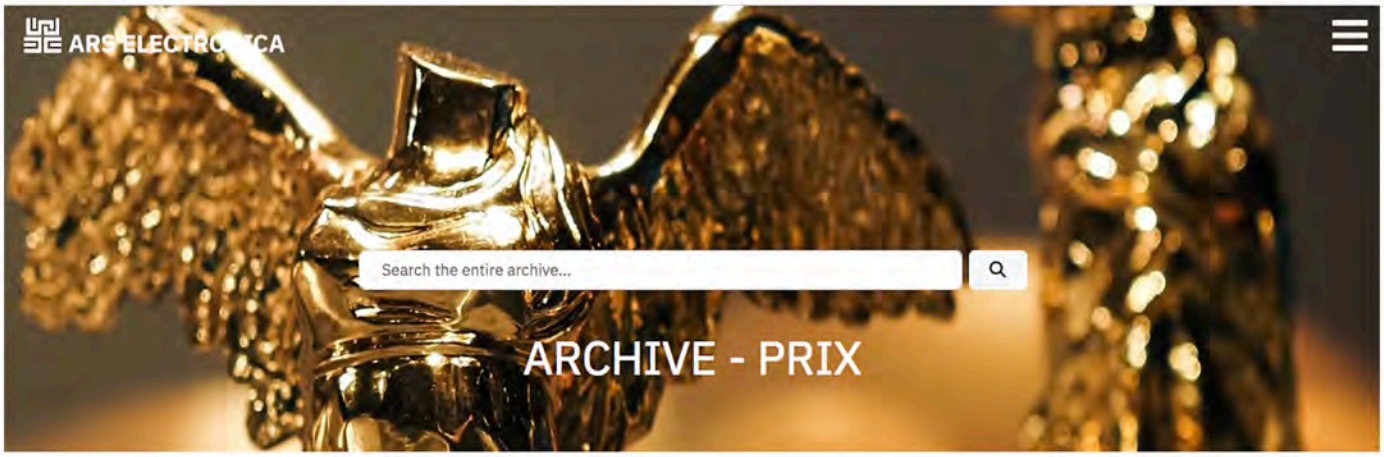
What's up, page 33.

Peter d'Agostino at Lehman

The Lehman Gallery, established in 1984, programs consistently stimulating, technology-savvy shows under the direction of Susan Hoeltzel. It is at work on a two-year project to catalogue on the Internet all public art in the Bronx, from the 19th century to the present.

Lehman is offering a one-man survey, organized by Robert Atkins, of the Bronx-born conceptual and video artist Peter d'Agostino. It begins with his early work with television and moves on to ambitious installations, including an interactive virtual environment in video form. The piece feels a little like a large-scale digital war game and is implicitly critical of the lulling, distancing effects of the technology it uses.

More recent is a split-screen projected on-line work, "su.Vius," (www.temple.edu/newtechlab/Vesu.Vius), which pairs scenes of the Arthur Avenue section of the Bronx, where Mr. d'Agostino grew up, with shots of Pompeii and Mount Vesuvius near Naples, where his parents were born. The contrast between clips of Bronx street life and the ruined avenues of Pompeii is a quiet study in transience and the preservation of cultural memory.



ARS ELECTRONICA

Ars Electronica Archive **Prix** Prix Map Pictures Videos Publications Special Projects Women in Media Art

Prix

The Prix Ars Electronica Archive is a collection enabling search and viewing of all the submissions since 1987. The award-winning projects are documented with catalogue texts and audio-visual media. All other submissions can be searched by title/artist and displayed with year, category in list form. Please cite the credits (artwork name, artist and photographer) and only use the materials if your article is related to Ars Electronica.

Interactive Art — Anerkennung - Honorary Mention 1995

VR/RV: A Recreational Vehicle in Virtual Reality

Peter d'Agostino

Original: PR_1995_dagostino_001_o.jpg | 416 * 318px | 114.7 KB

CATALOG TEXT BIOGRAPHY

"VR/RV" is an interactive virtual reality environment produced at the Banff Centre for the Arts. On a drive in a recreational vehicle (RV, also known as a caravan in Europe) through a virtual reality (VR) theme park. "VR/RV" explores the displacement and disembodiment of a technologically determined culture which co-mingles video games and computerized war. I call "VR/RV" a form of "critical virtually", as it reveals a simulation that reverses map and territory. The recreational vehicle drives through a computer generated landscape - a three-dimensional map - onto which two-dimensional video images are projected forming a new mediated territory of analog and digital memories. By the analogy of navigating through a computer simulated information superhighway in a recreational vehicle to the West (The Rockies), the East (Philadelphia), the Far East (during the atomic bombing of Hiroshima) and the Mid-East (during the Persian Gulf War), "VR/RV" represents some of the Utopian hopes and dystopian fears that are a consequence of 20th century technology. As the vehicle drives through this simulated theme park, a progression of sounds emerges from a scanning radio that continously tunes in and tunes out fragments of historical events, songs, and the synchronous sounds of the surrounding environment.

NOMAD NOMADE
1993-94 BANFF

Art Studio, Audio, Computer Applications & Research, Television/Video

The Banff Centre , Box 1020, Banff, Alberta, Canada TOL OCO

NOMAD incorporates several related concerns:

- Beliefs and identity are no longer stable. Artists and institutions are not exempt.
- Transculturalism, whether experienced as diaspora, border culture or difference, affects cultural practice and how we see ourselves.
- Technologies play a key role in reshaping perception, mobility and possibility.

> *"The model in question is one of becoming and heterogeneity, as opposed to the stable and eternal, the identical, the constant . . . only nomads have absolute movement." ("Treatise on Nomadology-the War Machine,"* A Thousand Plateaux, *Gilles Deleuze and Felix Guattari)*

NOMAD can be imagined as the shifting and constant movement that alters economic, spiritual, and geographic categories and hence our understanding of the world. *NOMAD* represents varying concepts of space and time that inform relationships between and across cultures, between gendered and culturally different individuals. It investigates what happens to an image, a story, a theory that moves from place to place. *NOMAD* challenges truth, thus allowing that certain essentialisms can be made useful.

> *"Nomads are known to be rooted in myth, legend and folklore. . . To them, art has two essential factors: the ability to consolidate the community through ritual and performance, and collective participation in the dramatized, spoken and artistic forms . . . The impact of their art and their way of life has two important aspects: the fundamental idea that all life, experience and existence is without frontiers or boundaries, and the foundational idea of not glorifying fulfilment in terms of territory or resources." ("Thoughts on Nomadic Aesthetics and the Black Independent Cinema: Traces of a Journey," Teshome H. Gabriel)*

NOMAD includes the effects of televisual and digital technologies on social and cultural meaning. It is about the ability to be in at least two places at once, to be in two or more moments of historical space and time, to be both in and out of one's body. It explores the homogenizing tendencies of global communications media in relation to local cultures. It concerns the influence of these technologies over even those who appear to be outside the circuits, over those who are otherwise perceived as marginal or who are wilfully peripheral.

Peter d'Agostino is an artist who has been working in video and installations since 1971. His work has been exhibited internationally in the form of interactive installations, performances, broadcast productions and and telecommunications events. At Banff, he will continue his work on "interactivity and intervention" (begun in 1978 with Proposal for QUBE) by developing a form of Critical Virtual Reality(CVR). CVR is intended to function as a metaphorical equivalent of CPR (cardiopulminary resuscitation)—a form of first aid for a dying body. In this context, it is an attempt to apply CVR as a creative force to resuscitate a technological system suffering from an extreme case of military-industrial complex. D'Agostino's work has been included in the 1981 Whitney Bienniale, the Bienal de Sao Paulo (1983), Video Bienniale, Ljubljana, Yugoslavia (1985), Construction in Process, Lodz, Poland (1990) and is in the collection of the Museum of Modern Art's Circulating Video Library. His interactive videodisc projects include: *DOUBLE YOU (and X,Y,Z,)* (1981-86), *TransmissionS*(1985-90) and *STRING CYCLES* in-progress). Telecomunications events include: *On the LINES*, video/phone and interactive videodisc, Rijksmuseum Twenthe and V2, Den Bosch, Holland (1990); *LA-Boston*, picturephone event, University of California, Los Angeles and Center for Advanced Visual Studies, MIT, Cambridge, (1981); *Proposal for QUBE*, two-way cable-TV, Columbus, Ohio (1978).

The dizzying tools of the trade

Strap in to a virtual reality system, and the computer will transport you to another world. That's the promise. But outside of money-is-no-object military labs, the VR reality is something altogether different. The Banff Centre is no exception.

One of the biggest problems is the "user interface," the bulky, five-pound head-mounted displays that symbolize VR. The helmets contain sensors that track head movement. That information is fed to the image-generating computer, which sends appropriate signals back to the helmet's LCD screens, one for each of the user's eyes. The process takes only a fraction of a second, but the lag is still strangely disorienting. Users often complain of nausea and headaches after spending more than a few minutes wearing the device. Quick head movements cause such a strong sense of vertigo that rookie cybernauts can tumble dizzily to the ground.

STEVE SANDFORD

Banff Centre technician: *There are always surprises.*

The most convincing aspect of current VR products is sound. At the Banff Centre, technicians can now create a truly 3-D sonic environment; as a user moves towards and then past a virtual waterfall, for example, the sound of falling water will rise in volume and then fall away.

In the long run, however, VR's success will depend on advances in computing power. For now, the task of generating realistic 3-D environments and updating them in real time is beyond the graphic processing capabilities of even the most powerful computers.

At the heart of Banff's VR production lab, for example, is a half-million-dollar Onyx Reality Rack provided by Silicon Graphics and running MR Toolkit software from the University of Alberta. It's the world's fastest, commercially available machine for creating and displaying virtual environments. For complex VR pieces like "Placeholder," the Onyx is networked to two other powerful workstations and a bank of six Macintosh and IBM PCs. But Doug McLeod, director of the centre's New Media Research program, says it would take a machine several orders of magnitude more powerful to produce even TV-quality graphics.

These limitations have made the work of the centre's programmers and technicians especially crucial. A typical production begins with a meeting between artist and technical staff. The VR environment is modelled on a workstation running graphics software donated to Banff by computer animation firm Alias Research of Toronto. Then, in the most demanding part of the process, sound and interactive elements are added, work that requires the writing of reams of computer code and weeks of debugging. "Our programs get very big, very quickly," says John Harrison, the centre's senior research analyst. "And there are always surprises—we can never test everything that can go wrong."

It's work that artists like Perry Hoberman say deserves greater recognition. The close collaboration between artists and technicians is so important that technical staff should be considered co-authors of the final VR work, he argues, noting that the programmers who worked on his VR piece, "Bar Code Hotel," made key creative contributions to the project. Their mark is easy to identify. "The behaviour of each of the different objects," he says with a laugh, "totally reflects the personalities of the programmers."

—*T.J.*

VR / RV : a Recreational Vehicle in Virtual Reality

Hardware & Software

Below are the hardware and software requirements to run VR/RV. Please note that none of the items mentioned are optional. They are all required components:

- Silicon Graphics Onyx computer, with
- At least two processors, each 150 MHz R4400
  - At least 64 MB of memory
  - RealityEngine2 graphics system
  - Two RM4 raster memory boards on RealityEngine2
  - Multi-Channel Option
  - At least 1.5 GB of free disk space, preferably on *fast* hard drive(s), e.g. Seagate Barracuda
  - Silicon Graphics IRIX operating system, version 5.2 or 5.3
  - Silicon Graphics IRIS Performer library (run-time only)
  - Silicon Graphics ImageVision library (run-time only)
  - University of Alberta MRToolkit library

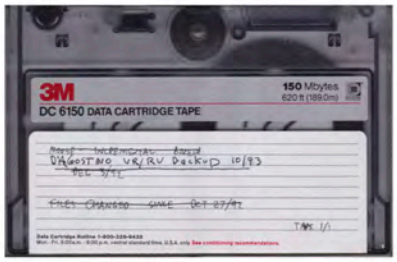
- Two NeXT Computer systems, *each* with
  - At least 32 MB of memory
  - At least 200 MB of free disk space (shared between the systems)
  - One IRCAM Signal Processing Workstation (ISPW) card
  - One Ariel ProPort model 656 D/A convertor for ISPW
  - NeXTstep operating system, version 3.2

- VPL DataGlove sensing device
- Polhemus FasTrak position sensor
- Head-mounted display (no specific type required, but it must accept two channels [one for each eye] of NTSC video output from the Multi-Channel Option on the Onyx system)
- The three computer systems must be connected over a network.

VR / RV : a Recreational Vehicle in Virtual Reality

Hardware & Software

This SGI O2, data disks for Onyx Reality Engine and NeXT computers are in the collection. Contact: Peter d'Agostino pdasite@aim.com



WorldToolKit™ on A Silicon Graphics Workstation

SENSE8™, the leading supplier of virtual reality application development tools, presents another real world example of a virtual reality application. Using WorldToolKit, a developer can rapidly build applications such as the Manned Maneuvering Unit simulator shown below. In this example, WorldToolKit was combined with the power of a Silicon Graphics workstation to give high framerate and unparalleled realism.

WorldToolKit on SGI

WorldToolKit is available for Silicon Graphics workstations running GL4.0 and Irix 4.0.1 (or higher), from the Indigo to the latest Reality Engine image generator. Tightly integrated with SGI's Graphics Language (GL) and their new tool kit "Performer", WorldToolKit functions provide a powerful application programmer's interface that simplifies the task of building high-performance simulations. Support for most of the input and output devices on the market today means that you can extend your WorldToolKit simulator to a virtual reality system with minimal effort.

Virtual Reality

WorldToolKit can be configured to support a variety of output devices by setting the appropriate display flags. The example application uses the DISPLAY_STEREOVIEW flag to set the monitor in stereo mode (120 Hz.) and create the dual viewport display required by StereoGraphic's *CrystalEYES* system. Other display options supported include monochrome or color head-mounted displays (using a VideoSplitter to output left and right-eye video channels), monochrome and two-color boom displays, and color monitors.

Grey-scale representation shown. Actual image is 900x700 resolution, 24-bit color. The view is one eye of the MMU operator. This WorldToolKit simulation runs at 10 fps on a Crimson VGXT.

Open Architecture

WorldToolKit is open-architecture, giving you the flexibility of incorporating your favorite hardware or software products. And you have the ability to upgrade or enhance your system component by component.

Graphics source code written in GL can be embedded directly within a WorldToolKit application. For example, the Earth shown in the example was constructed using GL functions to wrap satellite imagery (provided by Sandia National Labs) around a three-dimensional Earth model.

Data Import and Export

Your virtual reality application must work in concert with other applications. These applications may include CAD programs, modelling programs, or data collection systems. For example, the space shuttle shown was provided by NASA Ames in NFF (Neutral File) format. WorldToolKit has data import and export facilities for DXF, NFF, Wavefront, and other formats. In addition, there are a growing number of public domain translators from many common data formats into the WorldToolKit Neutral File Format.

Sense8 Corporation

Sense8 is dedicated to providing our customers with the highest quality software and technical support possible. We also offer a wide range of systems integration and consulting services for the virtual reality field.

For more information about Sense8 or WorldToolKit, please call us at 415-331-6318 or write to us at 4000 Bridgeway, #101, Sausalito, CA, 94965. Our fax number is 415-331-9148.

March 10, 1994

From: Douglas MacLeod
To: Peter d'Agostino
Re: VR/RV Planning

Enclosed please find:

1) A schematic drawing that reflects our discussions for your project. If this diagram is inaccurate please inform me as quickly as possible
2) A equipment list of hardware and software that will be necessary for the installation.

It is important to note:
1) The Banff Centre can only provide the following for the exhibit:

1) Executable files and model files for the Silicon Graphics computer
2) VR sound software and files

All other equipment both hardware and software is to be provided by the Gallery. You may also require technical support to install and trouble shoot the installation in Bellevue. Again it will be necessary for the gallery to fund this support.

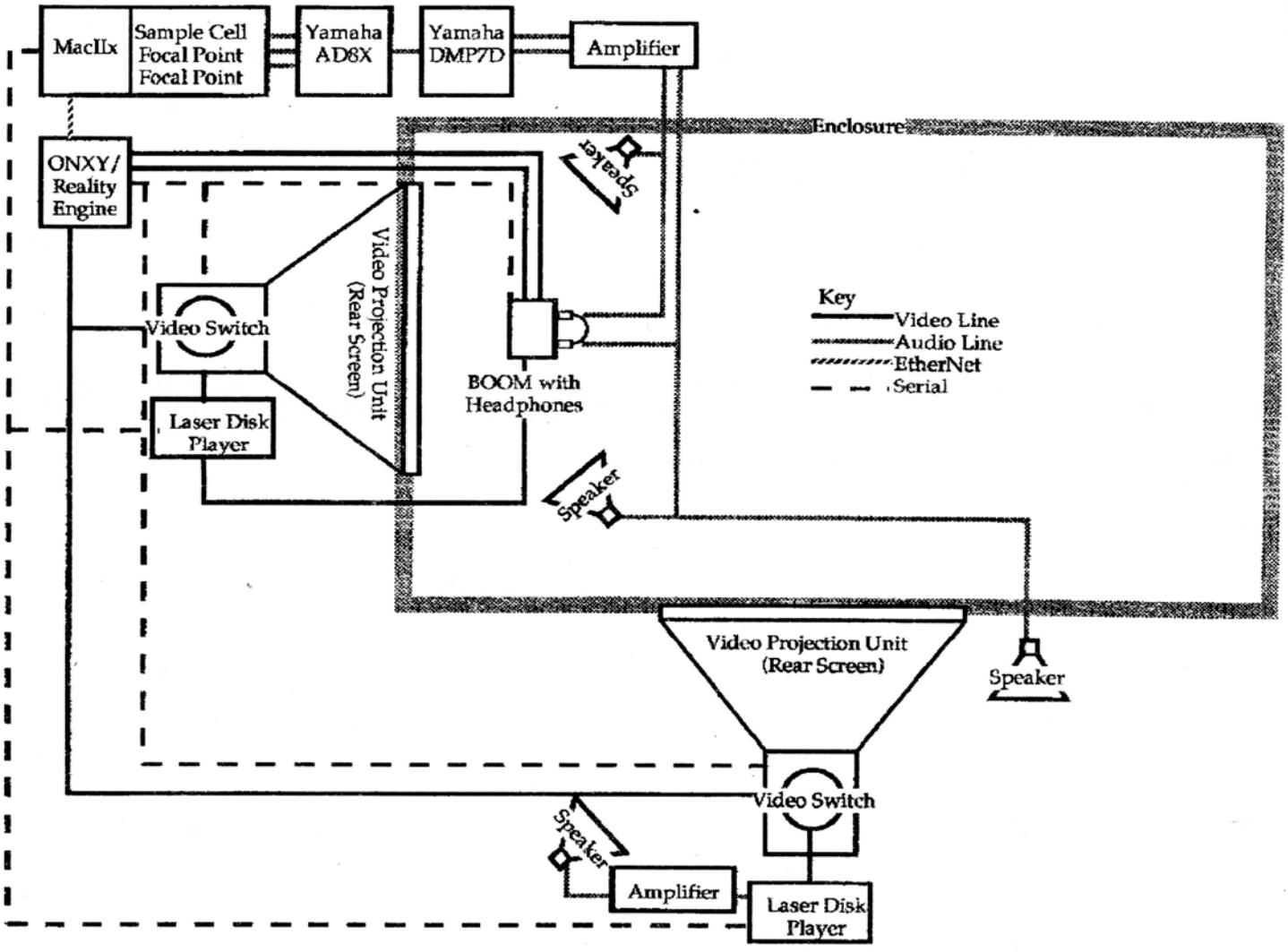
2) Regarding the BOOM. Chris Shaw of the University of Alberta has said that they would be interested in writing a driver for this piece of equipment but they would need two months to do so. This means that the BOOM must be delivered to the University of Alberta by May 5, 1994 if it is to be functional by the time you arrive in Banff on July 5.

3) I will also need to do more research regarding the video switches required for this project. I have been forewarned that they are expensive.

4) The project in its schematic form is very ambitious in terms of both its equipment and programming. In order for us to meet your deadline of September 17 we will need to keep to a rigid schedule. In this respect I will need the detailed project description by March 31. If we do not meet deadlines it will be necessary to scale back the project.

Schematic Design for Peter D'Agostino's VR/RV:
Notes:

- Not To Scale
- All equipment (including hardware and software), installation, staging and maintenance to be provided by the Bellevue Museum



VR/RV Equipment List: March 3, 1994

Model Name	Manufacturer	Address	Phone No.	Fax No.	No. Req'd
Hardware					
AD8X, 8ch A-D Converter	Yamaha Canada Music Ltd.	Musical Instrument Division 135 Milner Ave. ScarborougH, ON, M1S 3R1	(416) 298 1311	(416) 292 0732	1
AudioMedia (used as SMPTE Generator)	DigiDesign	1360 Willow Rd., Ste. 101 Menlo Park, Ca 94025	(415) 688-0600	(415) 327-0777	1
BOOM	Fake Space Labs	935 Hamilton Avenue Menlo Park CA 94025	(415) 688-1940	(415) 688-1949	1
Bryston amplifier					2
DMP7D Digital Mixing Board	Yamaha Canada Music Ltd.	Musical Instrument Division 135 Milner Ave. ScarborougH, ON, M1S 3R1	(416) 298 1311	(416) 292 0732	1
Headphones					1
LaserDisk Player, Model 4400	Pioneer or other w / RS-232 port				2
Macintosh IIx (or IIci), 8MB, large HD	Apple Computers Inc.	20525 Mariani Ave. Cupertino,CA 95014	(408) 906-1010		1
Onyx Reality Rack with Multichannel Option	& Reality Engine 2; from Silicon Graphics	P.O. Box 7311, M/S 12-134 (or 2011 N. Shoreline Blvd. 94039-1389) Mountain View, CA 94039-	1-800-800-4SGI, or 1-415-960-1980	(415) 961-0595	1
Rear Projection Screens					2
sampleCell HARDWARE (in Mac.)	DigiDesign	1360 Willow Rd., Ste. 101 Menlo Park, Ca 94025	(415) 688-0600	(415) 327-0777	1
Speakers					4
Video.Proj's: (1) 1020Q, (1) 1041Q, (2) 1251Q	Sony				2

VR/RV Equipment List: March 3, 1994

Model Name	Manufacturer	Address	Phone No.	Fax No.	No. Req'd
Software					
Max vers. 2.5 (Macintosh)	Opcode Systems Inc.	3950 Fabian Way, Suite 100 Palo Alto, CA 94303	(415) 856 3333	(415) 856 3332	1
MR Toolkit	University ofAlberta	University of Alberta Computer Science Department Edmonton			1
SampleCell SOFTWARE (In Mac.)	DigiDesign	1360 Willow Rd., Ste. 101 Menlo Park, Ca 94025	(415) 688-0600	(415) 327-0777	1
Video Switches - Serial controlled	2 input; 1 output				2
VR Sound Software	Dorota Blaszczak, Glen FraSer				1

Thurs. Aug 25

To: Raonull, Sean, Amit URGENT

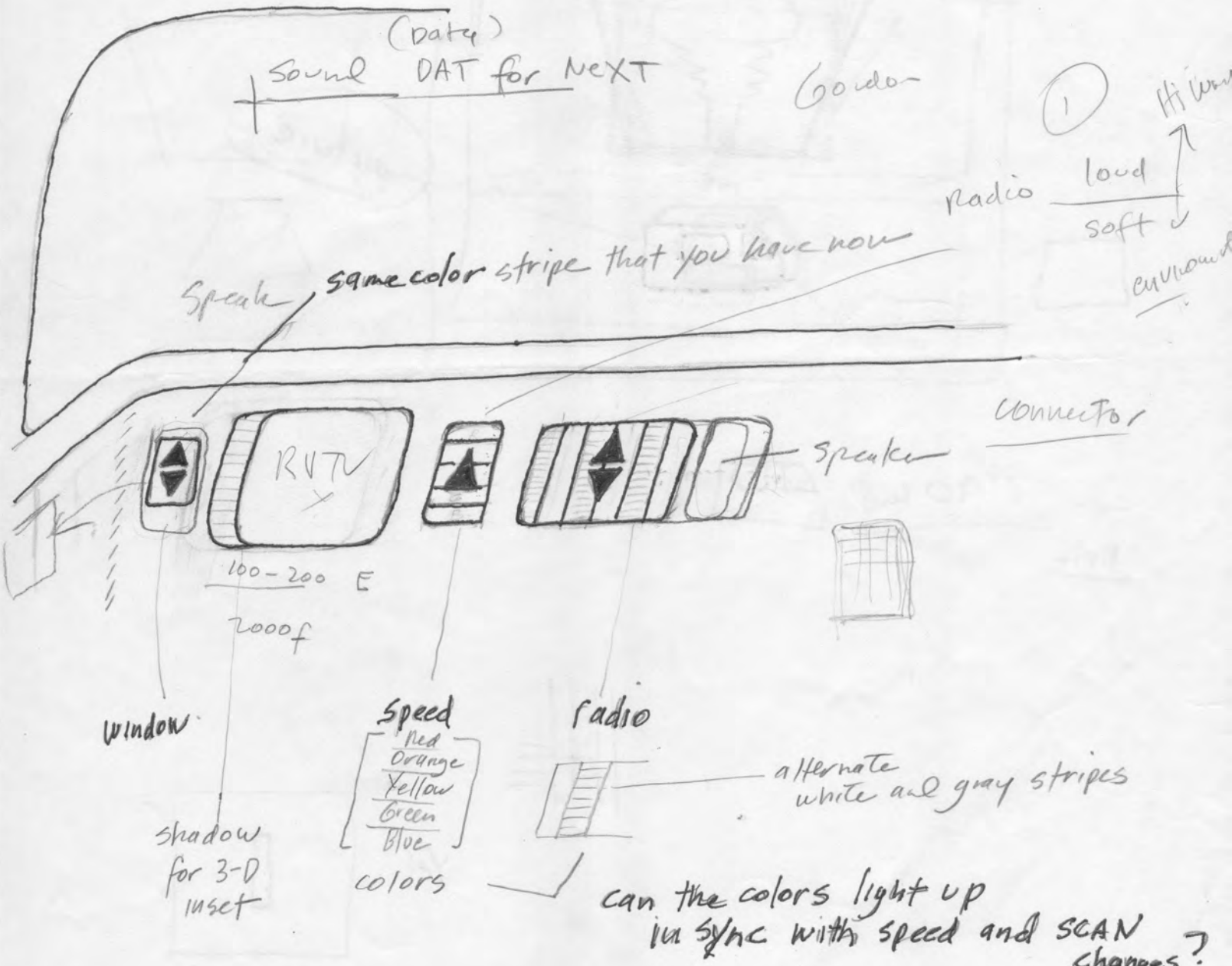
FAX 1-403 762 6665

From: Peter d'Agostino Helsinki check (country + city code)

Fax 90-441 087

Here is the new control panel you requested.

Thanks P— Also check today's E-mail



P.S. I will be back at this fax and Tel (90-440-581) from Sun. 3pm to Mon. 5am (9 hrs. later than your time)

No E-mail at this time.

VR/RV Sound Design Overview

Sound design by Rick Bidlack and Roger Warnatsch

All soundfiles used in VR/RV have been backed up to a DAT data tape in NeXT tar format. The entire collection is approximately 600MB in size. The directories are arranged by function, and should be obvious.

BlackHole — contains one soundfile meant for a blackhole or tunnel but never used in the installation.

RV — one soundfile, the sound of the RV itself (a Lincoln Continental). This was played back in a loop through NeXT-MAX (requires the Ariel/IRCAM board). A small random jitter is applied and the file is played a different speeds to effect the pitch change for fast/slow RV speeds. There is a smooth glissando between speed changes.

ScanRadio — contains several directories and files. Names of the directories are clear as to their contents, although "sports" contains weather as well. "editedBands" is the directory containing excerpts from Virtual Memory, while "rockEdited" contains excerpts from Roger's band Locos. The program mkscript produces (on stdout) a list of files to be played in order. This output is in the file "filelist". The program mkSymLinks takes as it's input (on stdin) the output of mkscript, and makes symbolic links to the files in all the directories under one directory, "symLinks". Since the symbolic files are all given numerical names, the command "sndplay symLinks/*" will play them in the correct order. For the installation, we ran another shell script which simply contained fifty or so iterations of this one command, thus playing the entire loop over and over again. Fifty is probably too many, but in fact we never estimated the length of time it took to play the entire directory through once, though I estimate 20-30 minutes.
I suggest the files in symLinks be removed before remaking this directory. To recapitulate, to make symLinks:

```
rm symLinks/*
mkscript > filelist
mkSymLinks < filelist
```

Alternatively:

```
rm symLinks/*
mkscript | mksymLinks
```

To play ScanRadio:

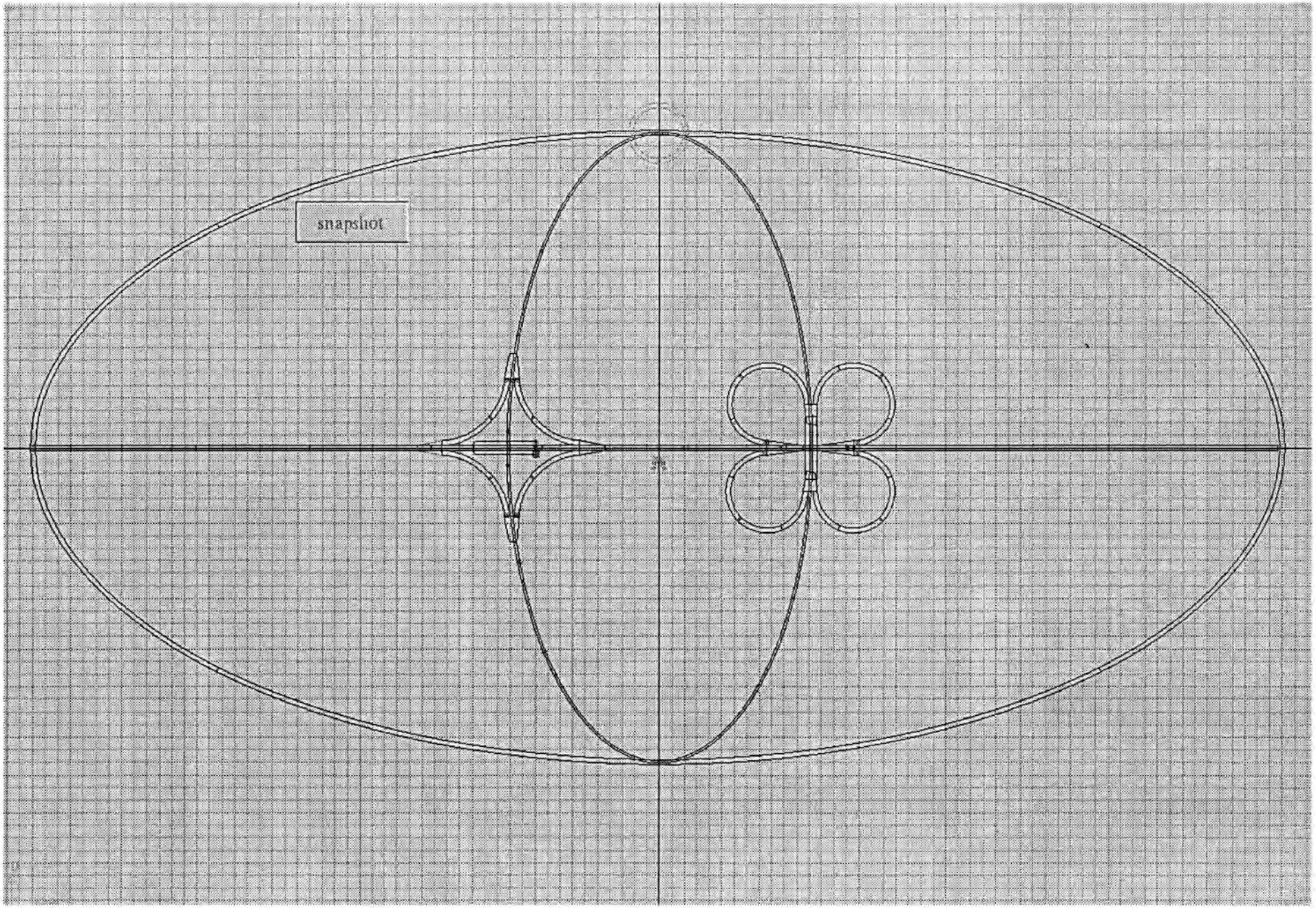
```
sndplay symLinks/*
sndplay symLinks/*
sndplay symLinks/*
sndplay symLinks/*
etc.
```

Signs — four soundfiles, one for each direction in the signs. These were also played back from the ISPW board for immediate response.

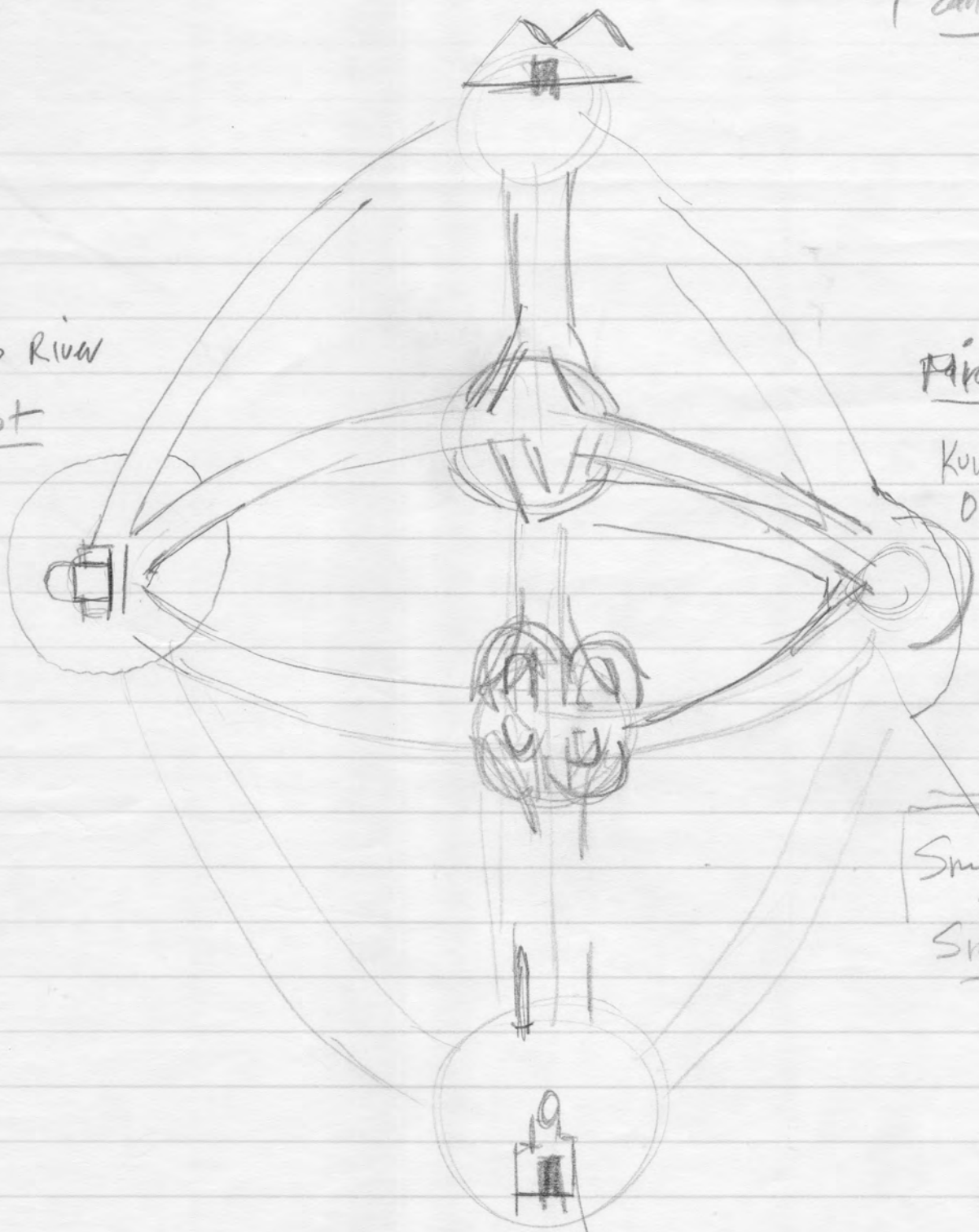
Sources — contains several directories, containing in turn source files used in the creation of the sound scape. There are also many soundfiles throughout these directories that were not used in the installation but could have been (bombs for example). The directory "VR_RVextra" also contains several rt scripts used to create the zone sounds. (rt is a program available via anonymous ftp from Princeton).

Towers — four soundfiles for Kuwait tower, Philadelphia city hall, the balck hole in Tunnel mountain, and the atomic dome at Hiroshima.

Zones — citymix1 is Philadelphia downtown, citymix2 is the suburbs, and citymix3 is the industrial zone. oceanmix was not used. oilguitarmix1 is Kuwait. oilguitarmix2 was not used. hiromix3 is Hiroshima.


snapshot

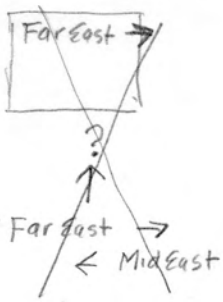
7 call D



See other towers

VR/RV
d'Agostino

West



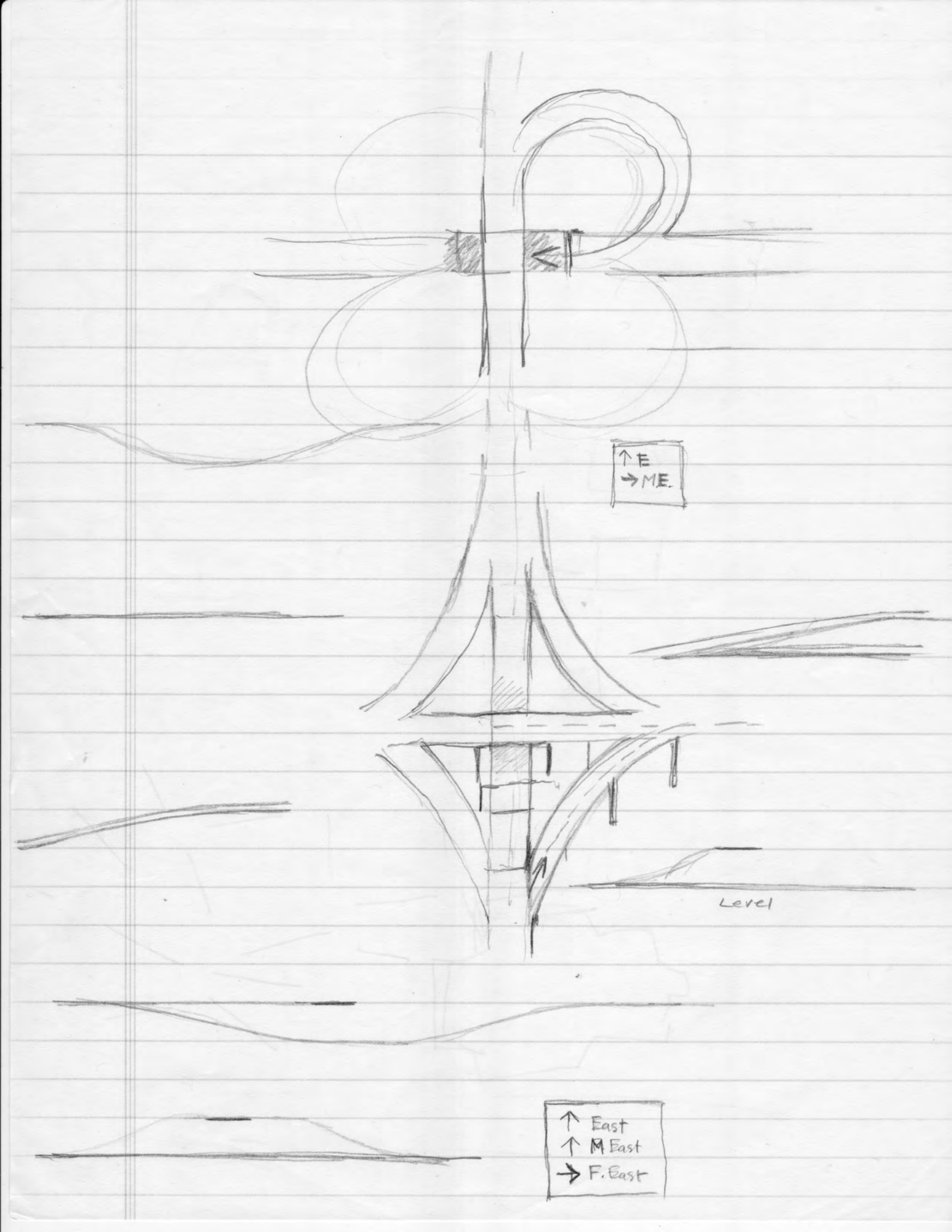
Far East

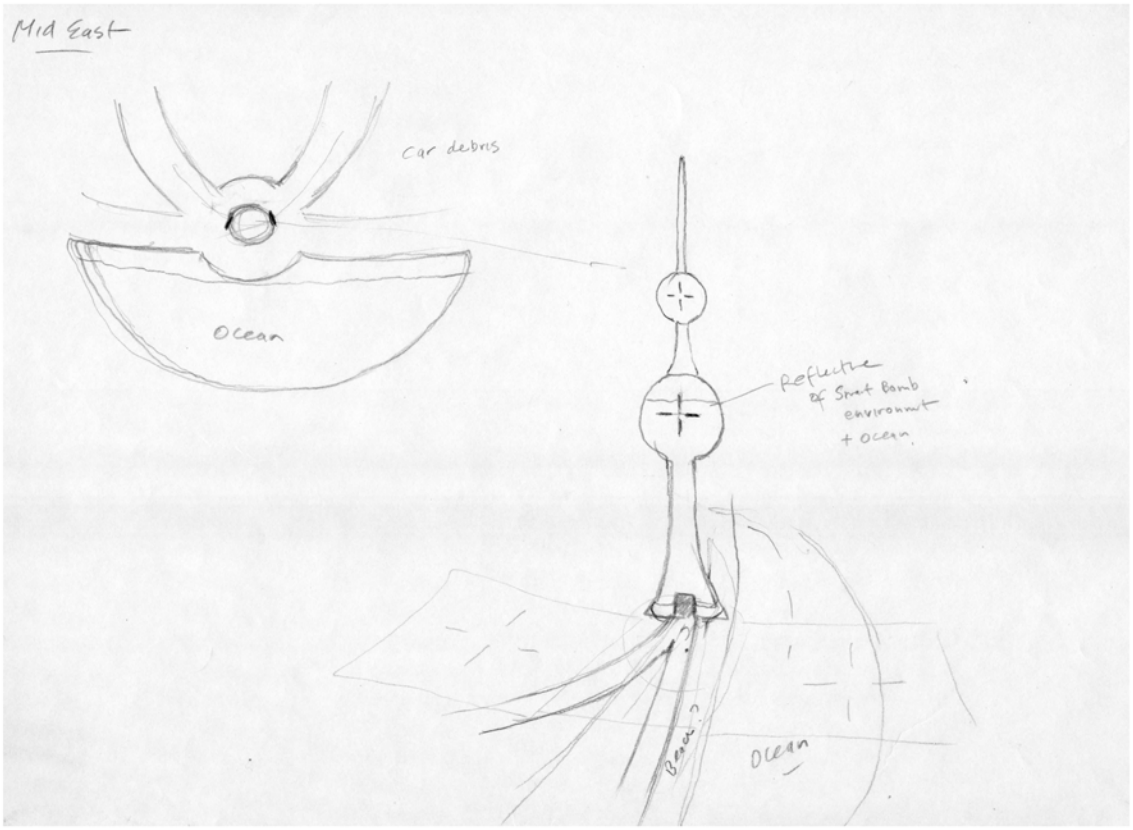
~~FE~~

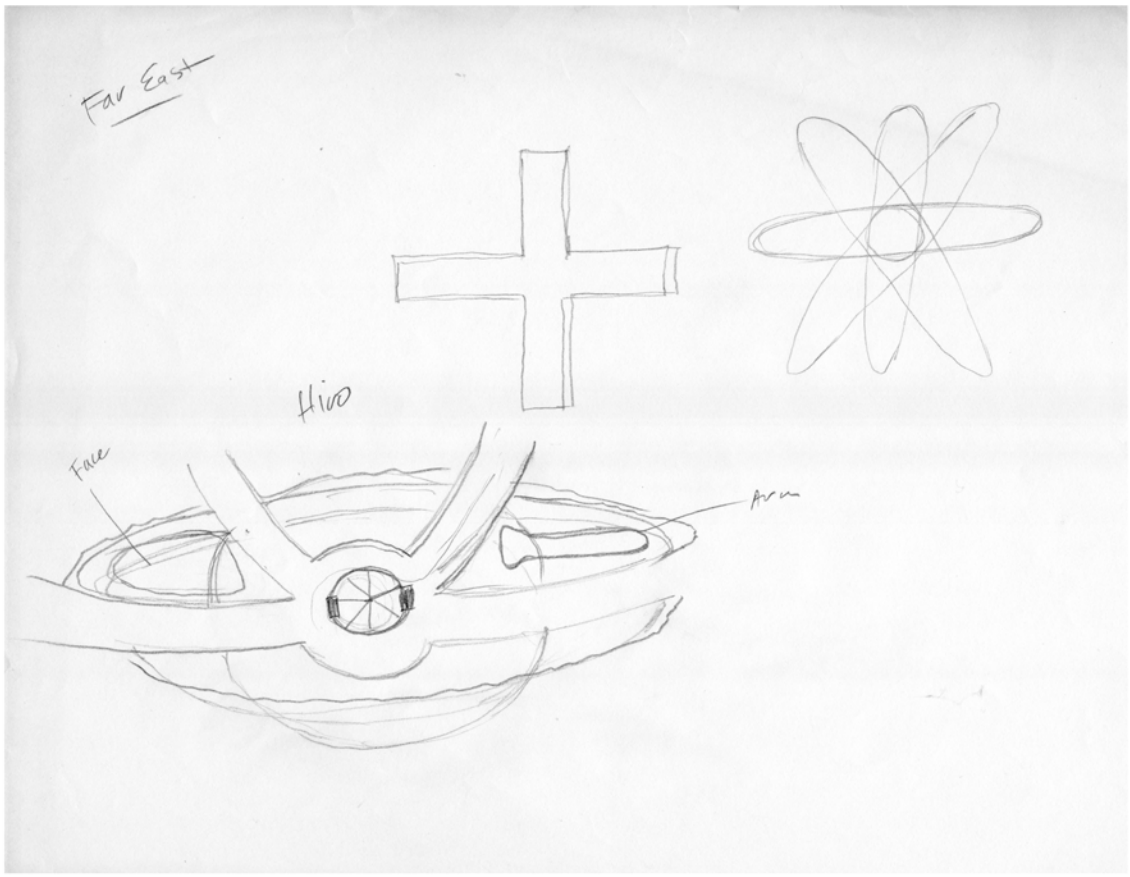
Mid-East

~~ME~~

East


↑ E
→ M E.
Level
↑ East
↑ M East
→ F. East


Mid East
Car debris
Ocean
Reflective of Smart Bomb environment + ocean.
Bomb?
Ocean

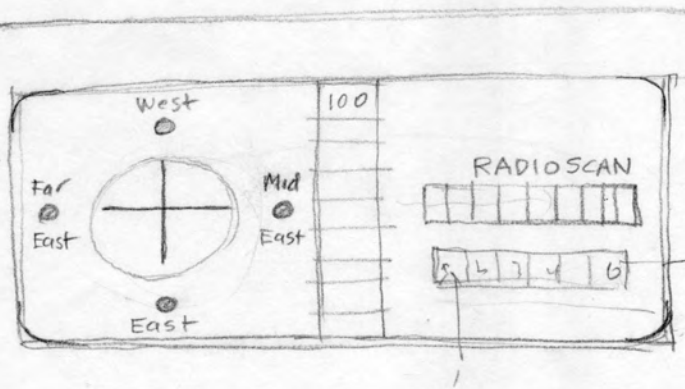

Far East
Hiro
Face
Arm

Make a billboard sign from Philly footage

RV d'Agostino

CONUNDRUMS

1 live radio source



1:30

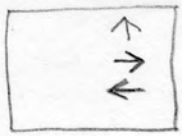
RV

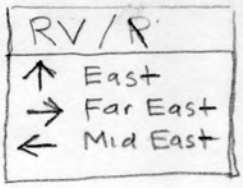
Sound: Radio

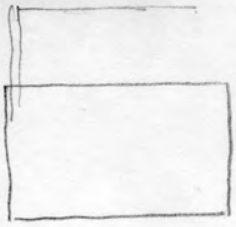
Other sounds - select to match scene

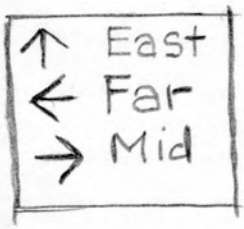
menu

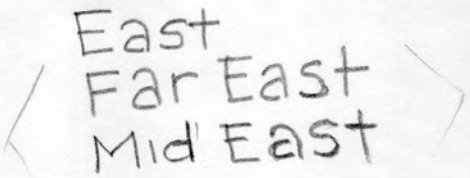
Signage

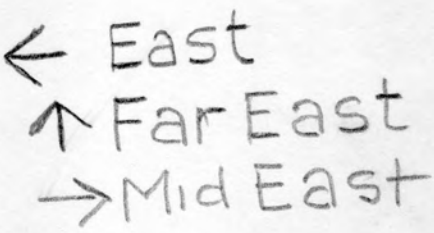


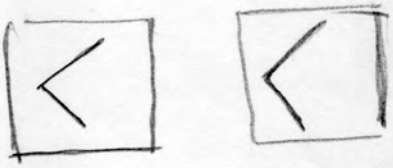


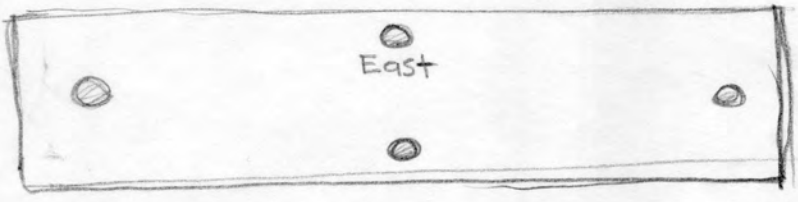


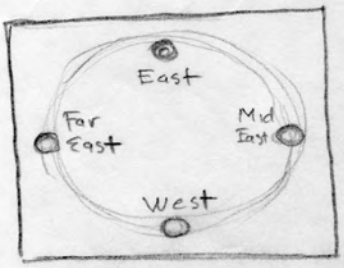


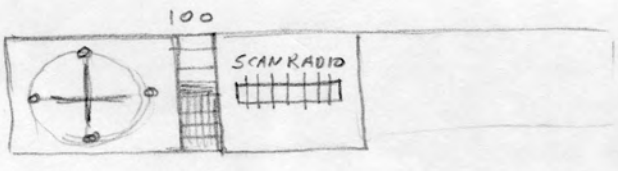












Billboards

When you stop they become Movies

See Phila. - footage

Peter d'Agostino
c/o ISEA Helsinki
Tel 358-0-7563 601
Fax 358-0-7563 602
e-mail: pda@astro.ocis.temple.edu
also cc: susanna@uiah.fi
(Tel in US for message only if necessary -do not call after 10pm Phila time
215 635-4501)

I asked Amit to keep me up on the daily meeting and send the questions that come up. Please keep the dialogue going and keep Douglas and Gordon informed on the specific needs of the project. If I don't respond to e-mail. it means that I probably didn't get access. In that case fax c/o Susanna.

Here is the current list I have compiled.

Schedule

I'm back Tues Aug 30-let's meet at 10am to fine tune the piece.
W 31 video documentation 1-6pm (Luke confirmed *)
Th 1 10-5 opens in project space (installation docu with people 1-3pm, 4-6pm edit)
F 2 10-5 continues in project space (10-6pm edit seesion)

I leave Sat AM.

1. Modeling- Raonull. We discussed control panels in RV. TV set lower and with look o being inset to dashboard. Pushbutton window on door. Speedometer and Scan radio display. Check to see that the stripe lines up -interior and exterior. Clean up rough edges on RV.

City Hall- go back to original. Keep statue on top and clean up. Drill for ride up to clock for view out front similar to Kuwait tower.

Check tunnels for glitch going out. Texture maps have color shifts.
Make mounds for Hiro head and arm.

Texture maps- Amit. Make maps for Hiro head and arm.
Add burbs and industrial area to Phila. Be prepared to adjust when I'm back.
Check Phila mapping. I liked the transparency that now seems to be off.
See if you can control levels of transparency for fine tuning when I'm back.

Video- correct freeway loop. Add waterfall to Still life for a longer segment. Call it still life. Prepare a long video segment combining key elements from all the screens including freeway and video now in RV screen to all play on RV screen.
We will complete the final version of this when I return.
Complet appropraie arrows for turns and roundabouts. Remember all roads next to A-Dome lead in. Continue working with Roanull and Sean on software needs.

Navigation- Sean.

Adjust the Black holes for the West and Phila (into the wireframe city).
If tunnels can also be black holes can we still enter one and come out another?
Check smoke, fog options to fine tune when I'm back. Water-ocean ripples, rivers flowing?

Selecting places to go from the TV screen. When the loops representing each of the locations on the map are seen on the TV screen, the pointer from the glove can get you t those black spaces we discussed. There you can see, the bomb, the fires of Kuwait, etc.

You can also see the RV below. Try positioning the RV in a different position for each site so we can see it from several different vantage points.

Also, this out of RV experience can extend to the freeway footage (which Amit must reprocess to fit the RV screen) if you point when this footage is on the screen let's hav an overhead view of the RV driving along the freeway -in real time, if possible.

The current plan for the installation is to have a loop of that aerial footage just above the Hiro dome that cycles around and up the tower be a constant if no one is in the helmut . (Correct the view from the tower so that we can see both Hiro and Kuwait ruç as we have discussed.)

See the videotape for a sense of this...also make note of the sound.

Sound-Rick and Roger.

In the sample videotape (see above where the installation is mentioned) Catalina's voic is on the preliminary loop. She repeats West, East MidEast and Far East...

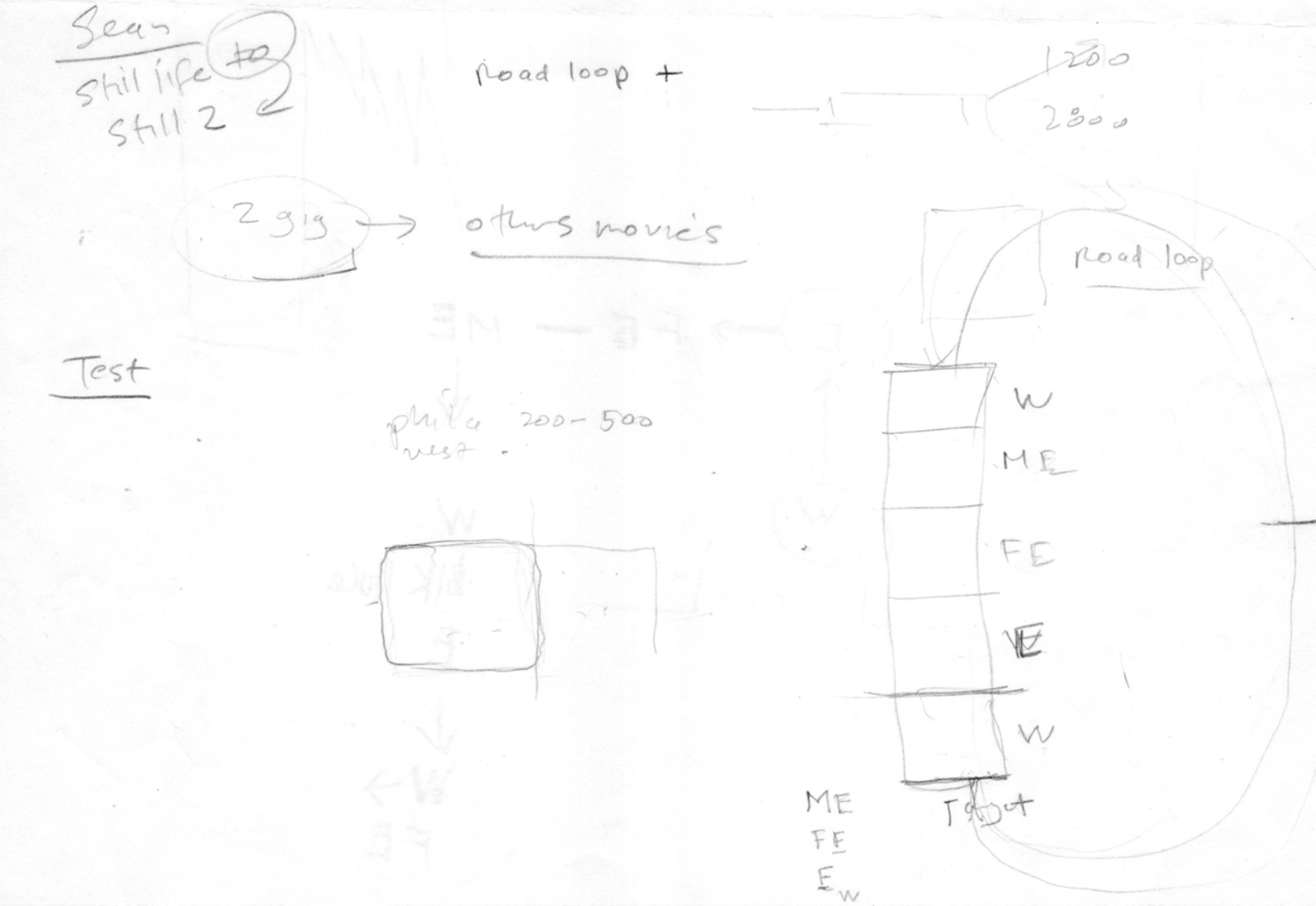
Her voice also functions to inform the driver of the RV of the selection that is made. Point to an arrow and she says the appropriate destination.

Scan radio should be refined. Rick -take out some of your solos eg: "500 miles" and replace with mostly Carol's voice. The duet is generally good.

Check speed or whatever it takes to trigger sound for the separate areas. We also need the vehicle sound. Window up and down differences, etc. Locations should intensify. When we're near the Kuwait fires, for example.

I await your questions and comments. Thanks, Peter

```
 6429868 Aug 12 13:52 Raw/buffalo2.mv                                (593)
 6940432 Aug 12 14:09 Raw/building-with-man.mv                       (605)
 9668176 Aug 12 13:41 Raw/elk1.mv                                    (899)
 8459492 Aug 12 12:45 Raw/horse1.mv                                  (722)
 8403752 Aug 12 12:48 Raw/horse2.mv                                  (722)
 7726212 Aug 12 12:52 Raw/horse3.mv                                  (678)
 3625536 Aug 12 14:04 billboard/billboard.mv          2      324
 6297560 Aug 12 13:48 buffalo1/buffalo1.mv            3      550
 1113360 Aug 12 14:11 cityhall/cityhall.mv            1       75
 5204924 Aug 12 13:44 elk-air/elk-air.mv              1      445
 2316600 Aug 16 18:41 freeway/freeway.mv             16      853
 4449736 Aug 16 18:36 hiro-loop/hiro-loop.mv          4      671
 4449736 Aug 18 13:12 hiro2/hiro-loop.mv                             (638)
12123440 Aug 12 12:28 kcity/kcity.mv                 19     1050
 2402488 Aug 16 10:56 mushroom-cloud/mushroom-cloud.mv 2      243
12449040 Aug 16 15:27 phila-loop/phila-loop.mv       14     1470
16653472 Aug 12 11:34 roadloop1w/roadloop1w.mv       15     1420
31946592 Aug 23 11:41 rv-loop/rv-loop.mv            ***     ****
 4619320 Aug 12 13:55 sheep/sheep.mv                  1      374
10250912 Aug 12 11:23 still-life/still-life.mv      110      810
24754952 Aug 22 18:43 still2/still2.mv               1     2185
 6306048 Aug 16 15:20 target-on-river/target-on-river.mv 11    788
 8912716 Aug 12 14:01 tourist-bus/tourist-bus.mv      4      757
32924576 Aug 12 12:17 train/train.mv                 21     2911
 9823744 Aug 16 11:11 train2/train2.mv               25     1478
14275468 Aug 12 12:40 waterfall/waterfall.mv         9     1244
21371784 Aug 16 17:32 west-loop/west-loop.mv        14     2607
```



```
#define TRIG_STOP_POINTAT_TRAIN          81
#define TRIG_START_POINTAT_WEST          82
#define TRIG_STOP_POINTAT_WEST           83
#define TRIG_START_POINTAT_PHILA         84
#define TRIG_STOP_POINTAT_PHILA          85
#define TRIG_START_POINTAT_KUWAIT        86
#define TRIG_STOP_POINTAT_KUWAIT         87
#define TRIG_START_POINTAT_HIROSHIMA     88
#define TRIG_STOP_POINTAT_HIROSHIMA      89
#define TRIG_START_POINTAT_STILLLIFE     90
#define TRIG_STOP_POINTAT_STILLLIFE      91

#define TRIG_RV_FAST_SPEED               100
#define TRIG_RV_SLOW_SPEED               101

#define RADIO_MAX_VOLUME                 7
#define TRIG_RADIO_VOLUME_0              110
#define TRIG_RADIO_VOLUME_1              111
#define TRIG_RADIO_VOLUME_2              112
#define TRIG_RADIO_VOLUME_3              113
#define TRIG_RADIO_VOLUME_4              114
#define TRIG_RADIO_VOLUME_5              115
#define TRIG_RADIO_VOLUME_6              116
#define TRIG_RADIO_VOLUME_7              117

#define TRIG_START_TOWER_KUWAIT          130
#define TRIG_STOP_TOWER_KUWAIT           131
#define TRIG_START_TOWER_HIROSHIMA       132
#define TRIG_STOP_TOWER_HIROSHIMA        133
#define TRIG_START_TOWER_PHILA           134
#define TRIG_STOP_TOWER_PHILA            135
#define TRIG_START_TOWER_WEST            136
#define TRIG_STOP_TOWER_WEST             137
```

?

— ignore

Sound Design

3–4 mins

1	2	6	4	5	6
BANDS	CONUN	Carol/Rick	Talk	Rock	MISC
OK	1. Lexicon	1. 500 mi	1. George	1. Day Time	E M O F W O E
			2. CNN live		
			3. Oliver (level)		
			2 George		

500 miles → Lord 1/2/3/4

— George —

Albula 2

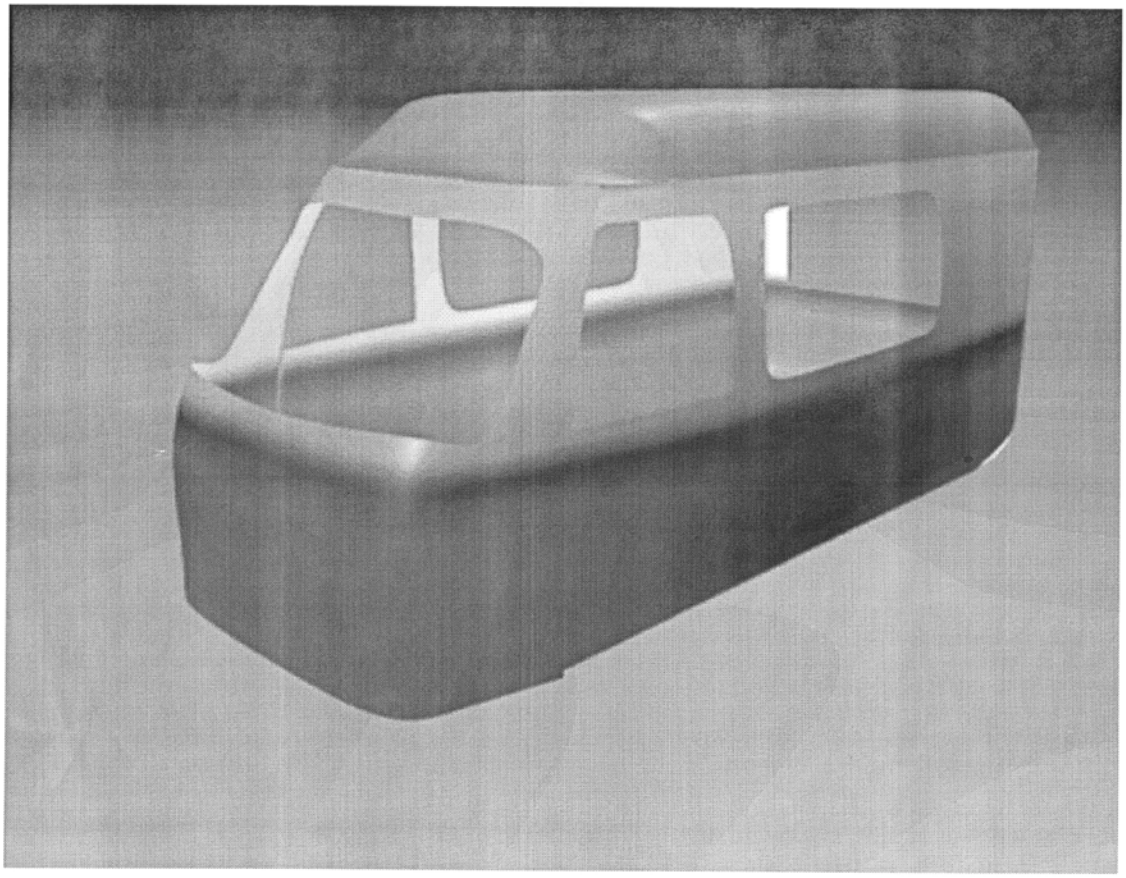
E M O F W

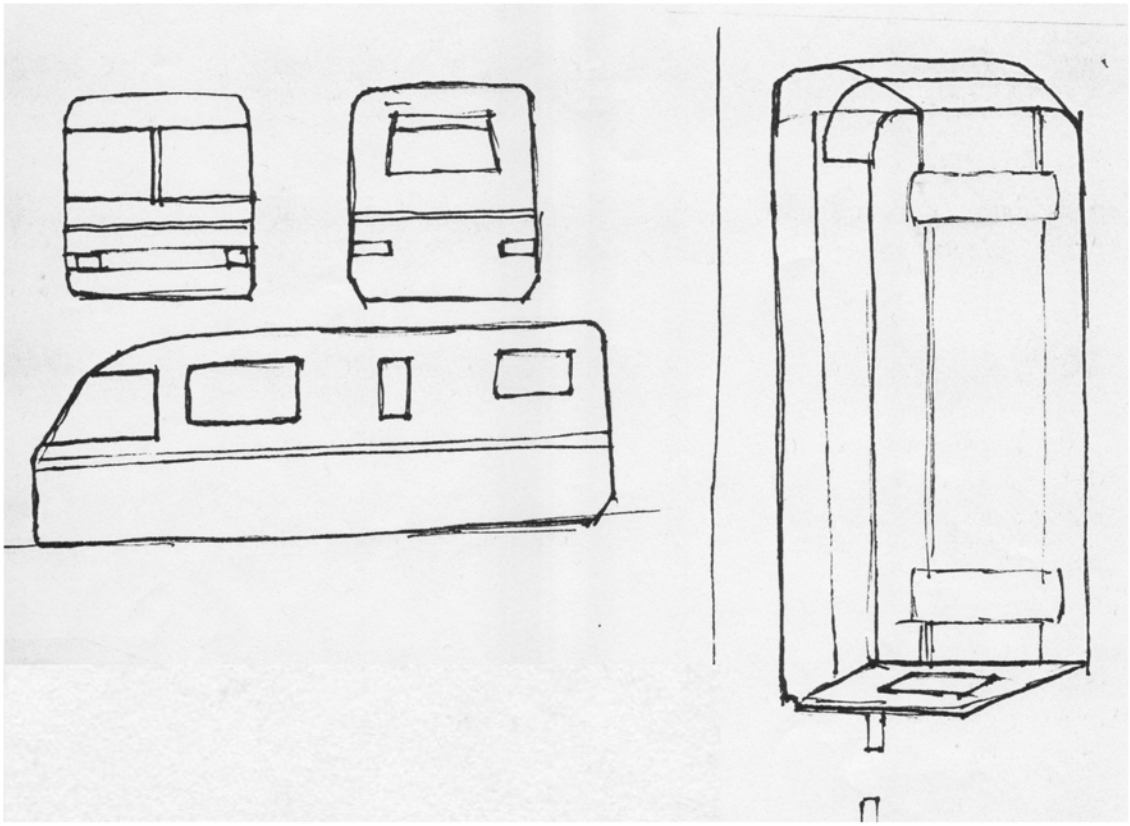
music changing — music

add Oppenheimer → 2

on Talk

MISC





Pace Arrow
The Leading Edge of RV Refinement

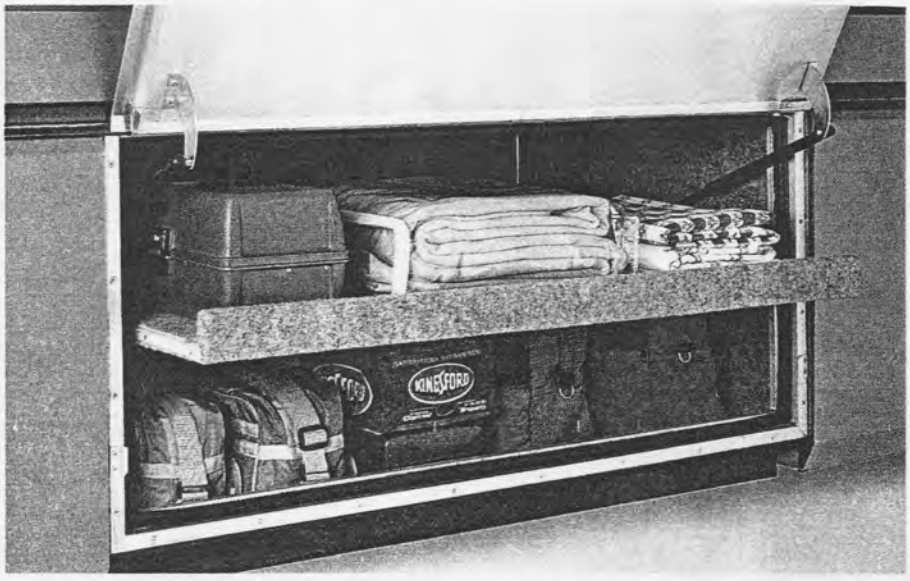
The 1993 Pace Arrow introduces you to the leading edge of RV refinement. The innovative Pace Arrow was the first to come out with an aerodynamic one-piece fiberglass front end and crowned roof. Less air resistance means better fuel economy and adds to a smoother, quieter, more comfortable ride.

Wraparound urethane bumpers are flexible to resist dings and are backed by a sturdy steel impact beam.

Pace Arrow's large. curved windshield provides an excellent panoramic view.

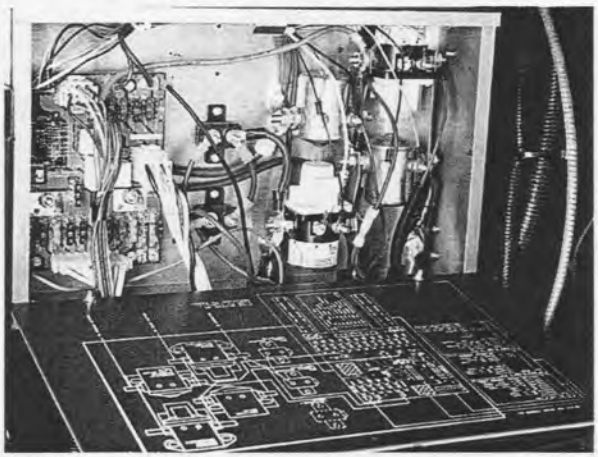
Halogen headlights and integrated wraparound turn signals offer the utmost in safety. The rugged stretch-formed aluminum grille has chip-resistant powder paint. Behind the grille are built-in air baffles to direct the flow of air to the engine for more efficient cooling.

The 1993 Pace Arrow features a large upper body radius to lower body profile for better air management. The fuel fill is rear mounted for convenience. The large wraparound taillights are integrated into Pace Arrow's automotive body styling. An exterior wash-down kit makes rinse-offs easy when you're outside.



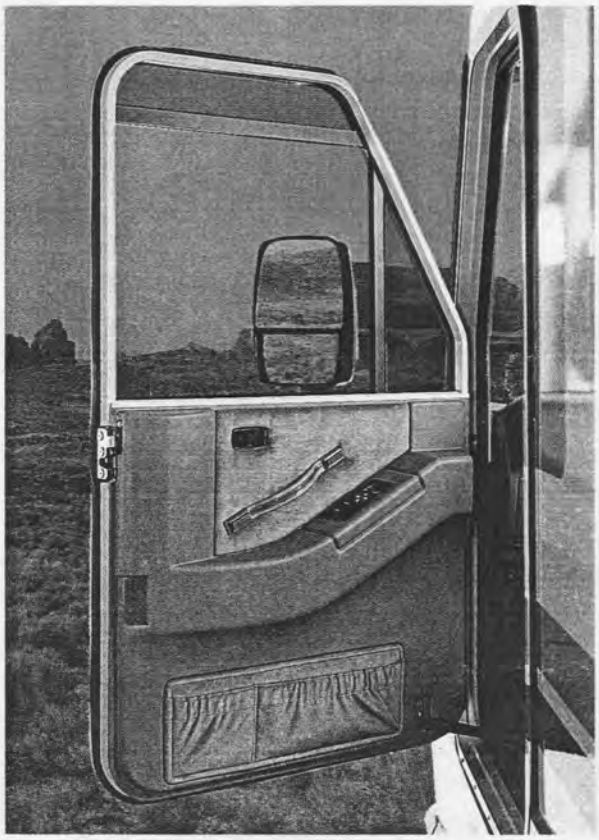
Pace Arrow's Storage System

Pace Arrow's exterior storage capacity is legendary. The doors are one-piece heavy-gauge aluminum with heli-arc welded frames. Die-cast metal paddle latches are flush mounted and have an integrated key lock. It only takes one hand to open and close the doors. Gas lift struts hold the doors up, letting you use both hands to load and unload. Continuous one-piece bulb seals keep dust and water out. The compartments are made of corrosion resistant galvanized steel and are lined with mildew resistant Ozite carpet to protect your cargo. Each compartment also has a utility light for convenience.

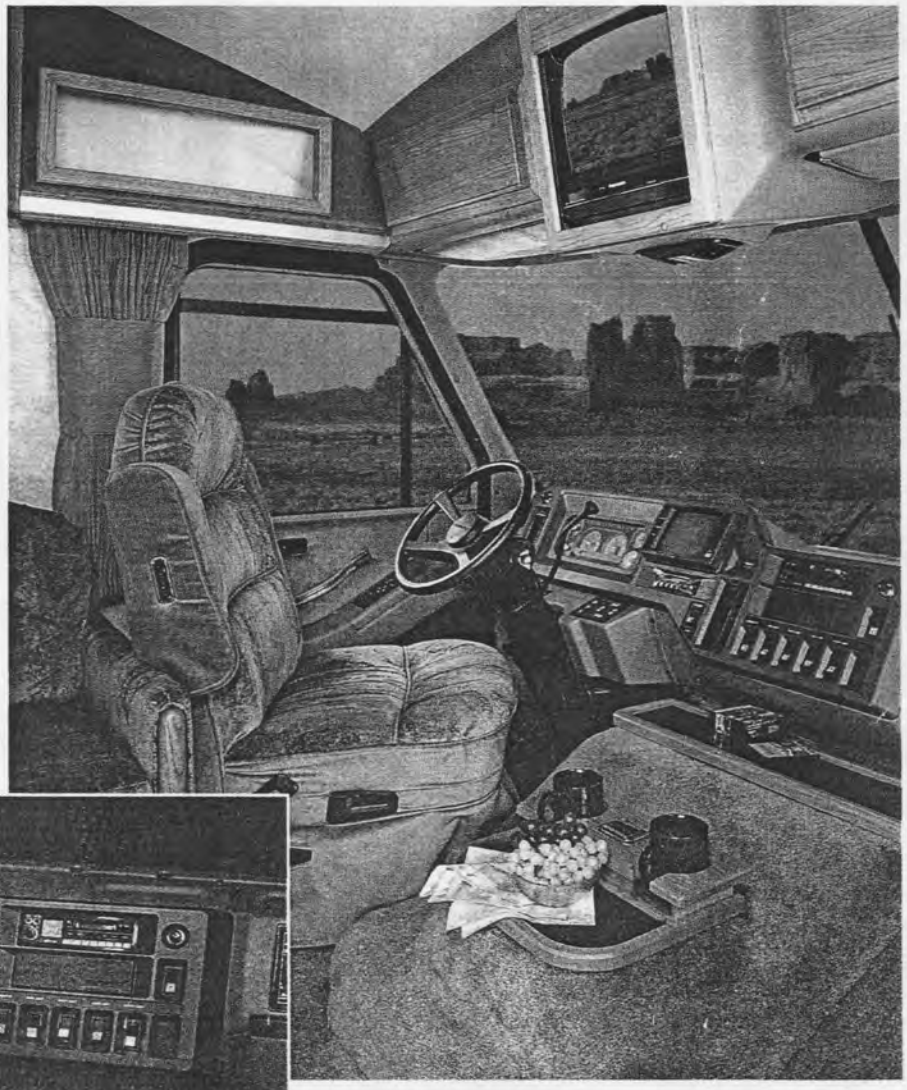


Pace Arrow As Functional As It Is Attractive

A new Fleetwood designed advanced chassis electrical center makes checking and maintaining your Pace Arrow a whole lot easier. Instead of a confusing collection of colored wires, each wire includes easy to read labeling printed all along the insulation. Each and every circuit is clearly identified for better organization and ease of service. The wiring harnesses are equipped with pin and socket connectors, so they will only go into the receptacle one way...the right way.



Pace Arrow offers a standard driver's door that includes a molded, sculpted door panel with padded inserts and an arm rest for comfort. A handy map pocket, a safe and secure double-latch lock and a power window are also included.



The driver's environment is ergonomically designed for efficiency and comfort. The color-keyed, precision molded dash with soft foam cover houses full instrumentation with fiber optic back lighting.