Radiance Workshop 2008

Fribourg

Science, Theatre, Sculpture,....

"an ongoing journey with Radiance and Light"

-Rob Shakespeare

Summer 2006

Commissioned to develop a light sculpture celebrating the 25th anniversary of the I.M.Pei designed Indiana University Art Museum

The Canvas

early concept sketch

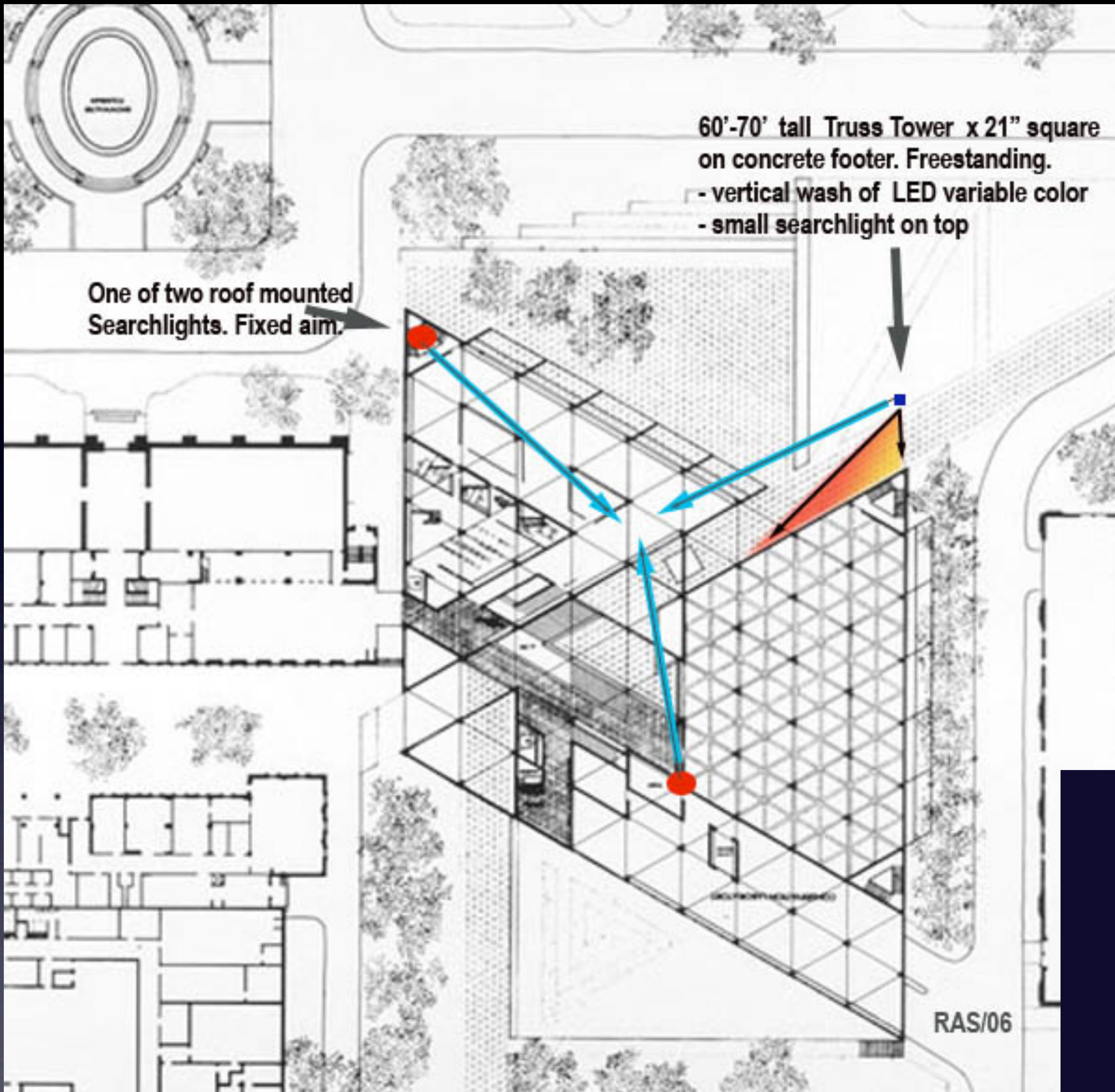
attract Bloomington - sky tracker

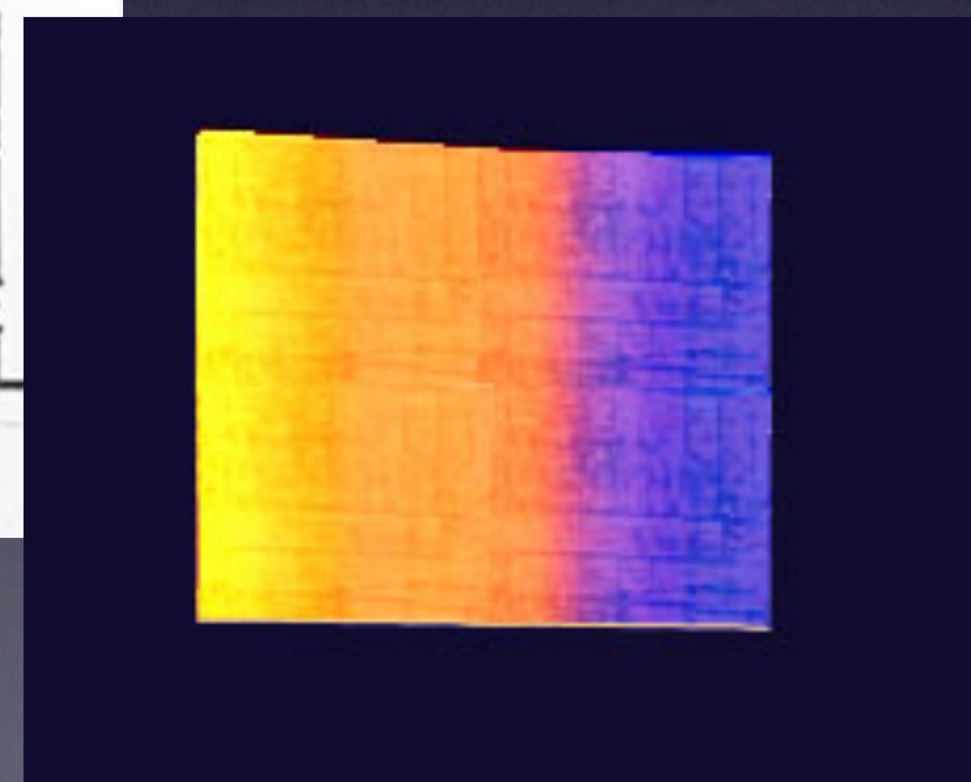
campus visibility - tower and luminous lighting

atrium allure - interior light sculpture

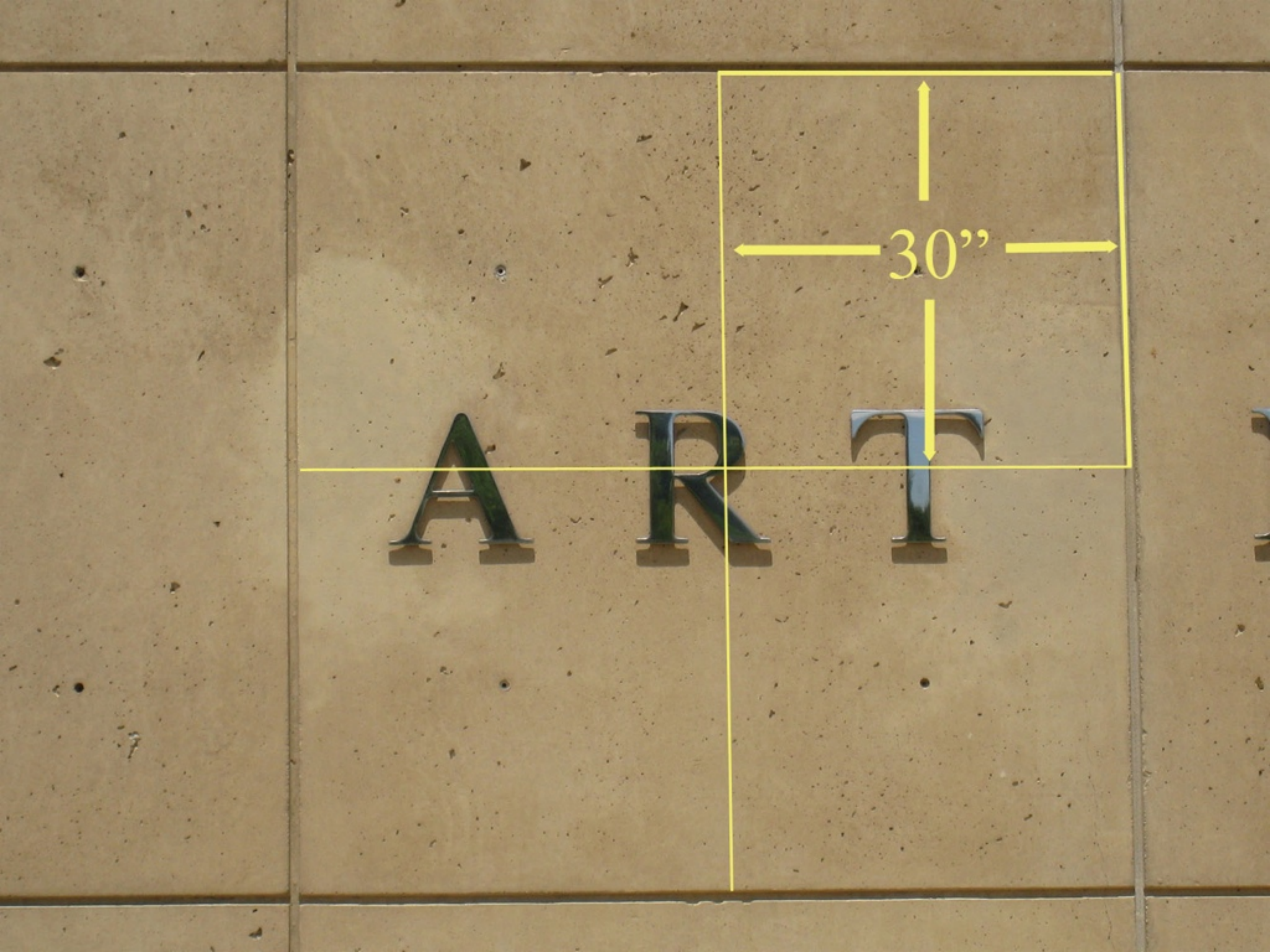
FEASIBILITY

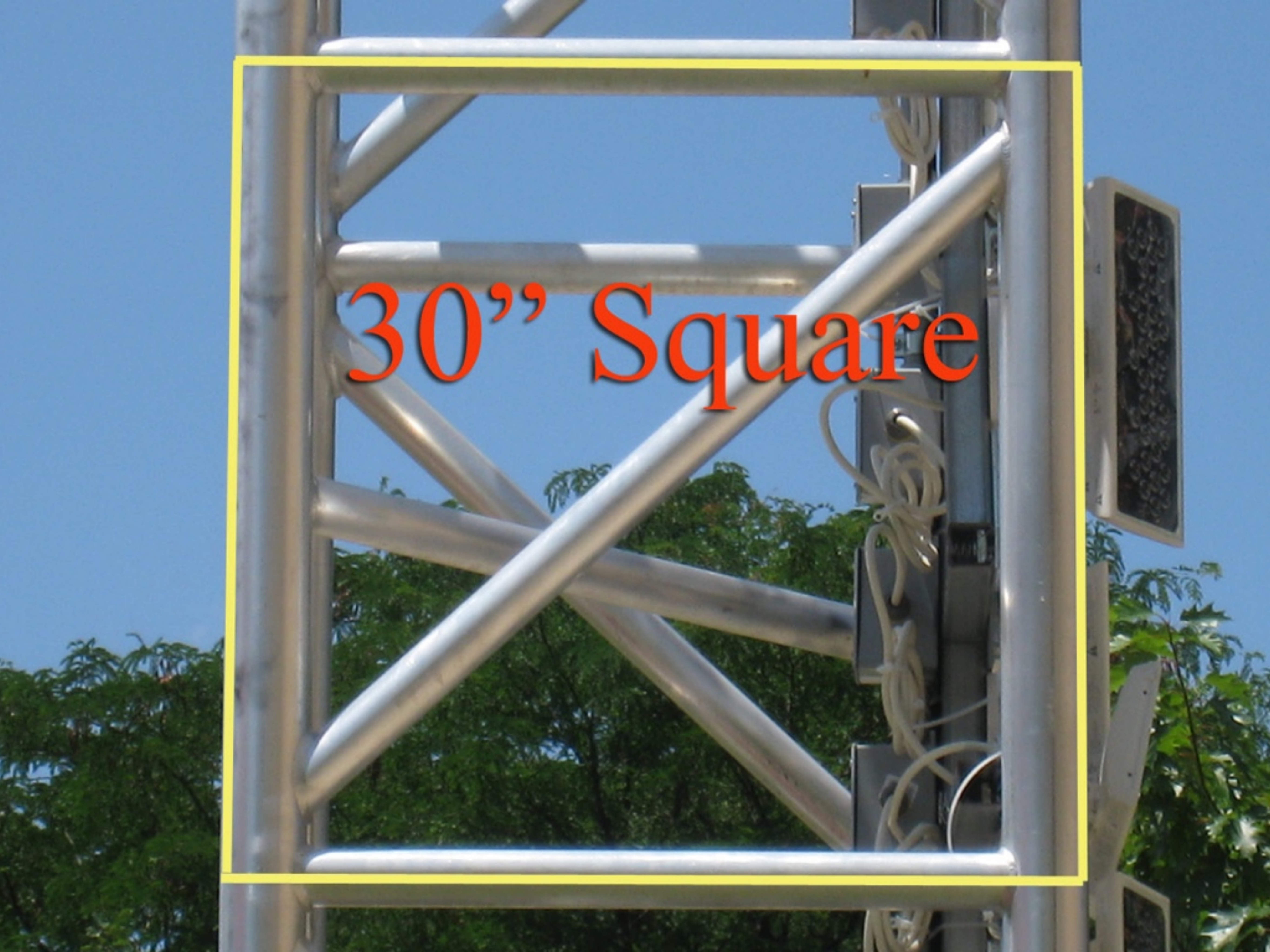
Exploring location and color patterns






5’
ART MUSEUM

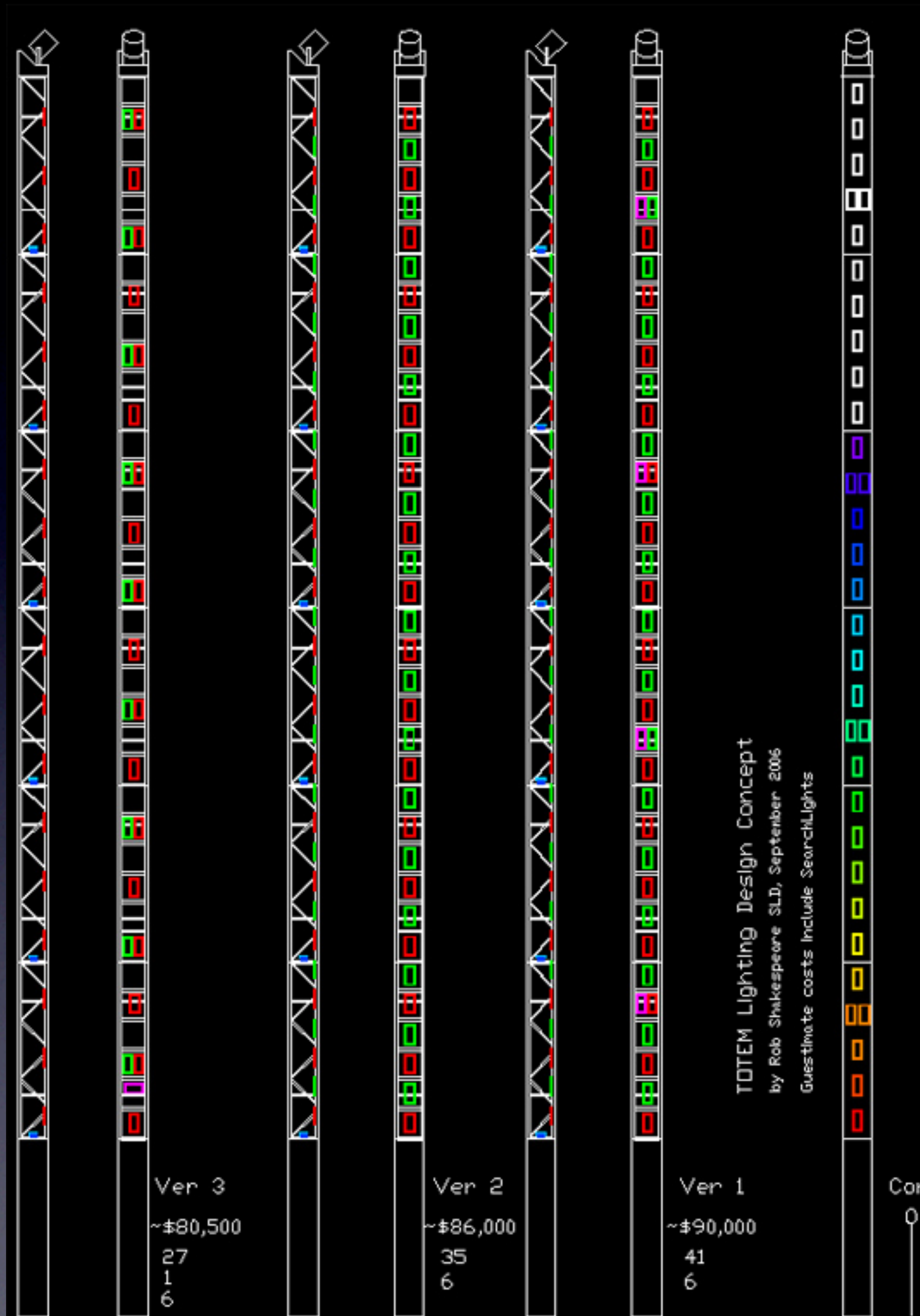

30”
A R T


30" Square


ART

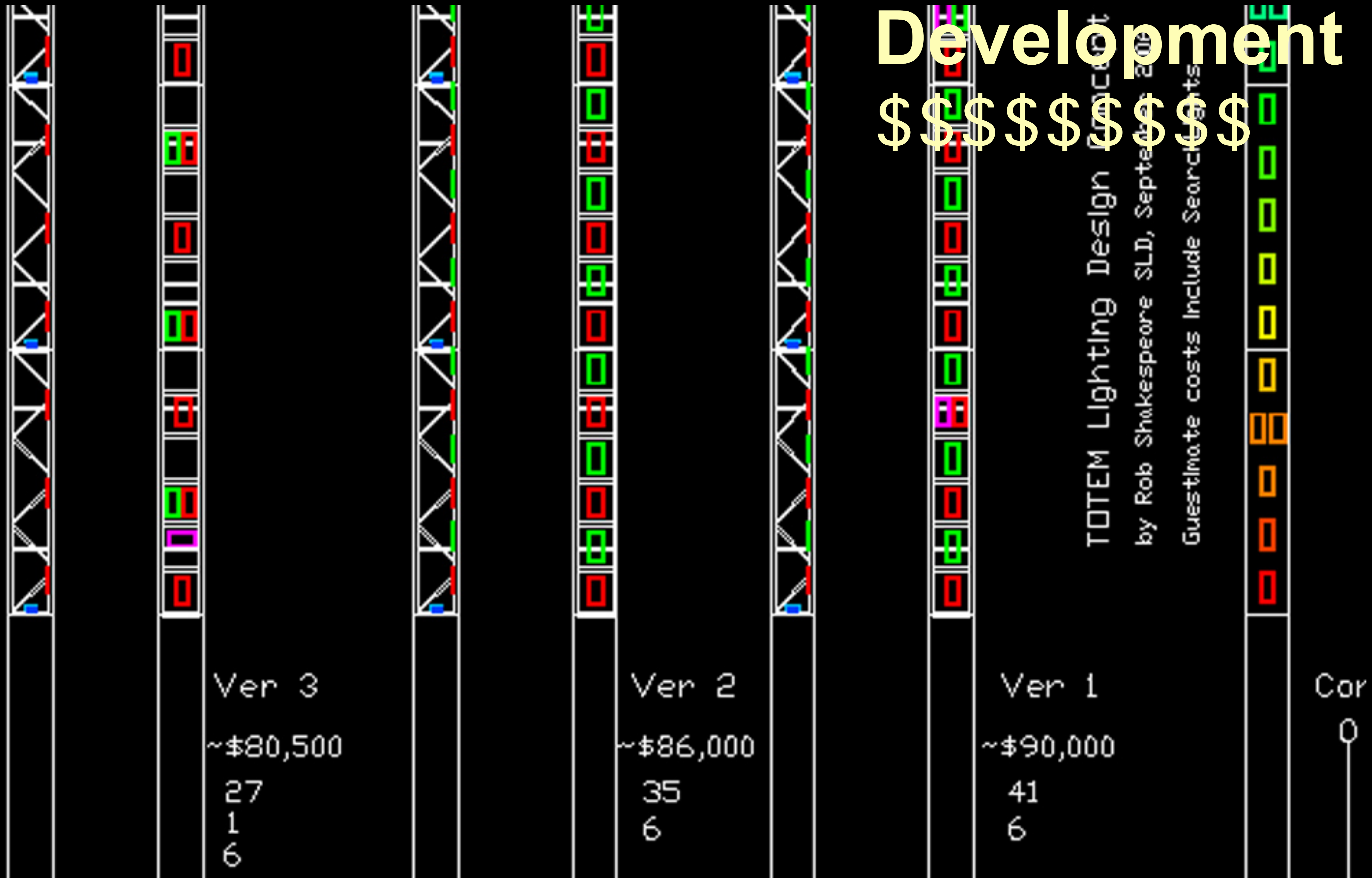

Design Development

Exploring truss column and patterns



Design Development

$$$$$$$$$

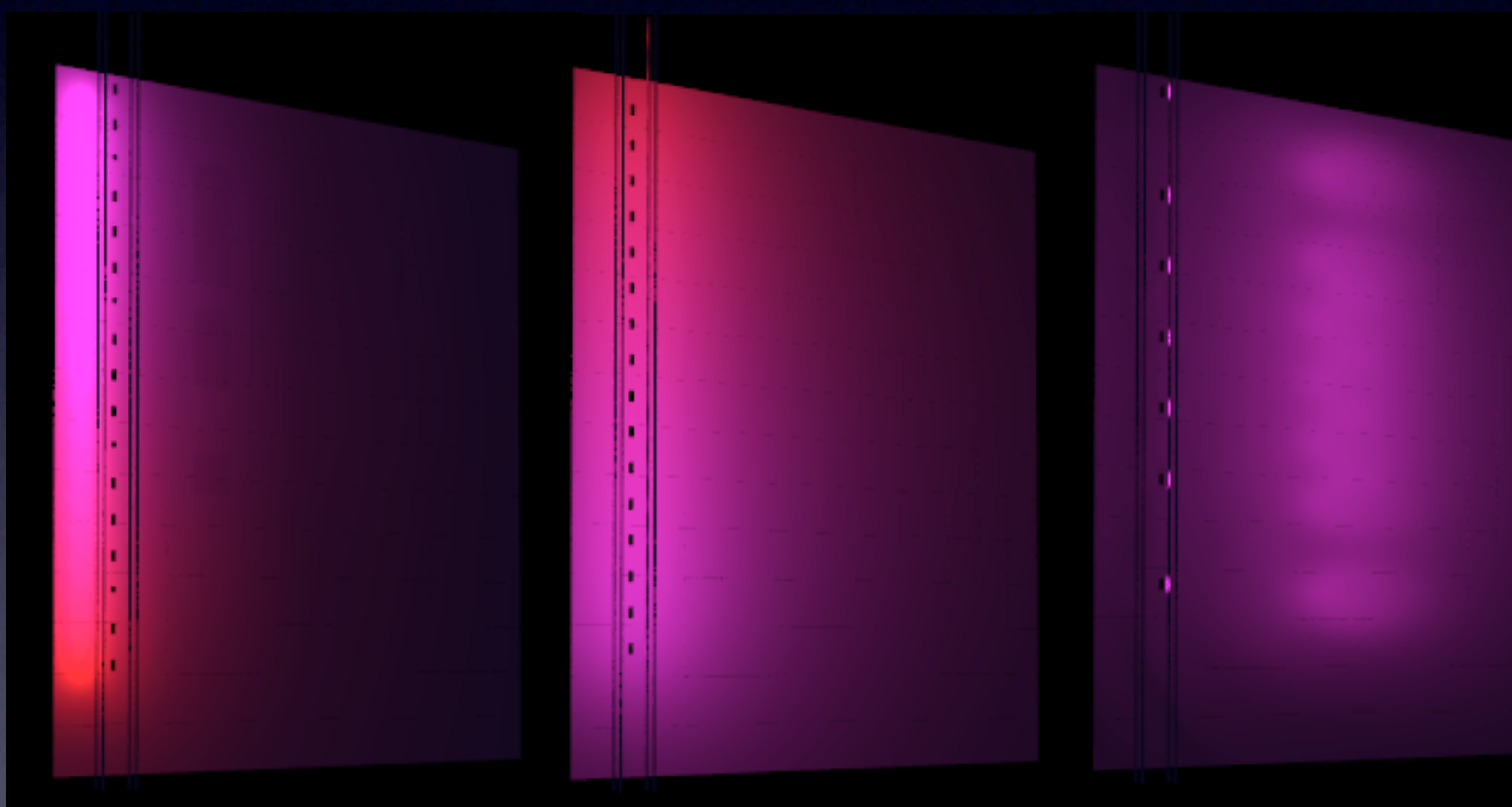


Design Development

Explore luminaires

Selected Color Kinetic's Color Blast

-good track record
-weather proof IP66
-linear dimming curve
- long lamp life ~50,000 hrs
- 50 w max Lumens: R212 G379 B137
(estimated 50w x 50 x .5 avg - 250w = ~1Kw)
- useful beam spreads 8, 10 & 23 degrees



Aiming sketches to determine coverage and quantity

Wall: 70' tall 100' wide

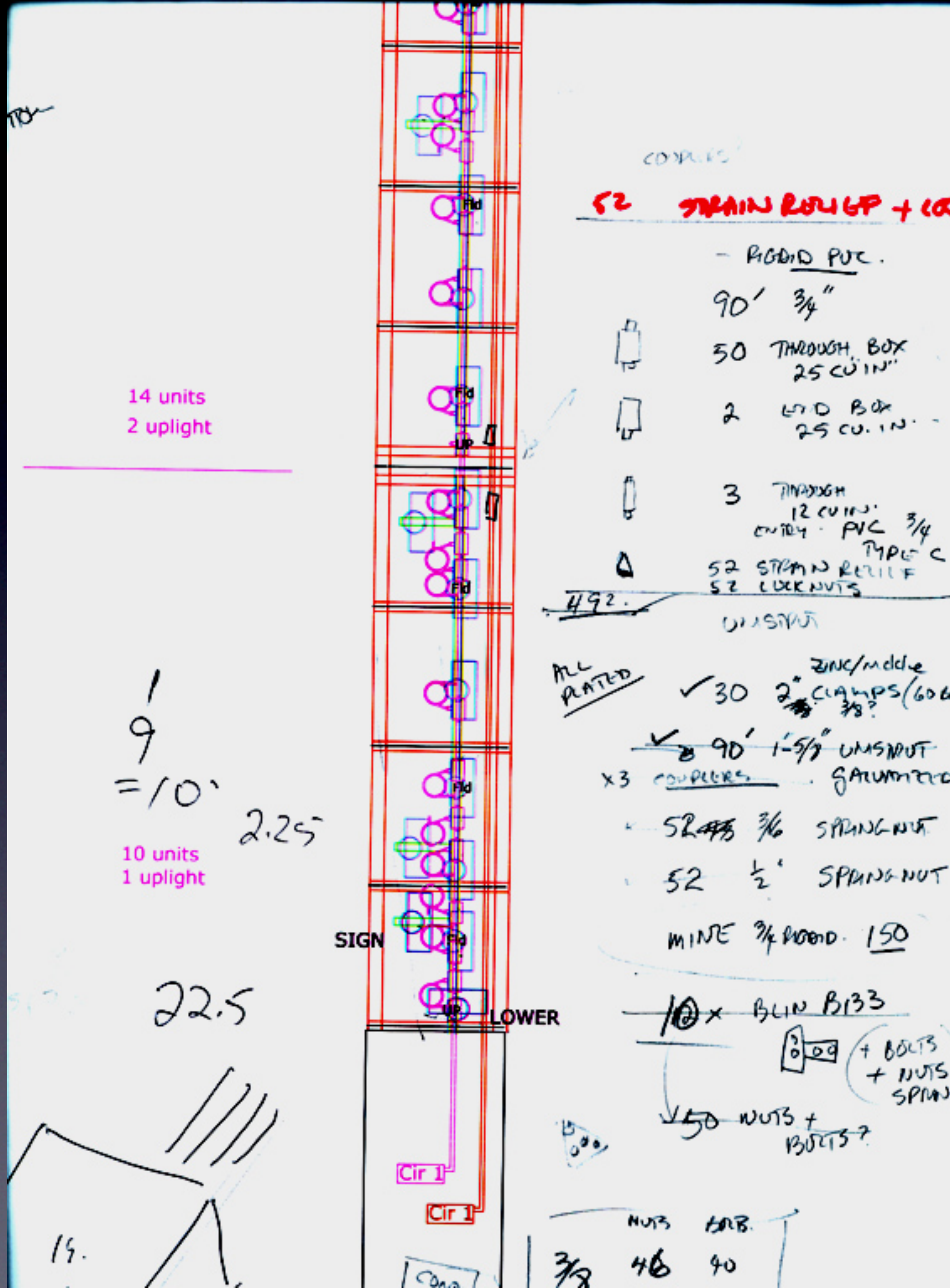
CK-intensities.xls

	A	B	C	D	E	F	G	H	I
1				*	*			17	0.058
2	#NEAR								
3	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c1	CBC.ies
4	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c2	CBC.ies
5	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c3	CBC.ies
6	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c4	CBC.ies
7	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c5	CBC.ies
8	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c6	CBC.ies
9	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c7	CBC.ies
10	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c8	CBC.ies
11	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c9	CBC.ies
12	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c10	CBC.ies
13	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c11	CBC.ies
14	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c12	CBC.ies
15	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c13	CBC.ies
16	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c14	CBC.ies
17	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c15	CBC.ies
18	!ies2rad -t default -df -m	1	-c	0.05	0.00	0.25	-o	c16	CBC.ies

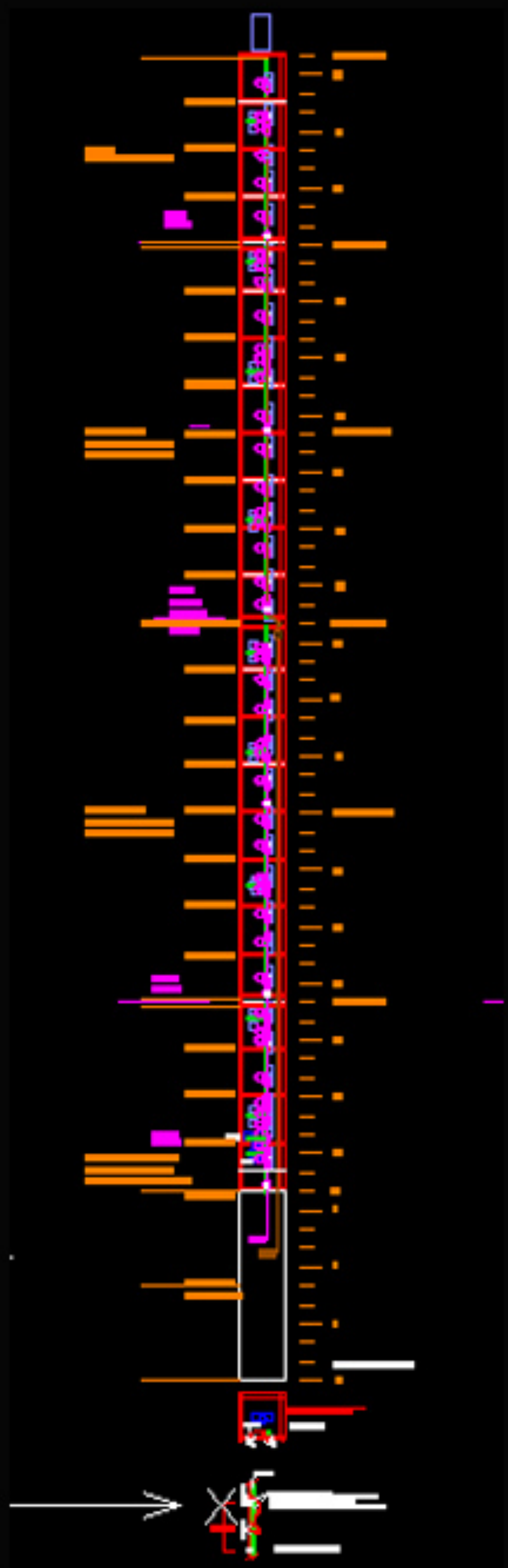
ck-locations.xls

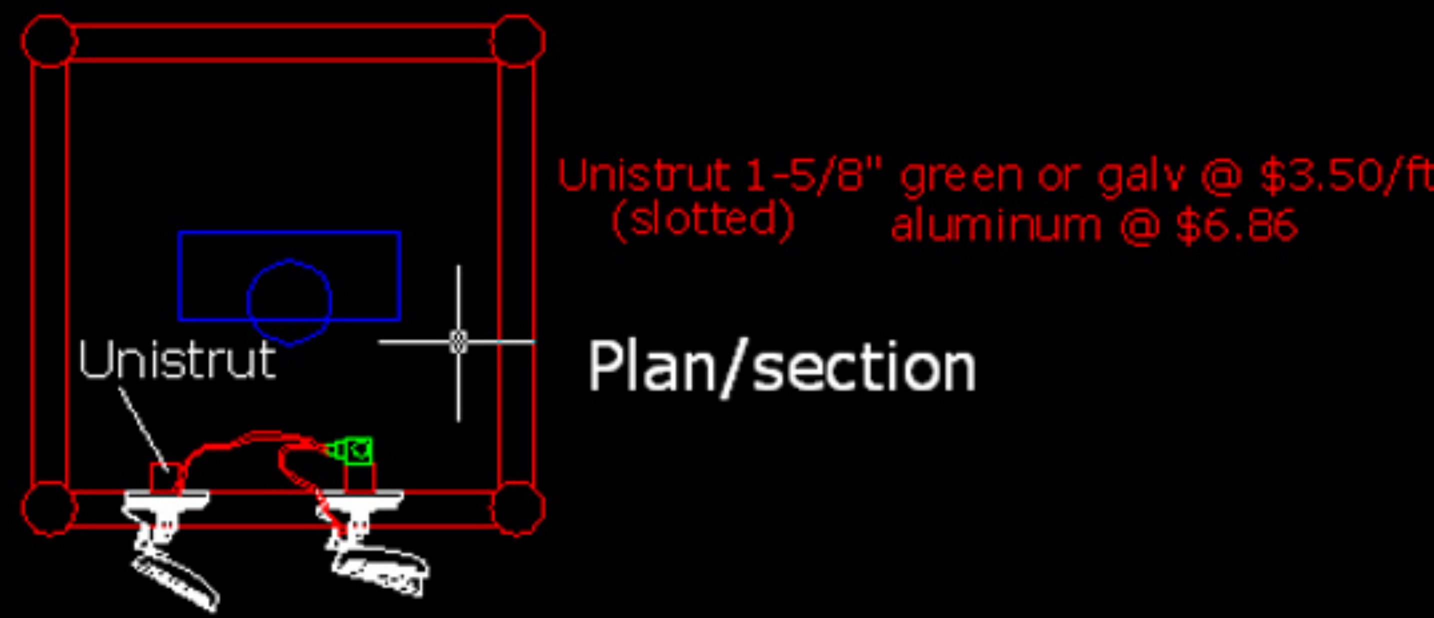
	E	F	G	H
1				
2	MIDS	Z		
3	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	11.00	1.rad	lb.rad
4	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	14.50	2.rad	lb.rad
5	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	18.00	3.rad	lb.rad
6	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	21.50	4.rad	lb.rad
7	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	25.00	5.rad	lb.rad
8	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	28.50	6.rad	lb.rad
9	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	32.00	7.rad	lb.rad
10	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	35.50	8.rad	lb.rad
11	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	39.00	9.rad	lb.rad
12	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	42.50	10.rad	lb.rad
13	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	46.00	11.rad	lb.rad
14	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	49.50	12.rad	lb.rad
15	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	53.00	13.rad	lb.rad
16	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	56.50	14.rad	lb.rad
17	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	60.00	15.rad	lb.rad
18	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	63.50	16.rad	lb.rad
19	!xform -n ch1 -rx 90 -ry 0 -rz -24 -t .5 -25	67.00	17.rad	lb.rad
20				

Spread sheets were useful to write the in-line ies2rad commands used to facilitate simulation sequences of undulating color changes

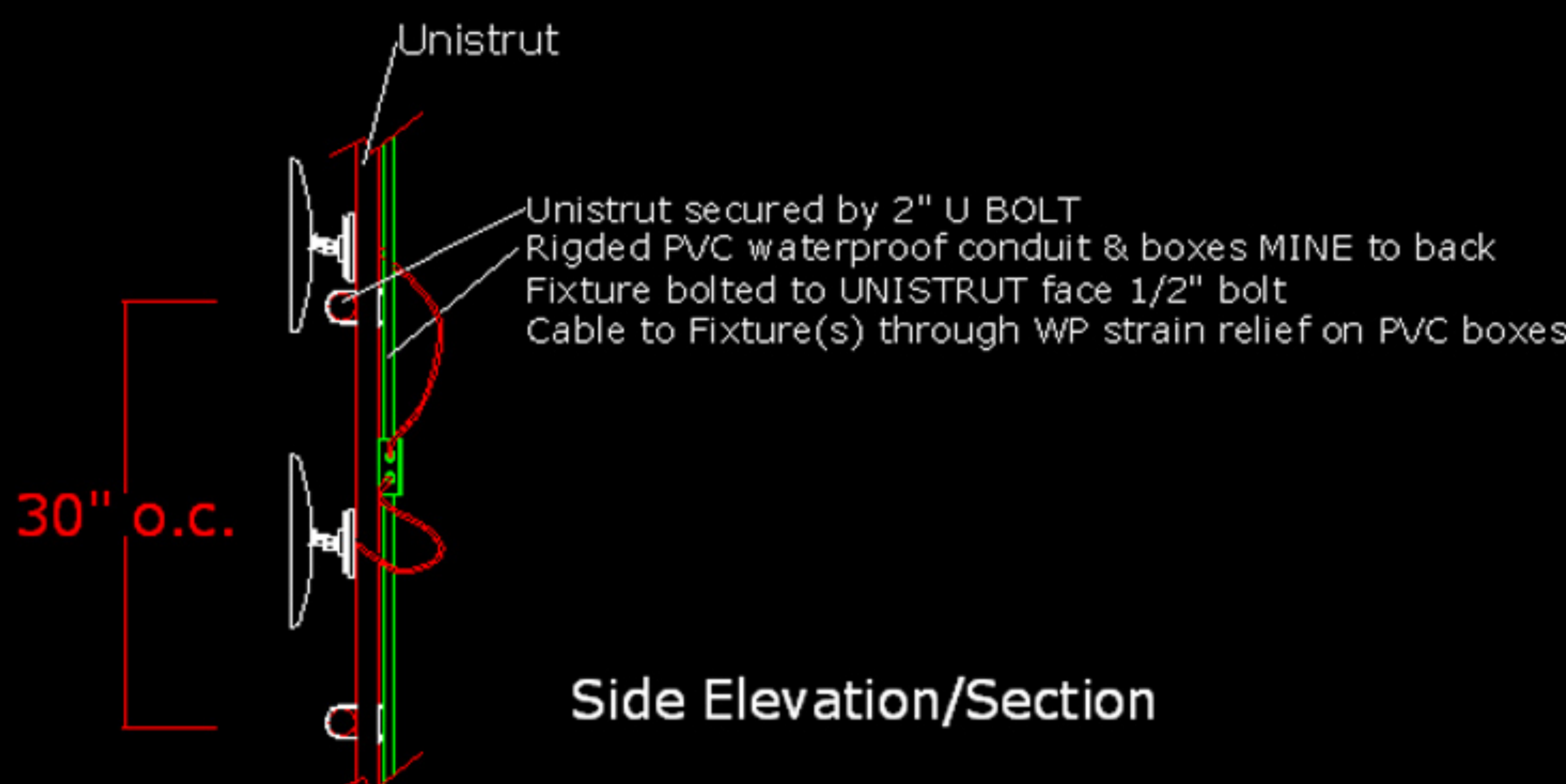


Mechanical sketch
tighter costing

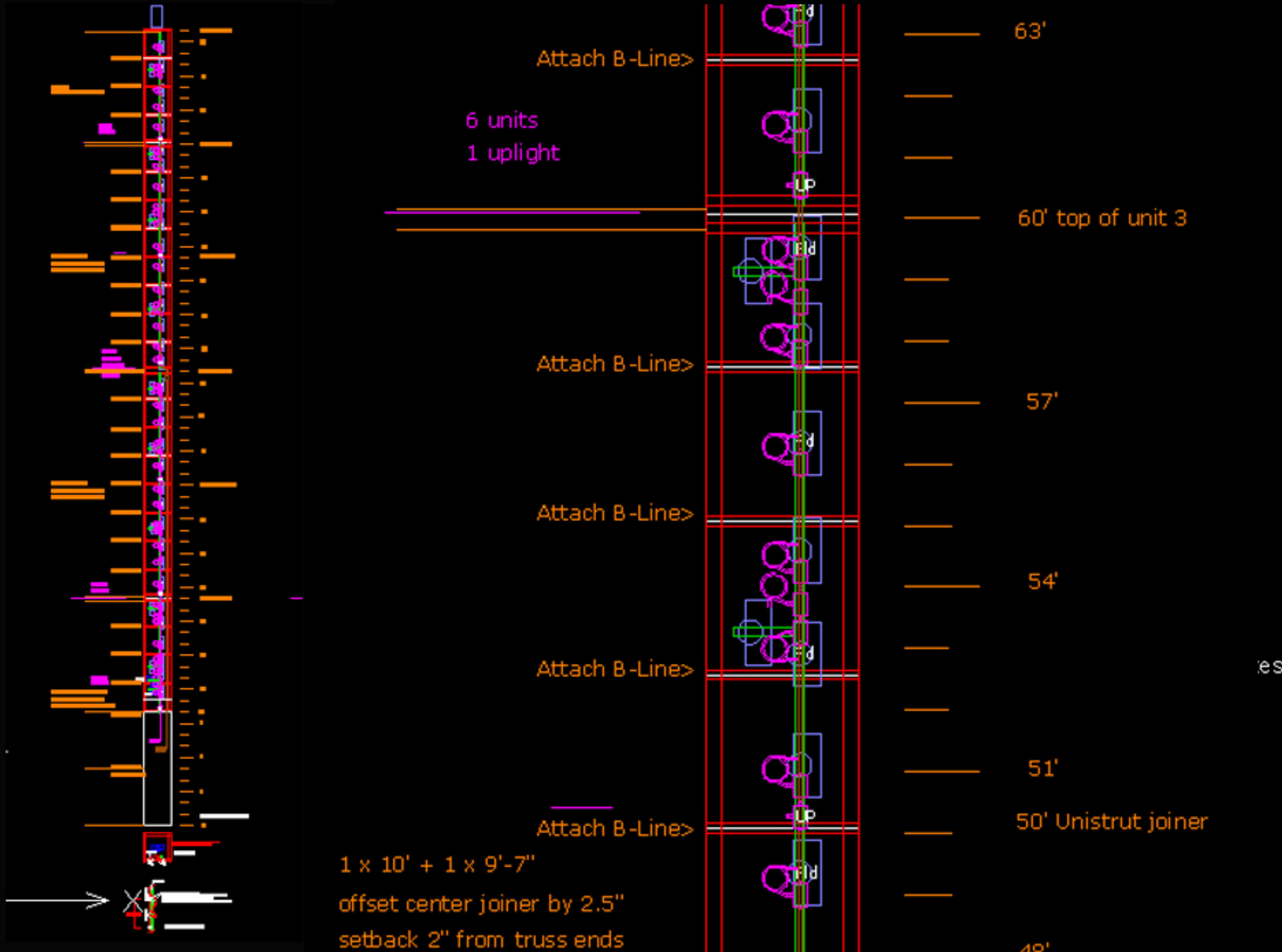




Plan/section



Side Elevation/Section


63'
Attach B-Line>
6 units
1 uplight
60' top of unit 3
Attach B-Line>
57'
Attach B-Line>
54'
Attach B-Line>
51'
50' Unistrut joiner
Attach B-Line>
1 x 10' + 1 x 9'-7"
offset center joiner by 2.5"
setback 2" from truss ends

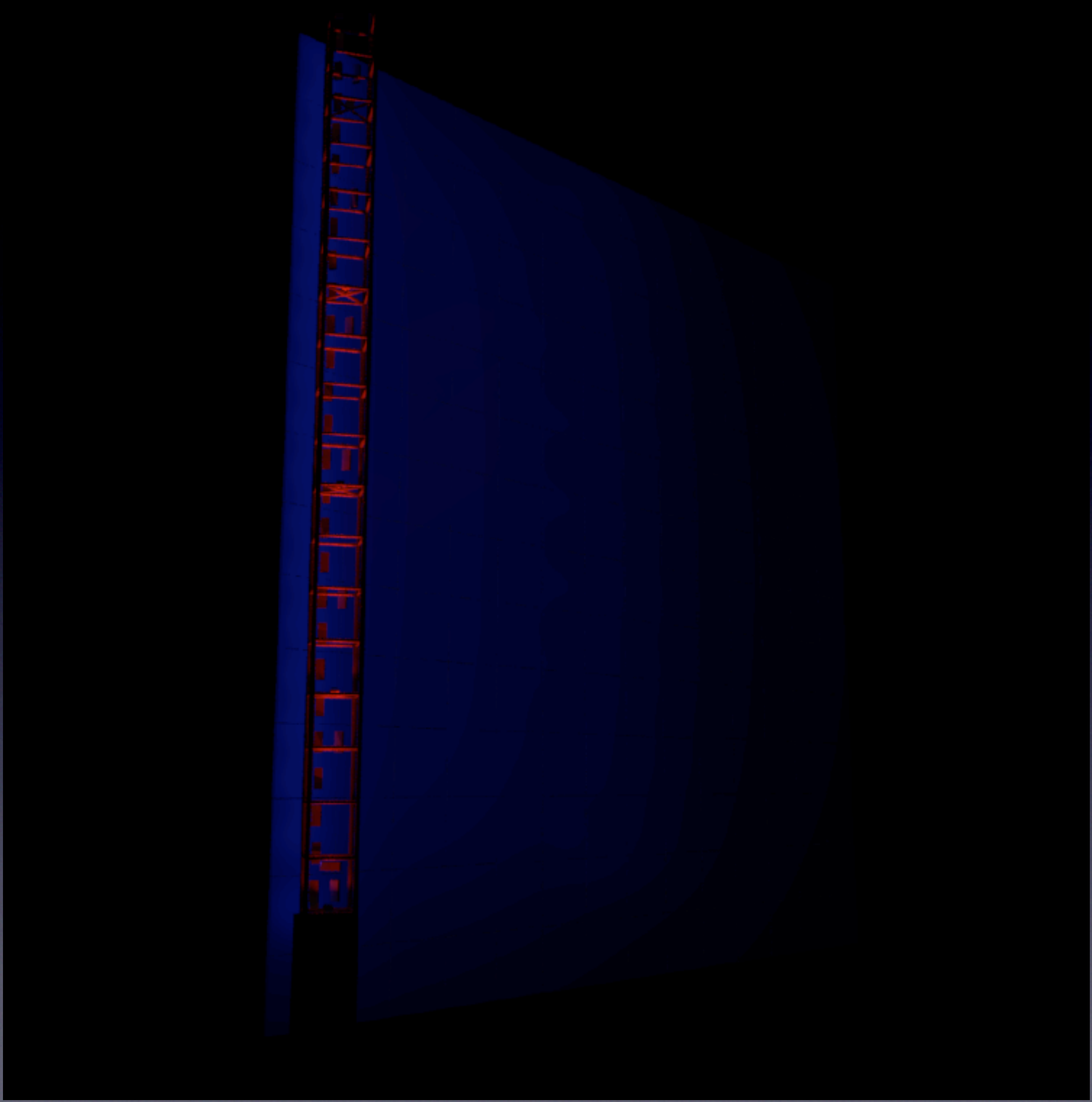
Keynote was used to:

- explore Radiance image transitions
- create rapid fundraising presentations
- develop final lighting sequences from renderings


ART MUSEUM


ART MUSEUM


ART MUSEUM

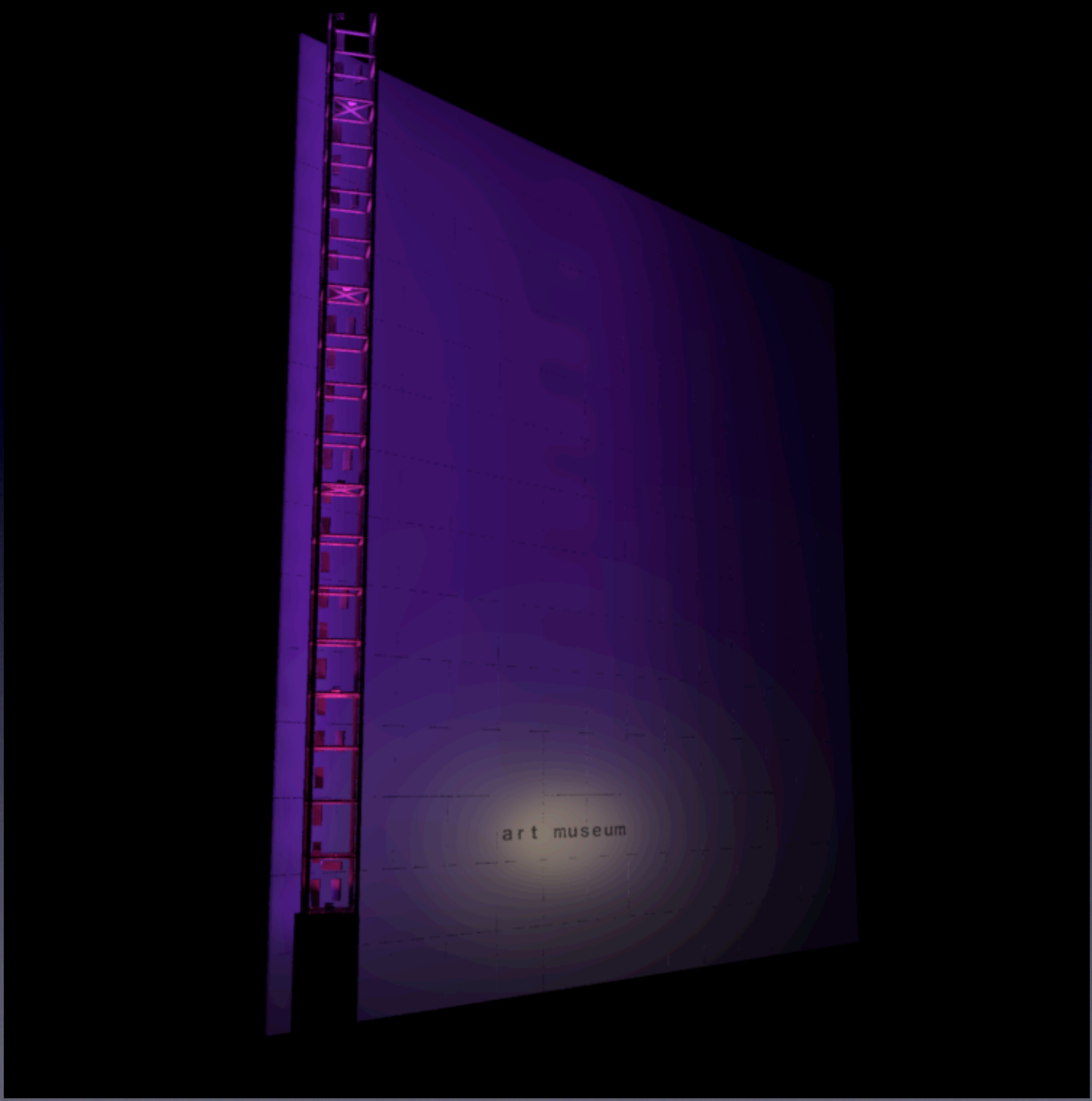


TOWER

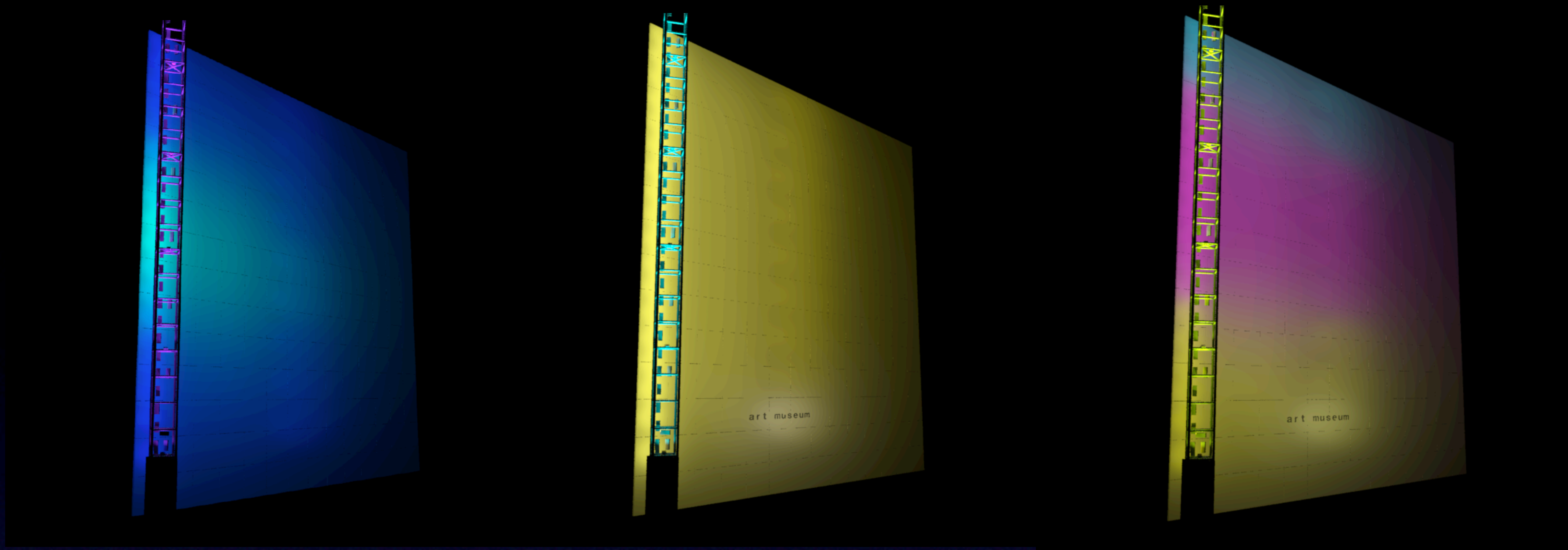
&

WALL

street view


art museum


art museum
celebrating 25 years!



Light TOTEM

70’ freestanding aluminum truss tower
6 LED RGB arrays - tower lighting
44 LED RGB arrays - wall lighting

1 230 million candlepower searchlight
2 1200w mini-searchlights
40’ linear LED RGB acrylic luminous tube

Light Totem

Opening Night!

Designing Visually Accessible Spaces

(DEVA) National Institute of Health grant 1 R01 EY017835-01

Our long-term goal is to provide tools to enable the design of safe environments for the mobility of low-vision individuals and to enhance safety for others. We conceive of a computer-based design tool in which complex, real-world environments (such as a hotel lobby, large classroom, or hospital reception area), could be simulated with sufficient accuracy to predict the visibility of key landmarks or obstacles (e.g., steps or benches) under a variety of natural and artificial lighting conditions. Design guidelines will be developed to optimize the visibility of hazards.

Principal Investigators: Prof. Gordon Legge, University of Minnesota
Chair of Psychology, Low Vision Specialist
Prof. William Thompson, University of Utah
Computer Graphics
Prof. Rob Shakespeare, Indiana University
Lighting Design and Lighting Simulation

http://www.cs.utah.edu/research/areas/percept/DEVA

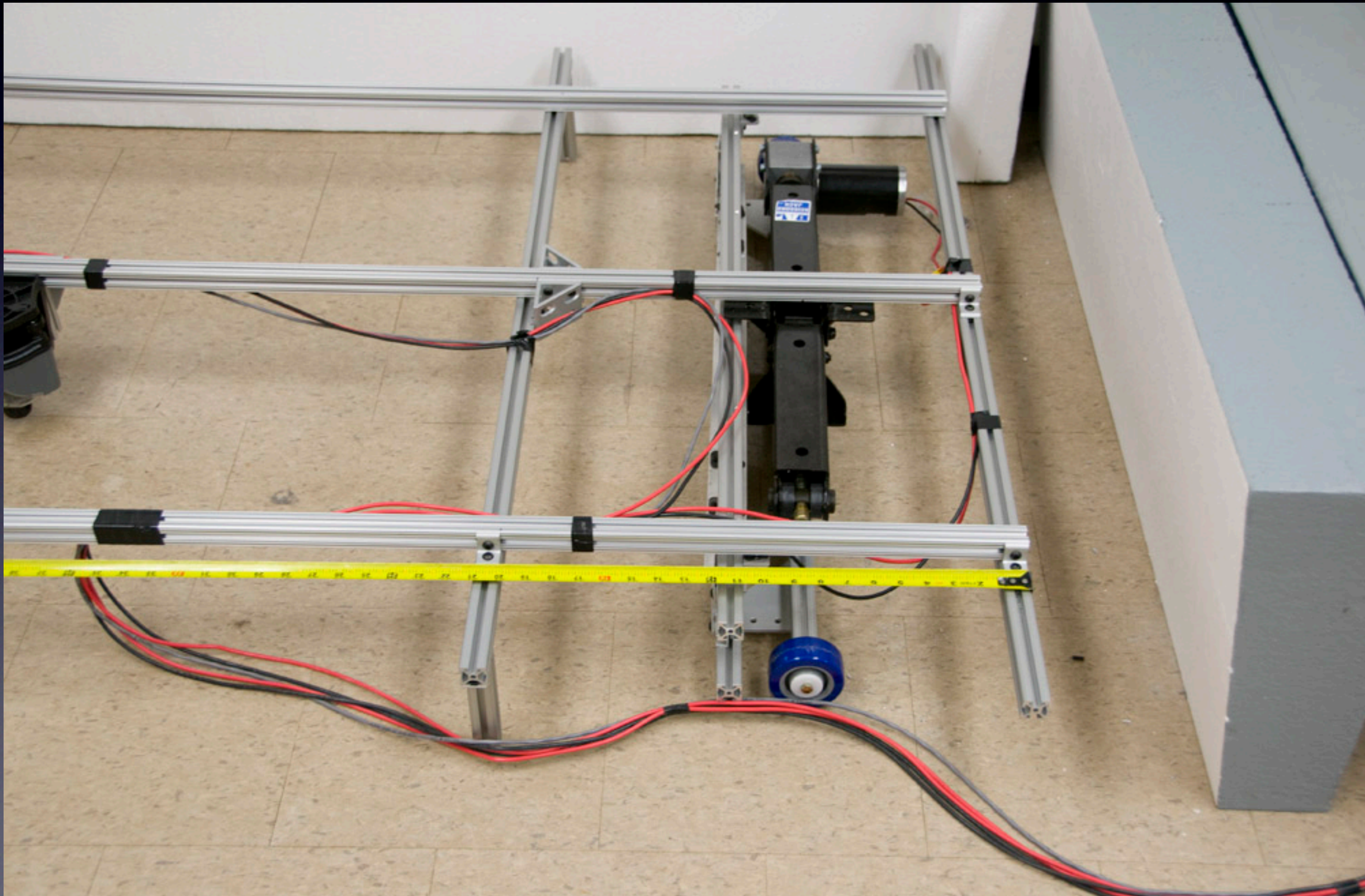
First steps...

High frequency lighting simulations of lab

create ~valid model of lab
compare simulation and HDR photos
compare edge detection
simulate lighting conditions not viable in lab

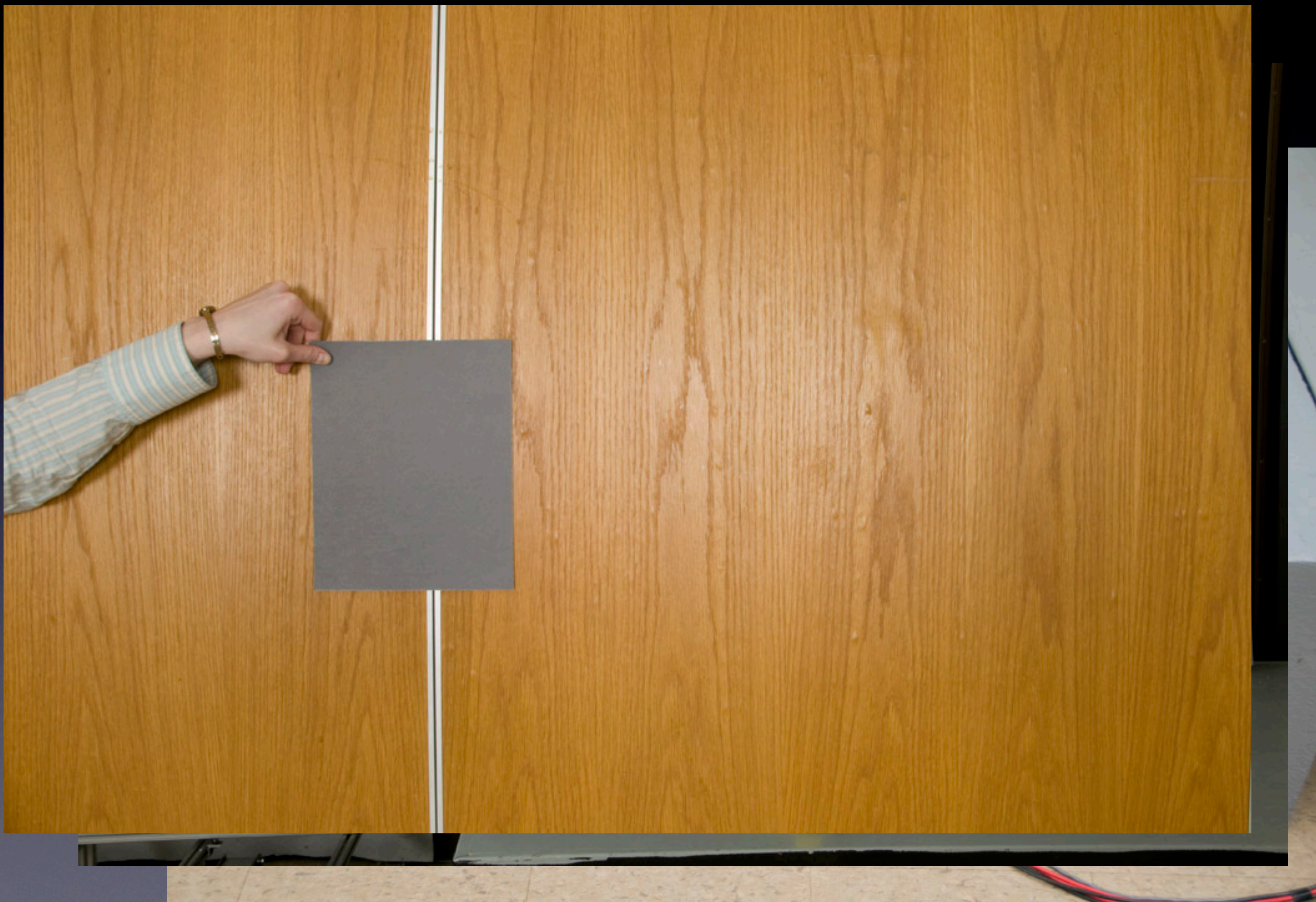
"We seek to predict, in an illuminated scene, edges which are difficult to detect or which are not visually detectable. We will then explore how to determine which of these low/non-visible edges is potentially hazardous to low vision individuals, and develop design guidelines to improve the visibility of hazards and/or mark them."

Collected data...



Collected data...

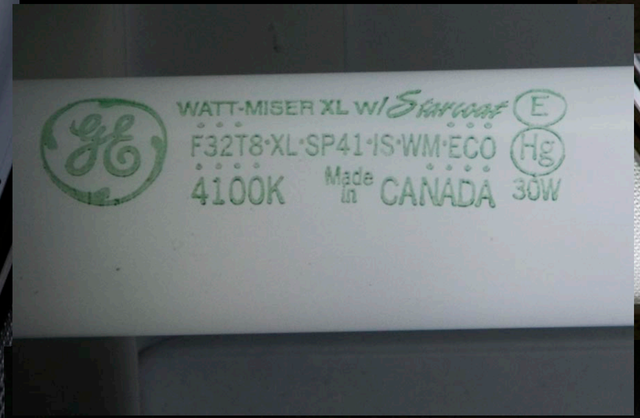
Collected data...

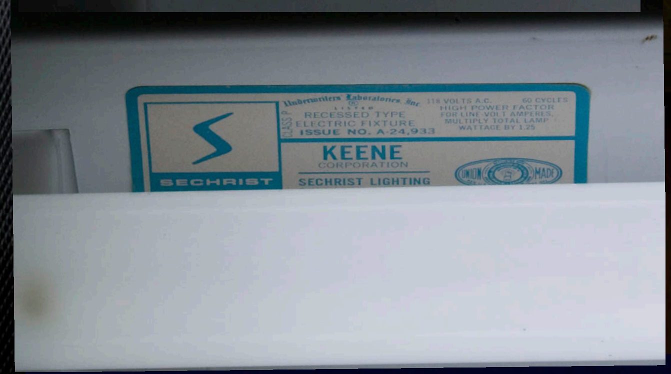


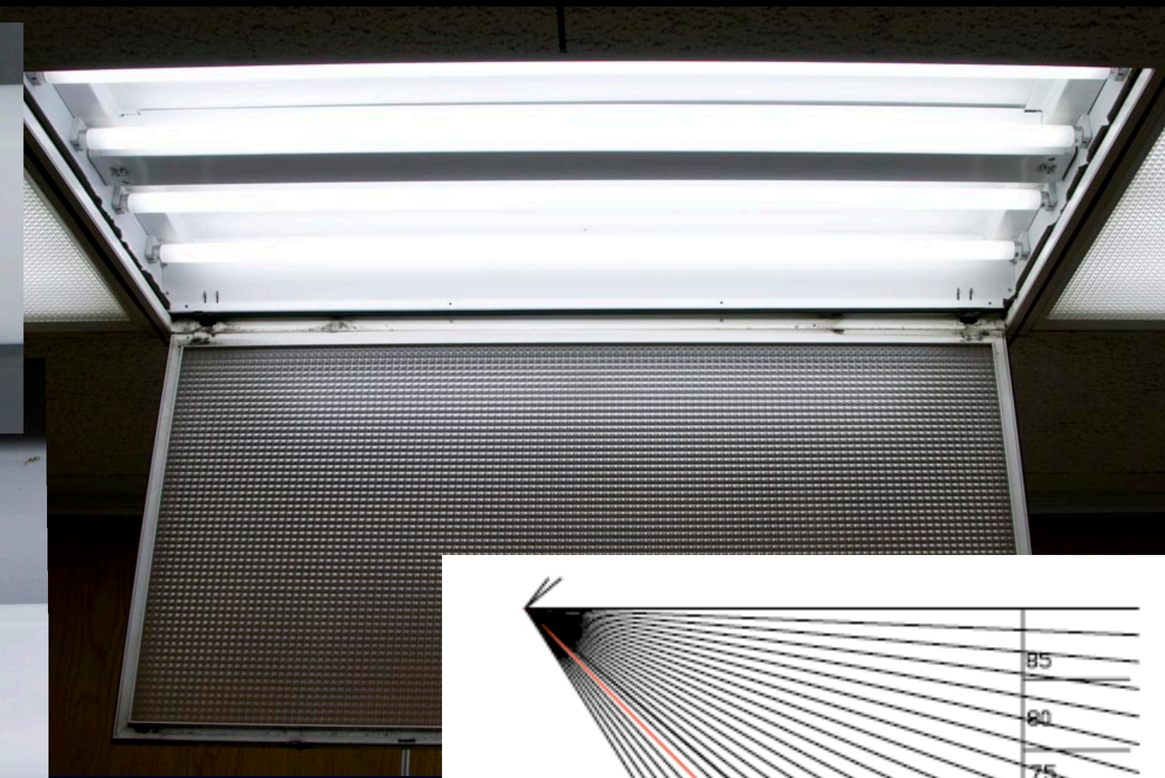
Collected data...

Objects & photometric distribution

Diffusely lit raw photo for color analysis and potential texture mapping



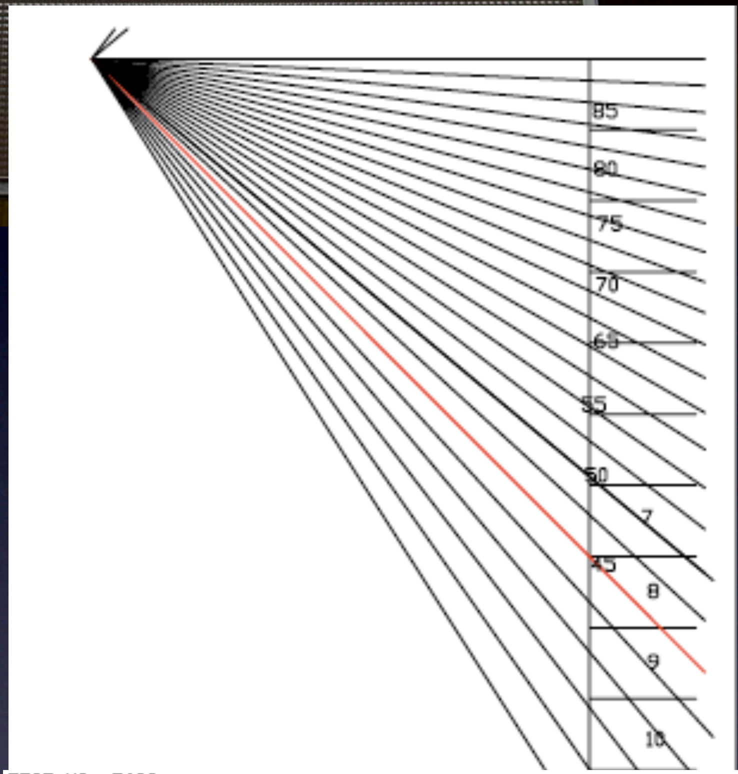




-Photometry detectives

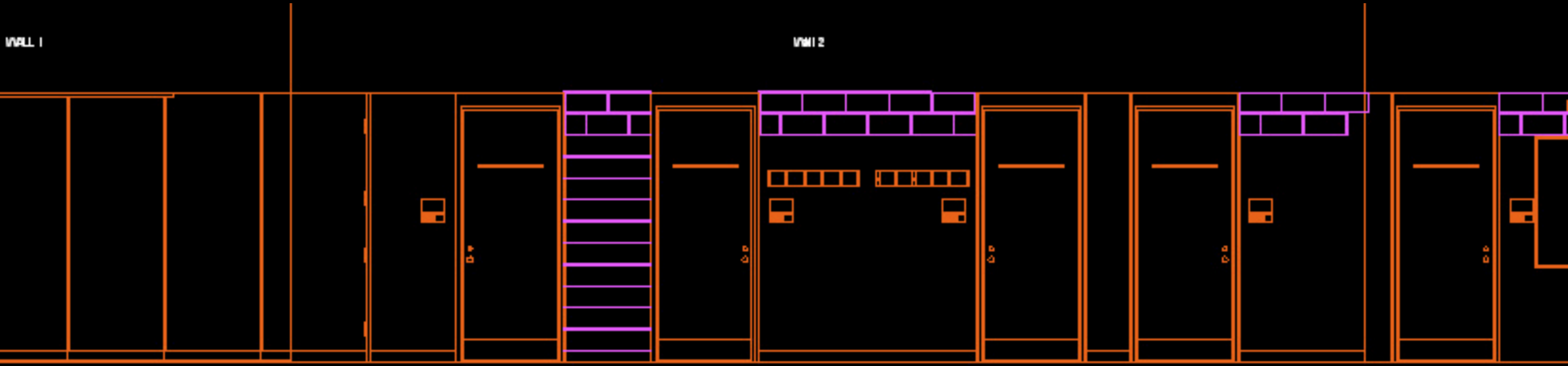
-Reflectance adjustments

Rad x w2 .57		
49.9	1.00200803	
70.7	1.01144492	
86.6	0.99654776	
100.7	0.9970297	
112.1	1.00990991	
119	1.02586207	
119.3	1.0373913	
119.7	1.05929204	
118.6	1.08807339	
117.8	1.04247788	
100.6	1.0141129	
	1.02583181	GREAT within 2.5%



2									
3		Mid of fixture	Lux	Luminance level vertical			MtrLumvsLUX		
4		Wall2	Wall3	Wall2	Wall3	checkW3LUX	W3variation	checkW2LUX	W2variation
5	b12	204	121	49.8	30.5	124.863103	0.03093871	203.874837	-0.0006139
6	b11	261	169	69.9	41.8	171.123859	0.01241124	286.161669	0.08792816
7	b10	325	217	86.9	55.1	225.57236	0.0380027	355.757497	0.08645636
8	b9	392	251	101	65.2	266.920469	0.05964499	413.481095	0.05195182
9	b8	433	288	111	73.7	301.718383	0.04546751	454.419817	0.04713663
10	b7	457	320	116				474.889179	0.03767022
11	b6	464	340	115	86.2	352.891786	0.03653184	470.795306	0.01443367
12	b5	463	359	113	91.5	374.589309	0.04161707	462.607562	-0.0008483
13	b4	445	386	109	96.2	393.830508	0.01988294	446.232073	0.00276106
14	b3	435	392	113	96.9	396.696219	0.01183833	462.607562	0.05967815
15	b2	414		99.2	92.7			406.112125	-0.0194229
16	b1	373		90.2				369.267275	-0.0101085
17	bsaeboard	338		79					
18						Avg variation	0.03292615		0.02975187
19									

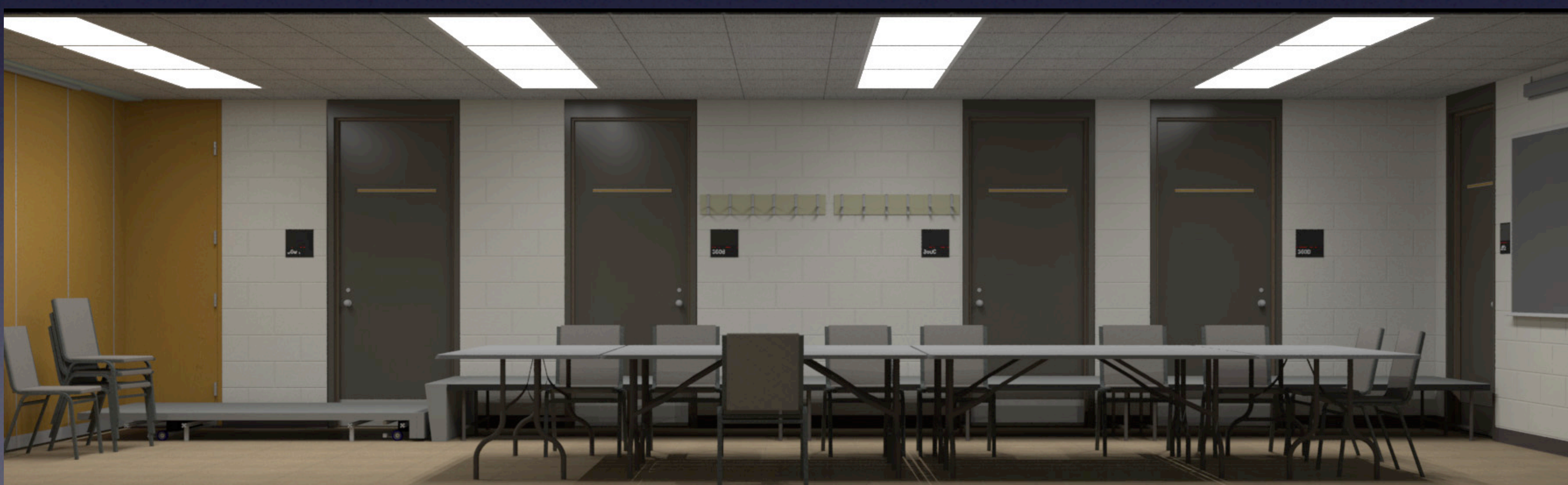
```
TEST NO. 5608
C.F.I. INDOOR 2x4 POST PAINTED FLUORESCENT TROFFER FIXTURE CAT.
WITH WHITE PAINTED INTERIOR AND FLAT PRISMATIC K-12 LENS
FOUR 32W F32T8/TL835 T8 FLUORESCENT LAMPS. LUMEN RATING = 3050 L
ADVANCE 120V 3 OR 4-LAMP ELECTRONIC BALLAST NO. REL-4P32-RH-TP
CANADIAN FLUORESCENT INDUSTRIES
CORNWALL, ONTARIO
TILT=NONE
4 3050 1 37 5 1 1 1.81 3.81 .00
1 1 101.4000
0,2.5,5,7.5,10,12.5,15,17.5,20,22.5,25,27.5,30,32.5,35,37.5
40,42.5,45,47.5,50,52.5,55,57.5,60,62.5,65,67.5,70,72.5,75
77.5,80,82.5,85,87.5,90
0,22.5,45,67.5,90
3782,3785,3793,3752,3737,3689,3666,3594,3550,3452
3382,3290,3160,3040,2899,2744,2583,2402,2196,2002
1761,1537,1329,1132,947,812,687,609,538,449
426,372,313,222,149,53,0
3782,3810,3798,3783,3758,3729,3672,3639,3572,3508
3434,3351,3235,3130,2990,2854,2694,2480,2285,2056
1819,1625,1408,1209,1024,862,731,621,519,454
376,321,255,202,130,51,0
3782,3780,3784,3758,3765,3721,3708,3657,3616,3566
3509,3430,3360,3249,3159,2987,2835,2635,2431,2207
1967,1744,1518,1328,1118,901,715,593,462,379
322,279,243,193,135,72,0
```



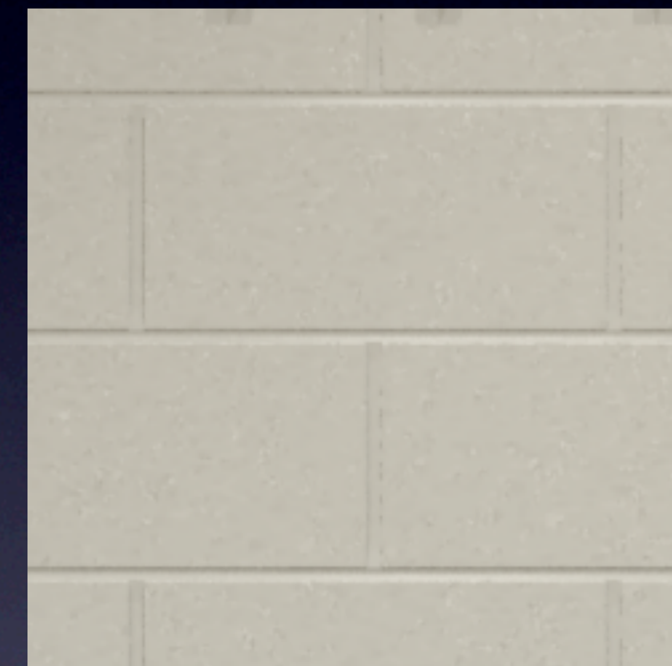
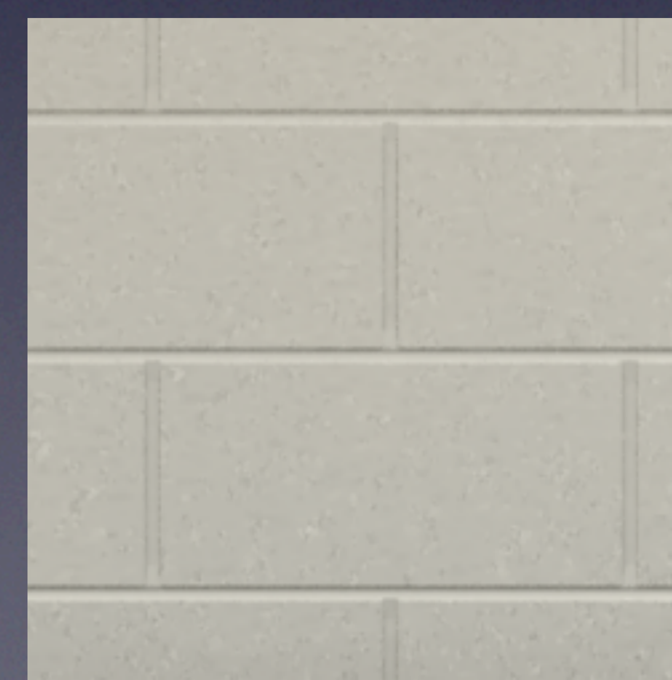
Autocad drawings of room geometry

Construct reasonable geometry, textures, photometry, then render

RADIANCE HDR Simulation




360B
360C

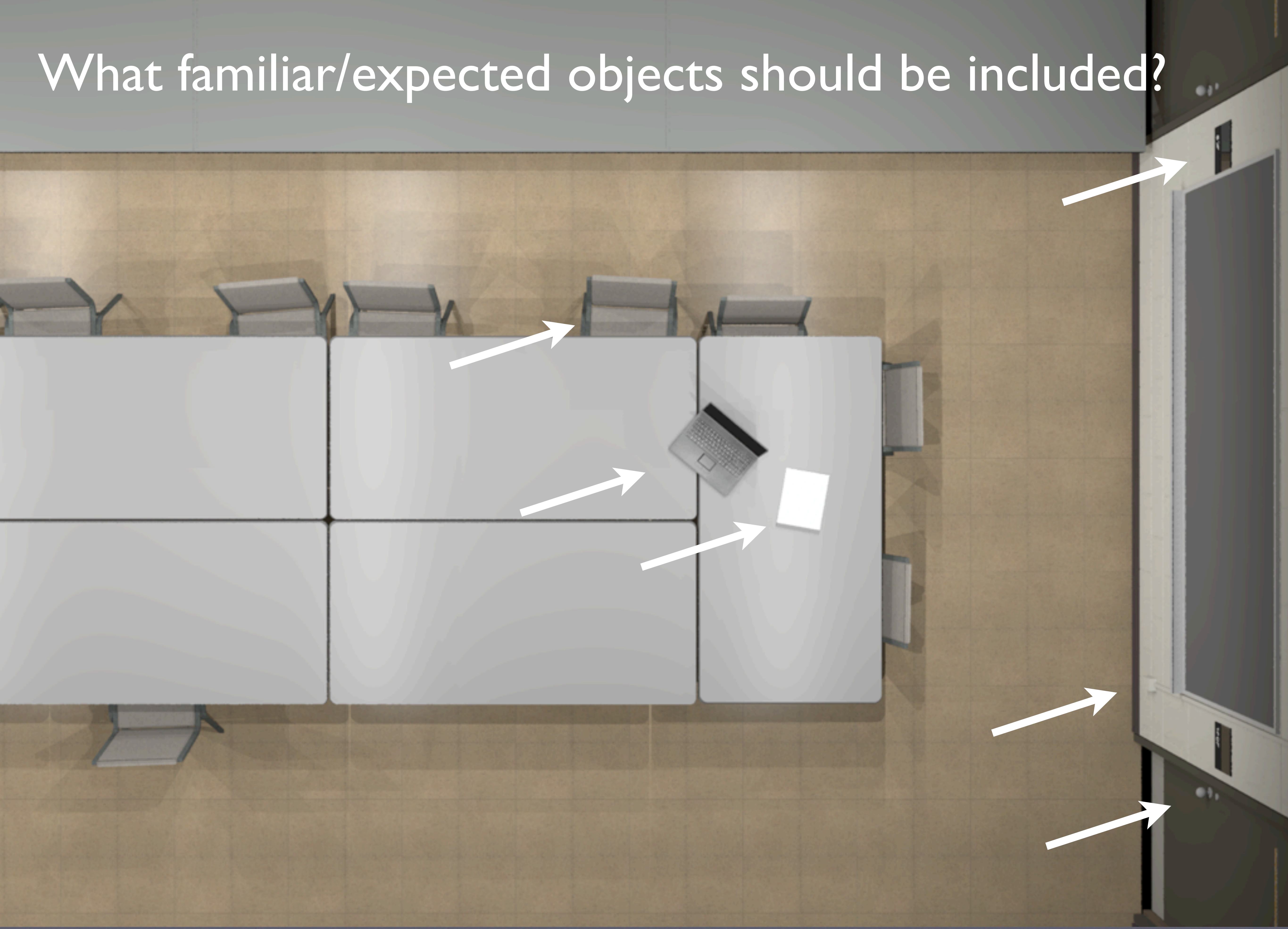
cinder blocks with paint layers

```
void texfunc block-rough
8 xwrink ywrink zwrink wrinkle.cal -s 2 -rz 90
0
3 0.02 .05 .05

block-rough plastic block_clr
0
0
5  .804  .789 .709 .02 .1

## cinderblock grout color
void brightfunc specks
4  dirt  dirt.cal  -s .05
0
1 .1

specks plastic block_clrg
0
0
5  .804  .789 .709 .004 .02
```

wood partitions

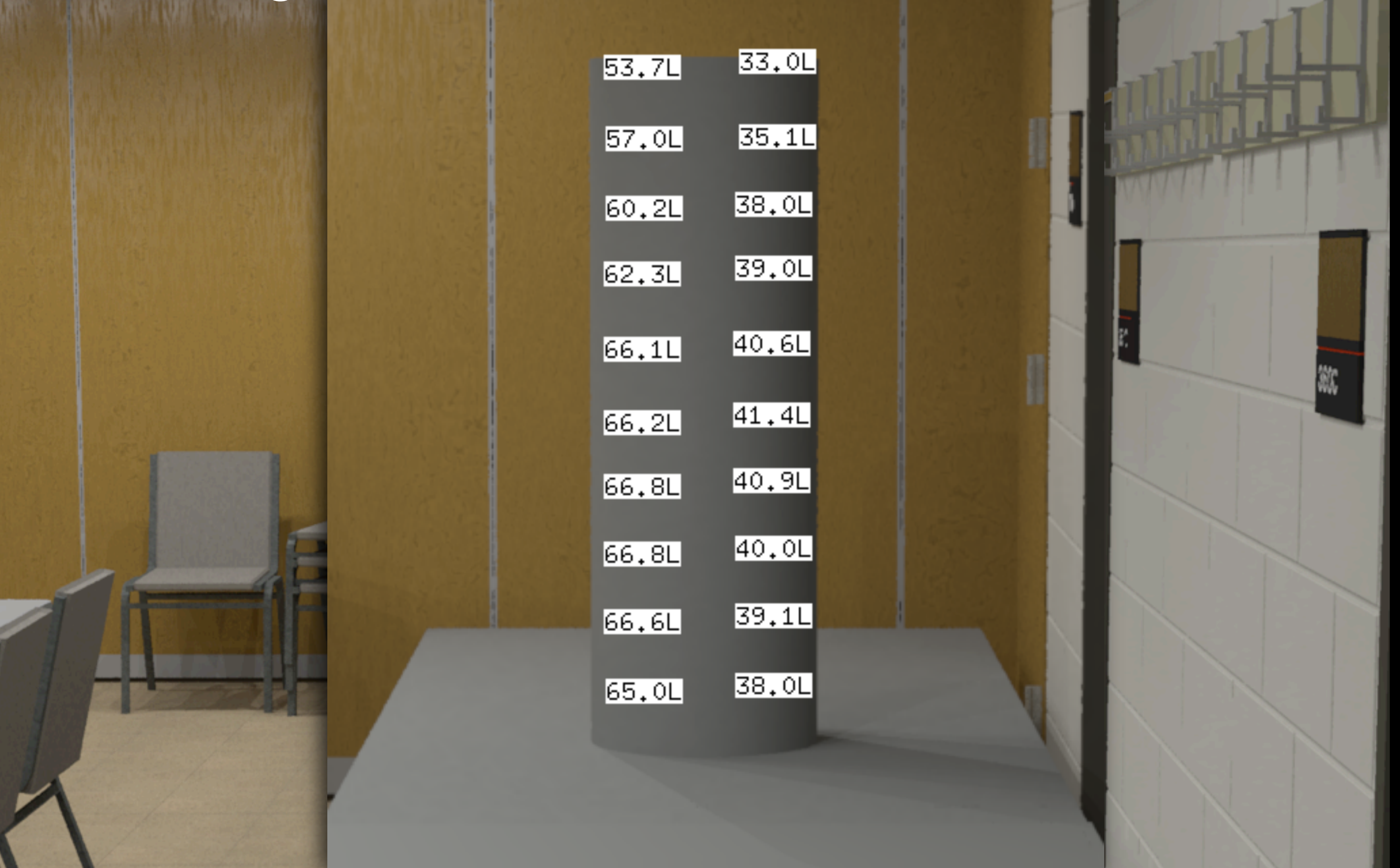
```
void brightfunc mottled
4  dirt dirt.cal -s .01
0
1 .03

mottled brightfunc maple
4 zgrain woodpat.cal  -s .3
0
1 .25

maple texfunc grainy
6 xgrain_dx ygrain_dx zgrain_dx woodtex.cal -s .3
0
1 .04
#1 .05

grainy plastic Wood3
0
0
5  0.5600 0.2900 0.0500 0.015 0.03
```

What familiar/expected objects should be included?



Validating the model..

Validating the model..

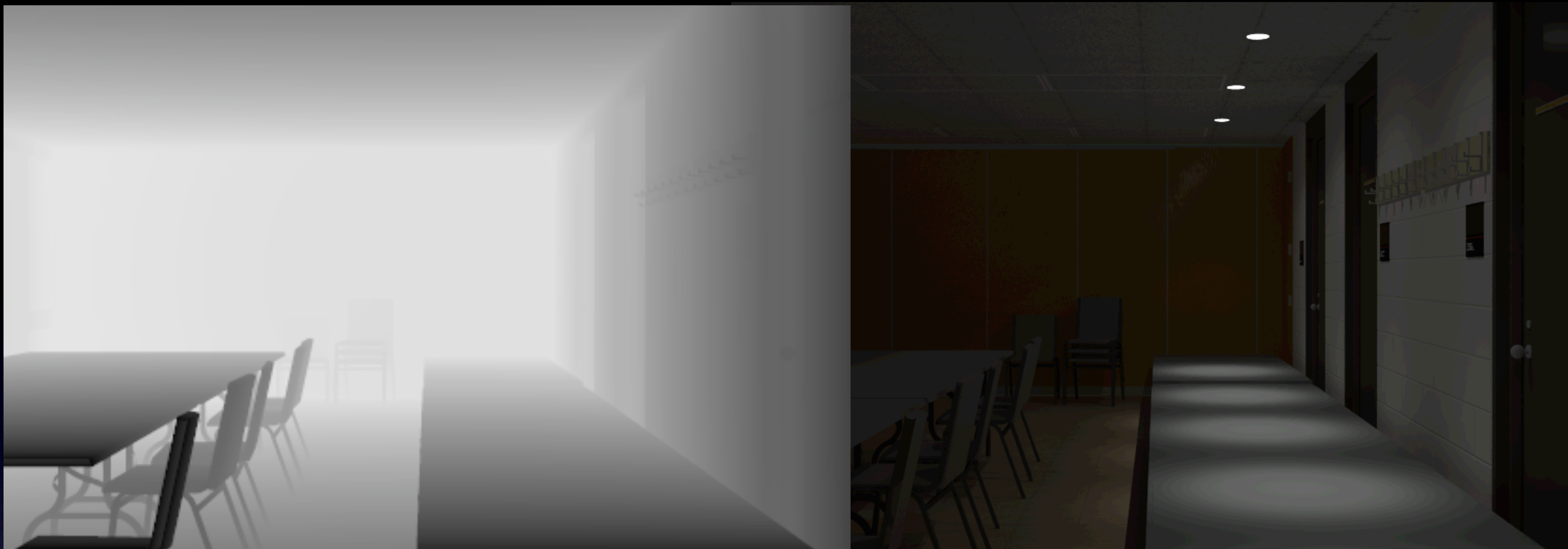


The platform-ramp boundary experiment...

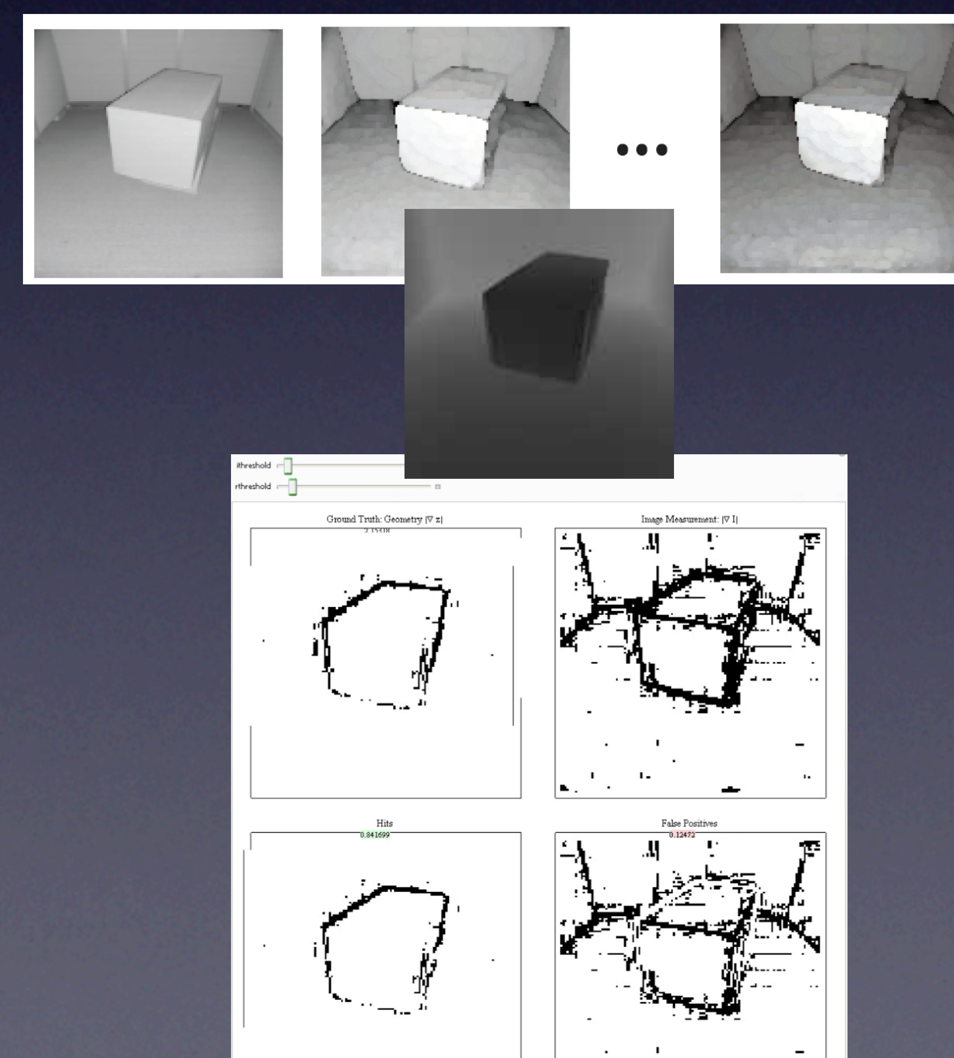

Positioning control..


Lighting control..
(Trial: 26w CFL downlights)
1” trip hazzard


Lighting control..
(Trial: 50 watt Par30-NFL)
1" trip hazzard



Depth map:
can provide Ground Truth to test edge detection in an illuminated scene



```
vwrays -vf views/platv.vf -ff -x 1800 -y 1200 \
 |  rtrace `vwrays -d -vf views/platv.vf -x      \
                            1800 -y 1200` -ff -oL x.oct\
 | pvalue -r -df -b -e .0022 > depthpic3.hdr
```

```
vwrays [view options] -ff -x $XRES -y $YRES \
| rtrace -x $XRES -y $YRES -ff -oL octree \
| pvalue -r -df -b -e 1/$MAXDIST > depth.hdr
```

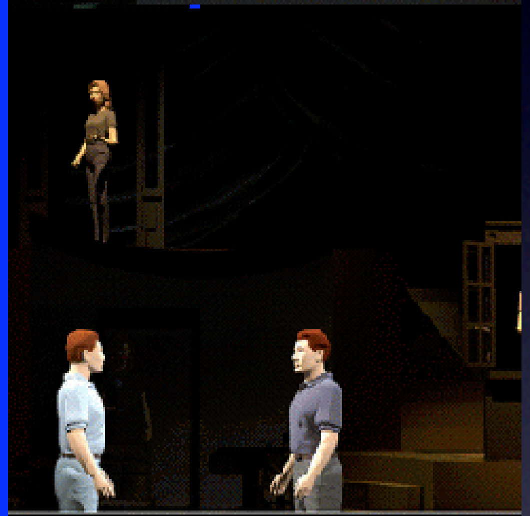
Almost ready for experiements...

Stage Lighting is my true passion

I met Radiance in about 1990

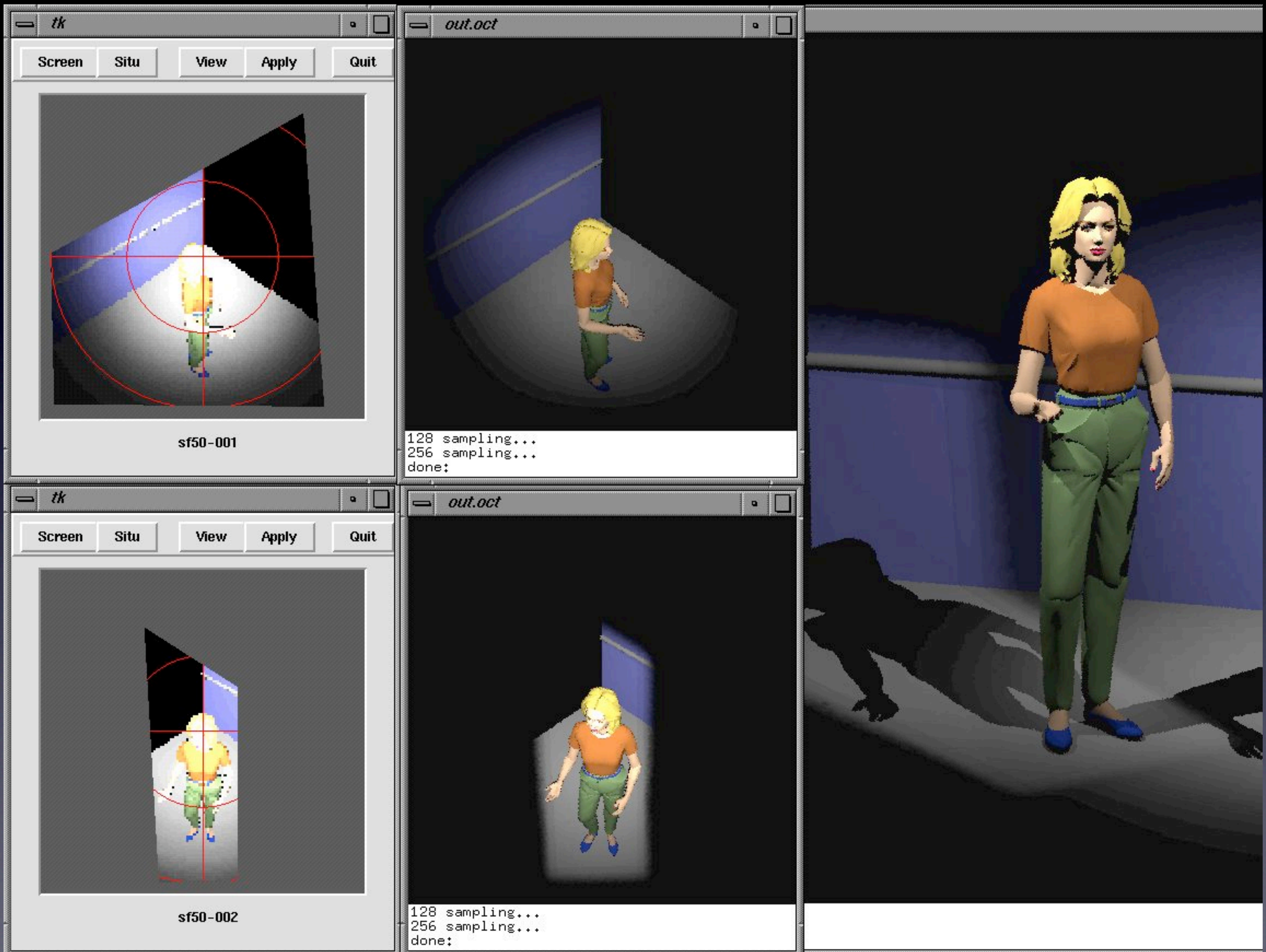
and it remains vital to my art

Here is glimpse from back then to now...



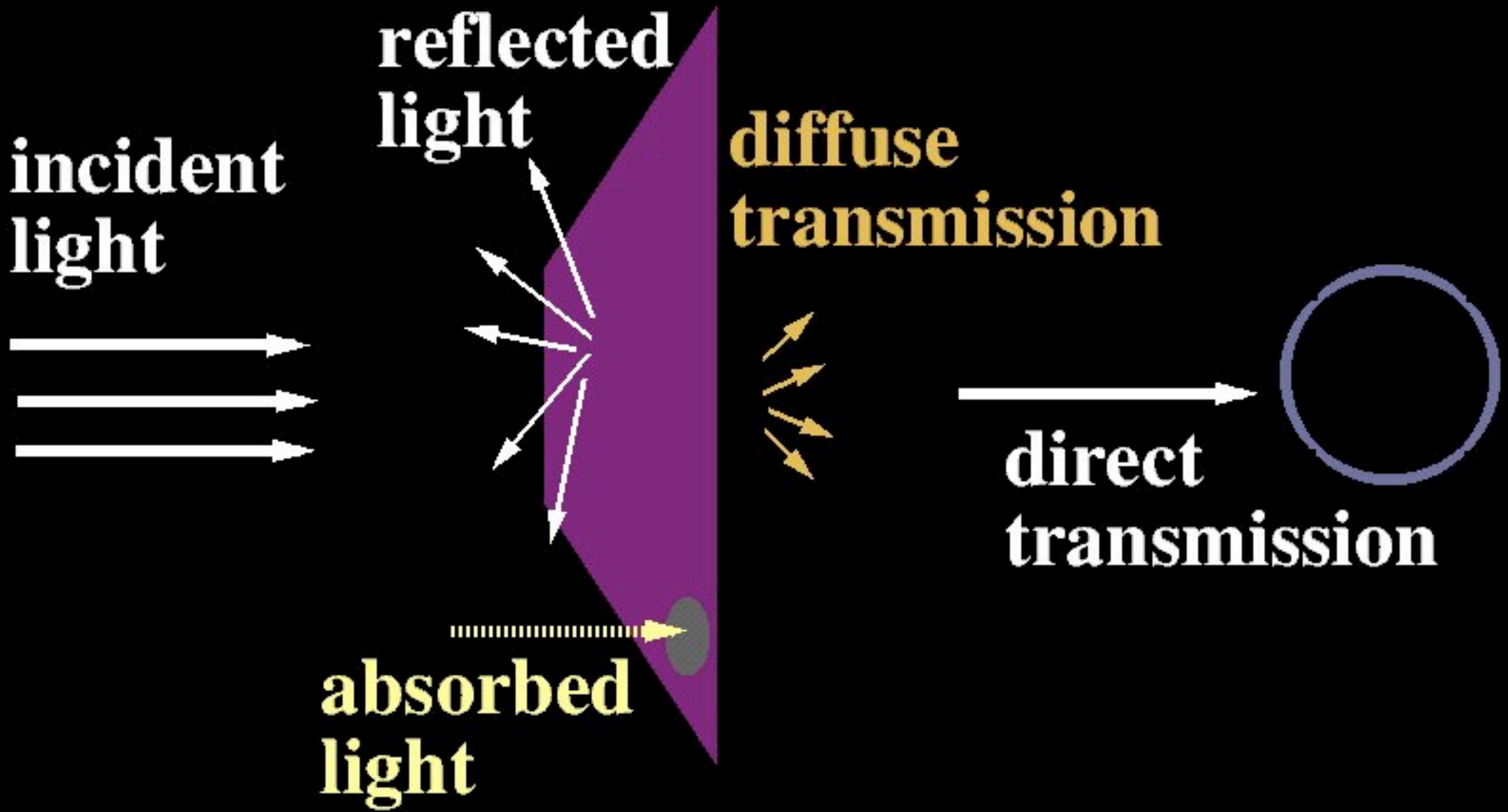
Many scenographic devices needed to be defined before succeeding in accurately simulating the stage.

Shaping light: hard and soft shutters

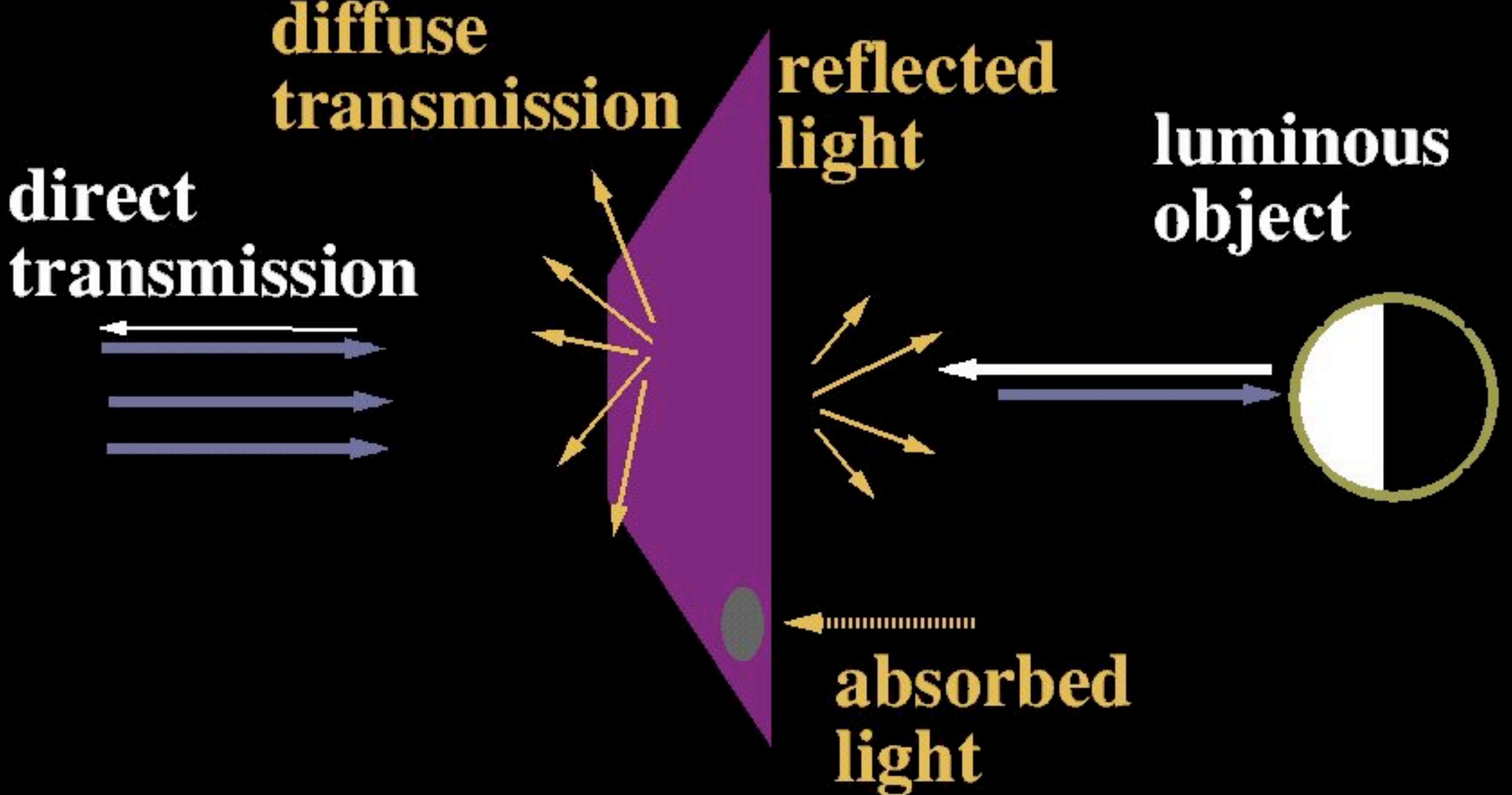


Illusions of illusions... simulating scrim (1)

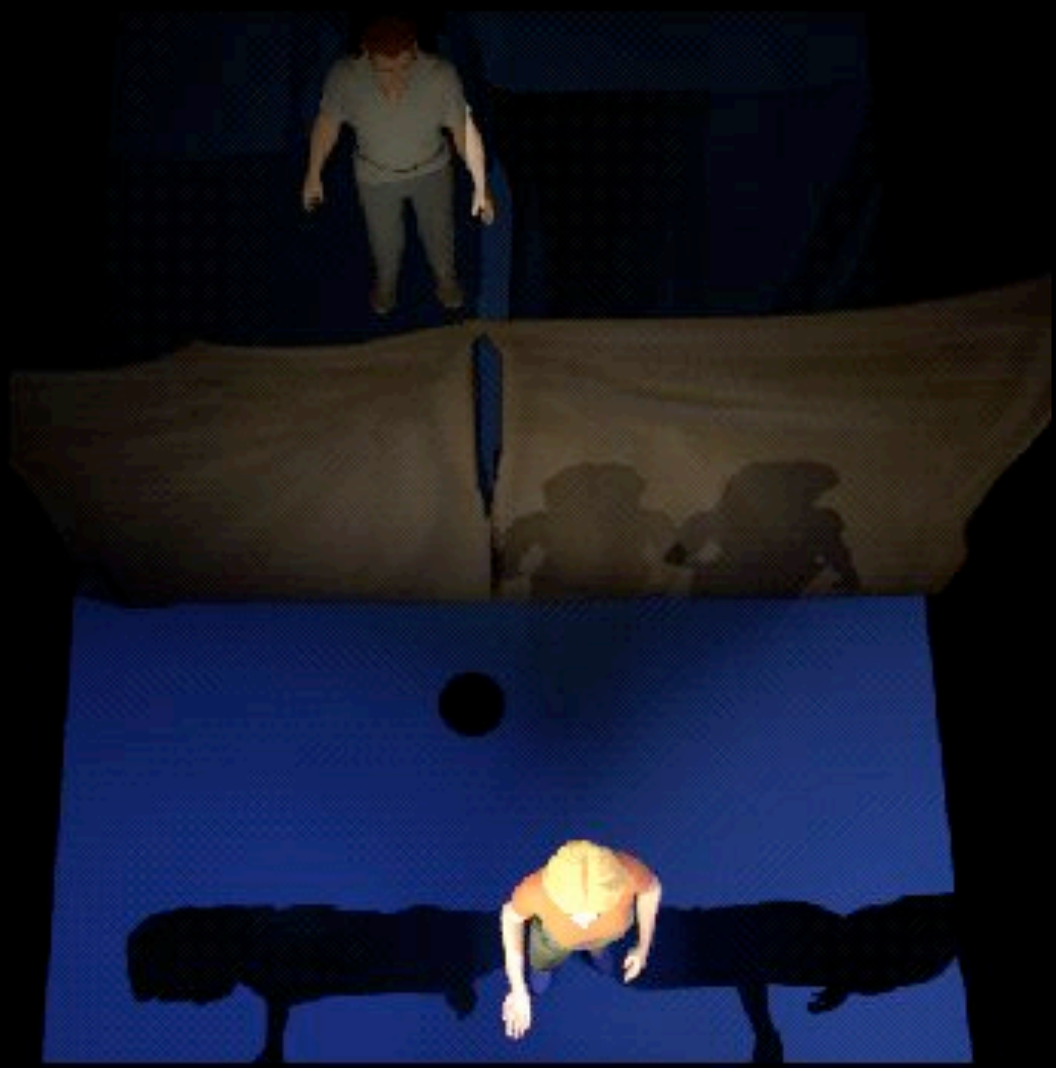
Technical analysis and measurements…



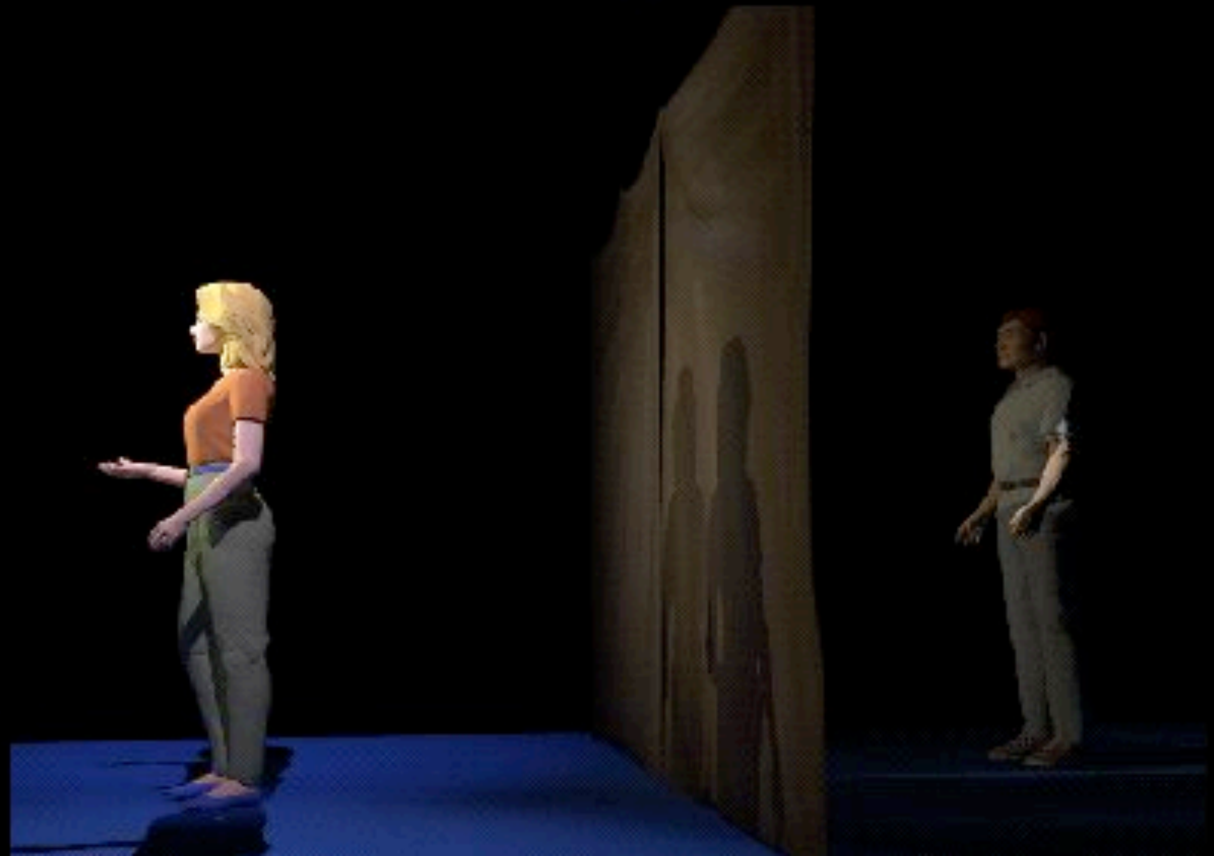
Illusions of illusions... simulating scrim (2)



(All light energy is accounted for)



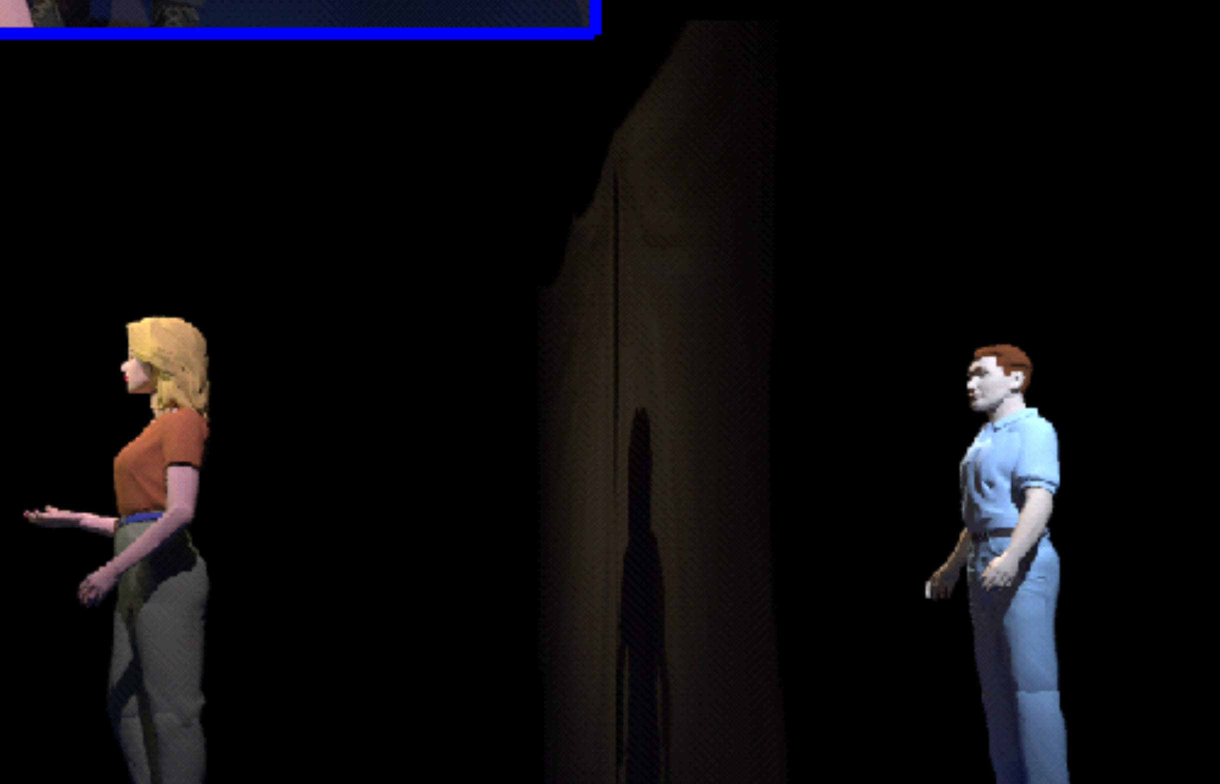
light in front



light behind

Theatre material: scrim

light in front
and
light behind



"cutting out" an image shape...

Concept: convert image "black" into a void

1. Create a pixel value file which can be read by .cal

```
pvalue -d -b scrim.pic  >  scrim.dta
```

2. Massage the scrim.dta file.
   - comment out the header and set up array info

example:

```
#Data file produced from a picture
##?RADIANCE
#ra_tiff -r
#pvalue -d -b
#FORMAT=ascii    # -Y 569 +X 695
2
1 0 569
0 1.221 695

      0.000e+00
      0.000e+00
      ...
```

“cutting out” an image shape...

The function:

mymapping.cal
{ a trimming function where:

A1 = clipping threshold
0 cuts away to void

}

```
mymapping(b) = if(b-threshold, 1, 0);
my_u = Px;
my_v = Py;
threshold = A1;
```

Combining cutout, image, and trans into a shaped scrim

Scene description:

```
void trans whitex
0
0
7 1   1   1   0     0     .8    1.0
# r  g  b   spec        rgh   trans        transspec

void mixdata my_mixture
7 whitex void mymapping scrim.dta mymapping.cal my_v my_u
0
1 .001

void colorpict data
9 clip_r clip_g clip_b scrim.pic picture.cal pic_u pic_v -s 1
0
0

my_mixture alias col_scrim data

col_scrim polygon scrim
0
0
12  0 0 0
    1.221 0 0
    1.221 1 0
    0 1 0
```

Joseph Svoboda and Laterna Magika

1958 World's Fair in Brussels

Czech Pavillion

validated a new art form

"apparent interaction"

between actor and image

Visionaries such as Svoboda

computer graphics in movies

inexpensive data projectors

the rise of powerful PC’s

shifting aesthetics...

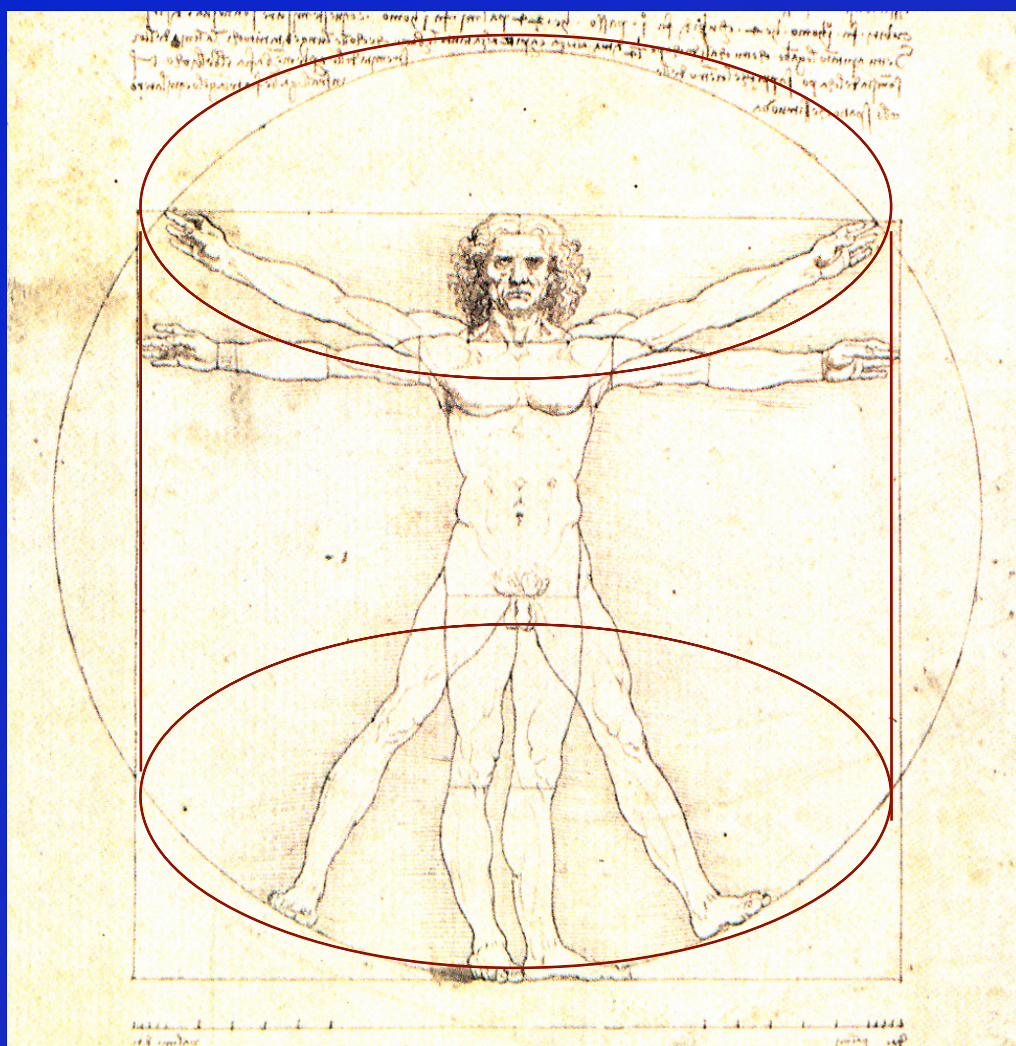
Is Leading me and other artists to explore

Virtual Scenography in Live Performance

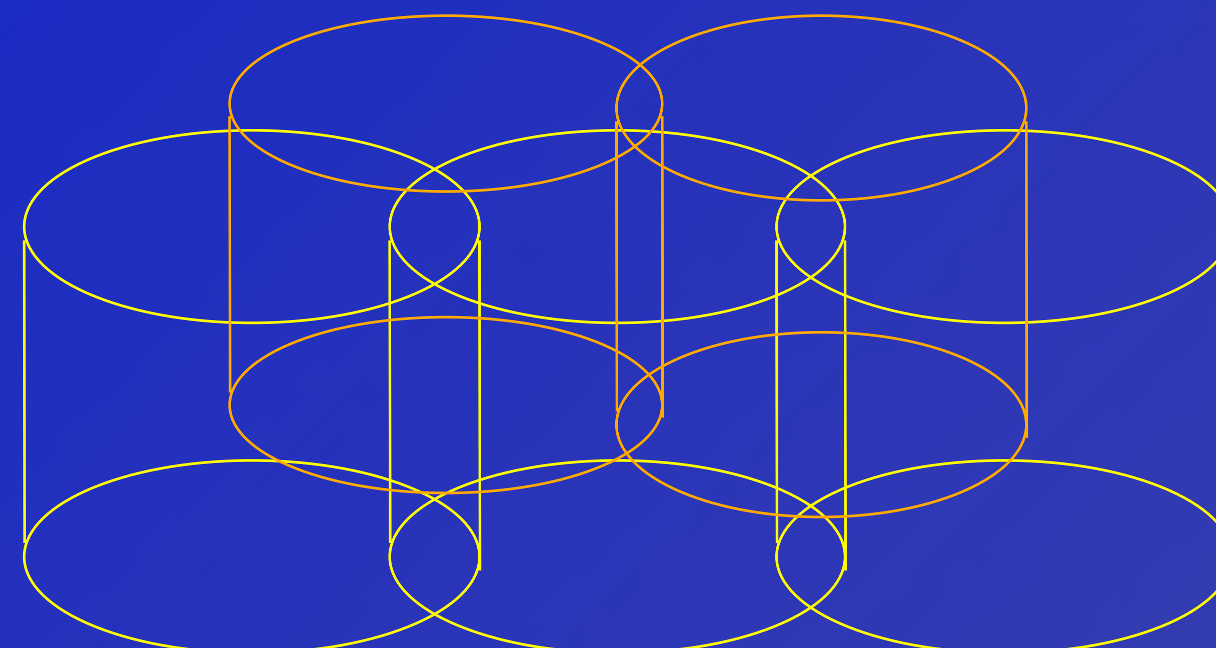
Background

…the resolution of stage lighting

Soon to become the size of a pixel!!



2 – 3 meters



Overlapping Acting Areas or zones are individually lighted

Background

How discerning are we of source, highlight, and shadow relationships? How far can we deviate highlight and shadow direction, before we prick the consciousness of the audience and distract them?

(Shakespeare, 2001)

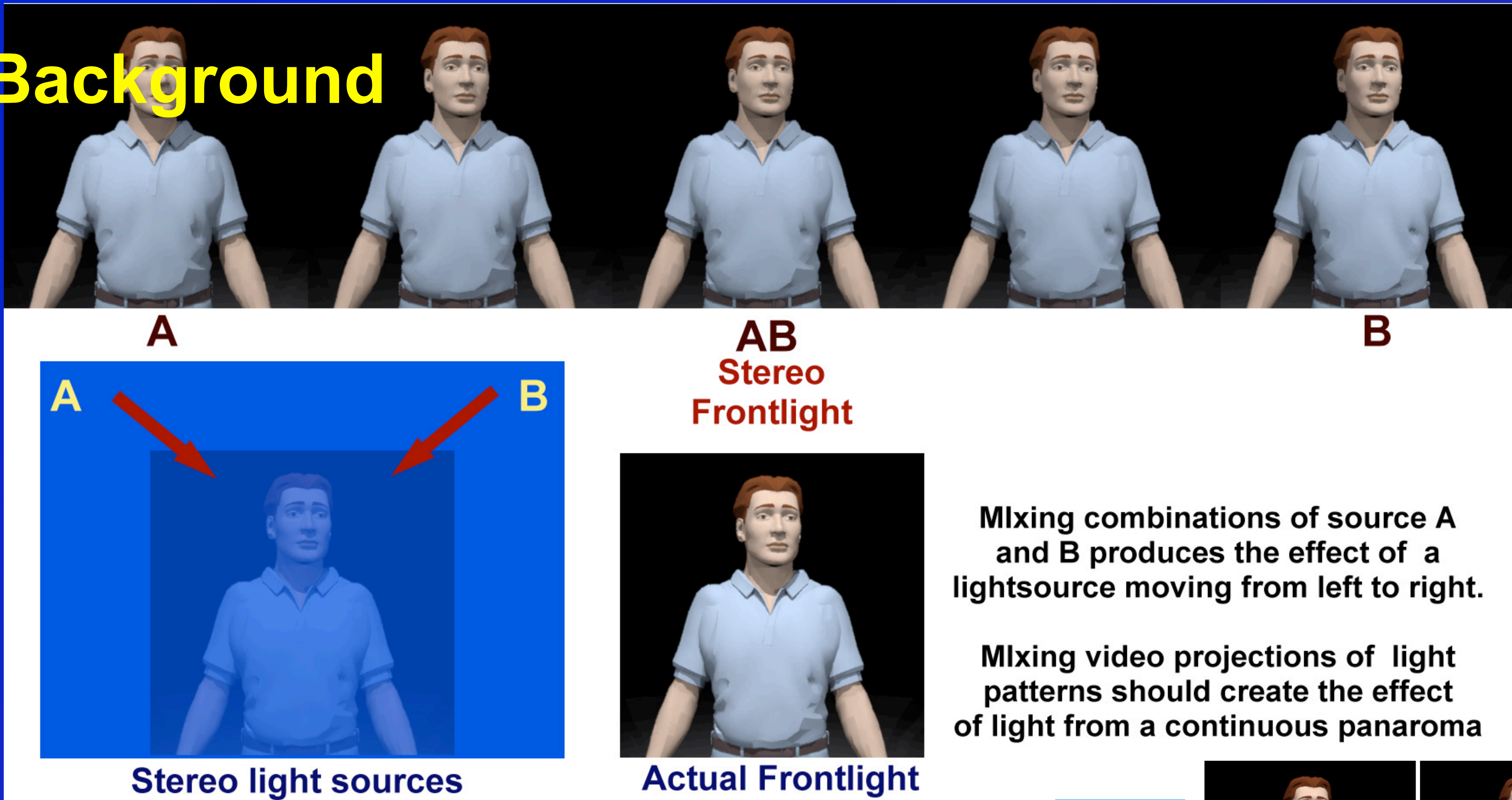
Background

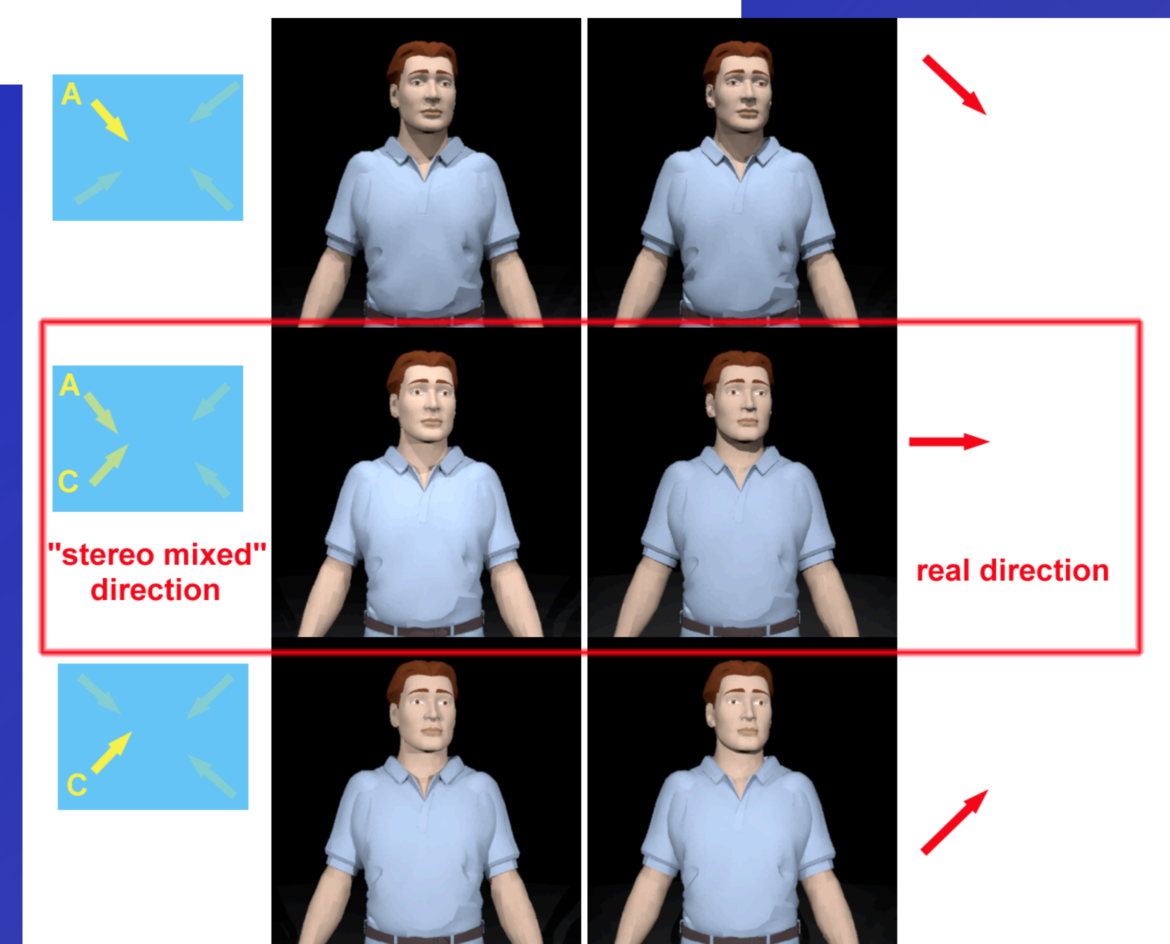

(Shakespeare, 2001)

At a glance, can you accept both of these images?

Is either correct?

Background





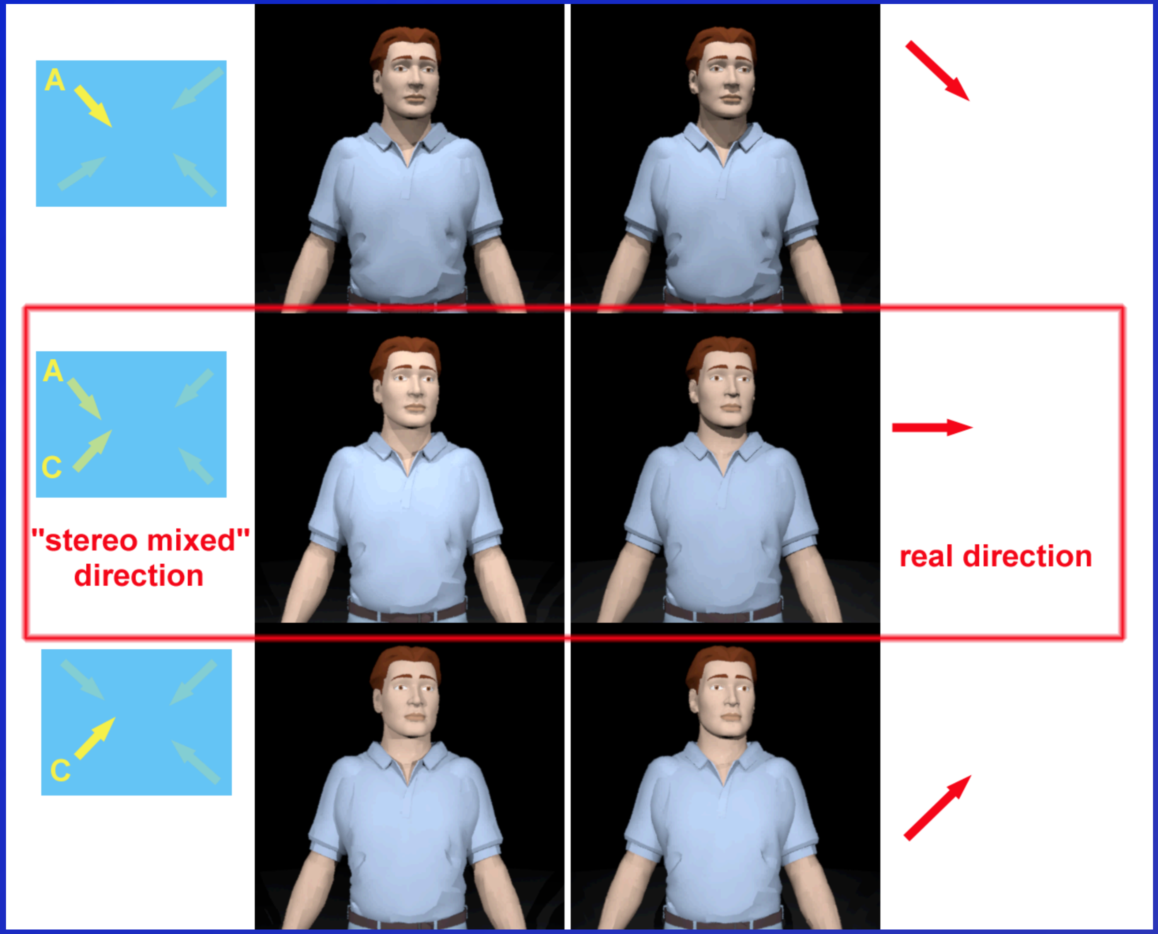
Live stage illusion

…apparent direction

of light on an actor

(Shakespeare, 2000)

Background

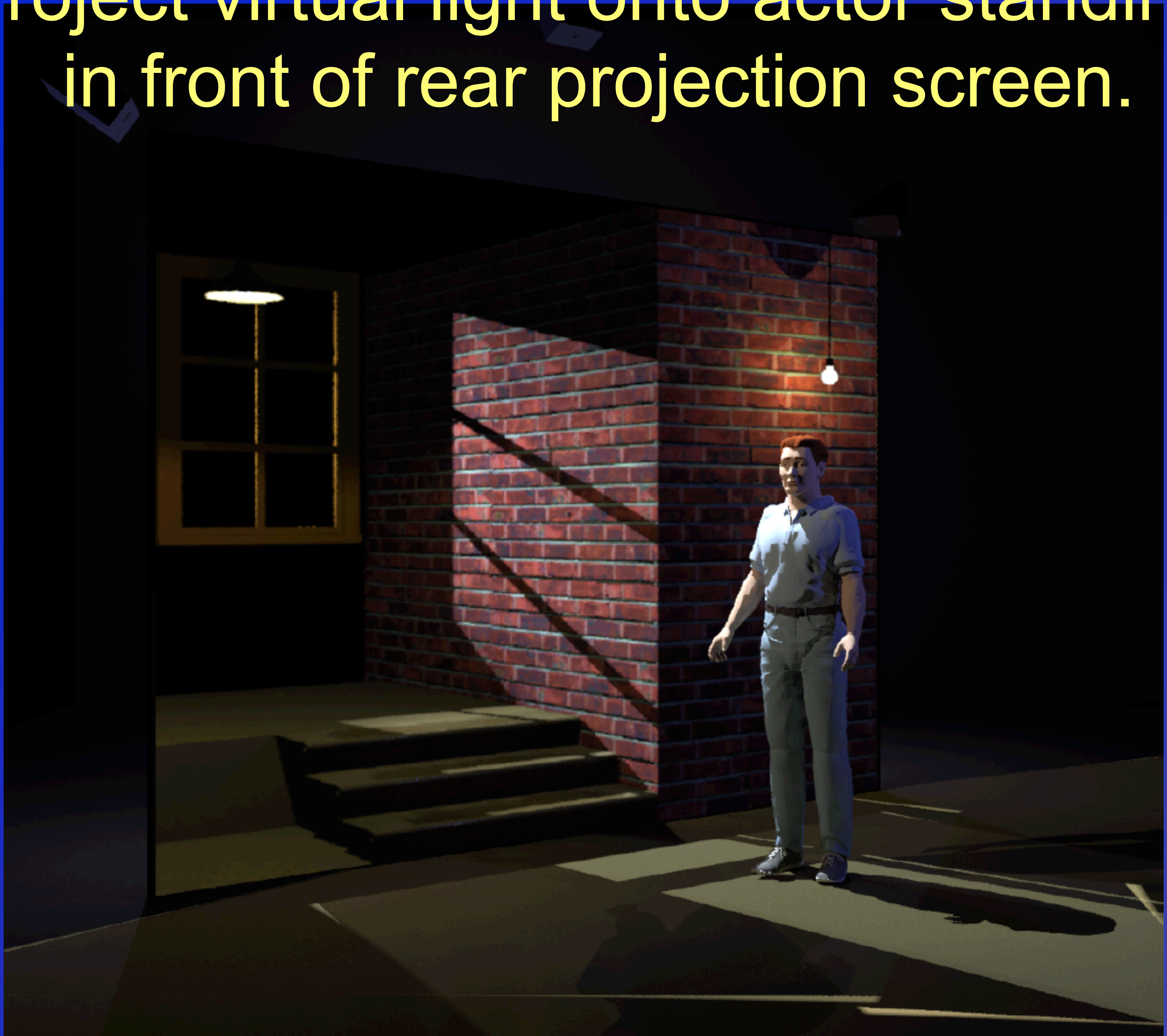


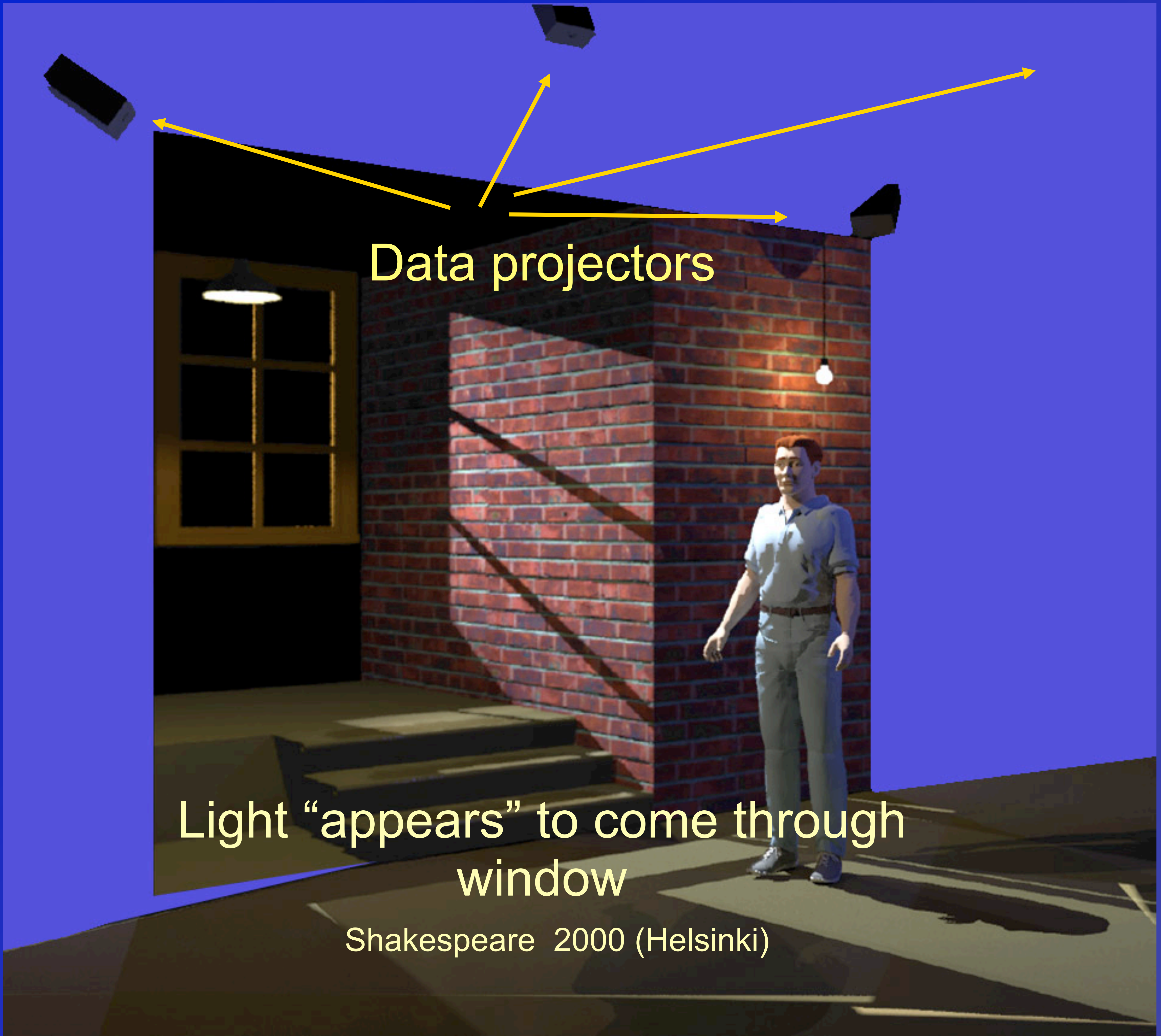
(Shakespeare, 2000)

It appears that we are not good judges of accurate highlight and shadow direction within certain bounds.

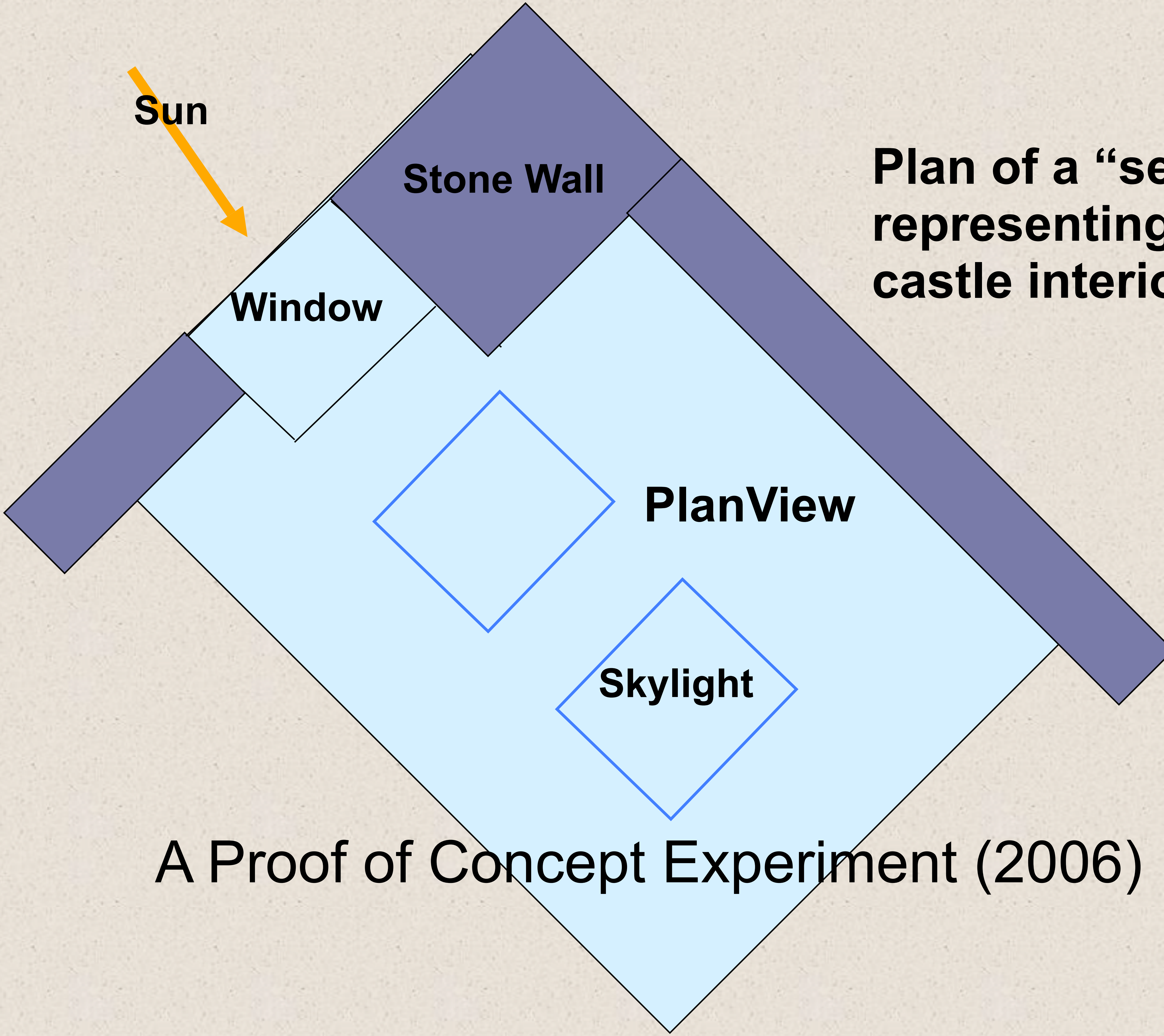
GOOD.. this weakness provides us with design opportunities

Project virtual light onto actor standing in front of rear projection screen.



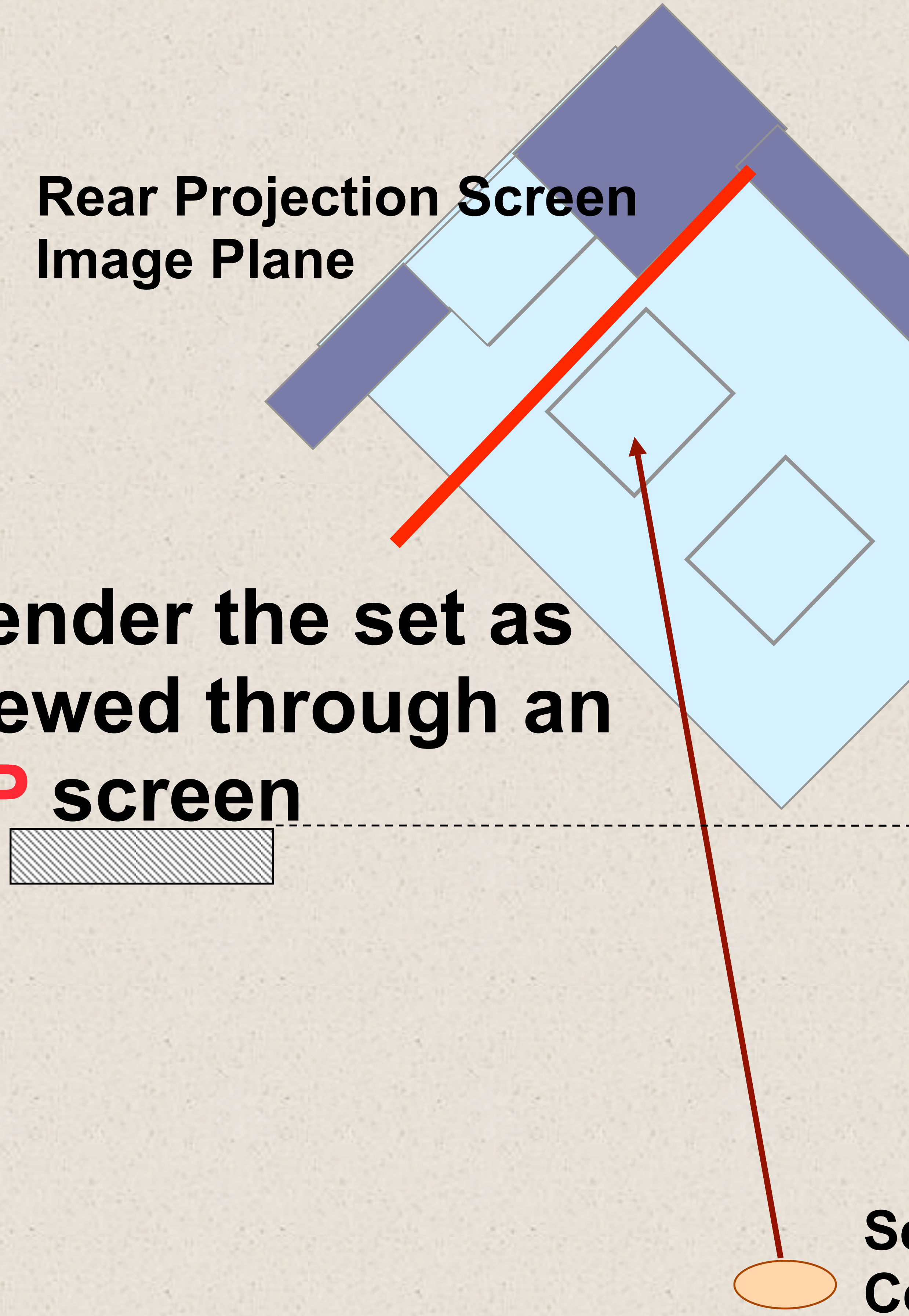

Data projectors
Light “appears” to come through window
Shakespeare 2000 (Helsinki)

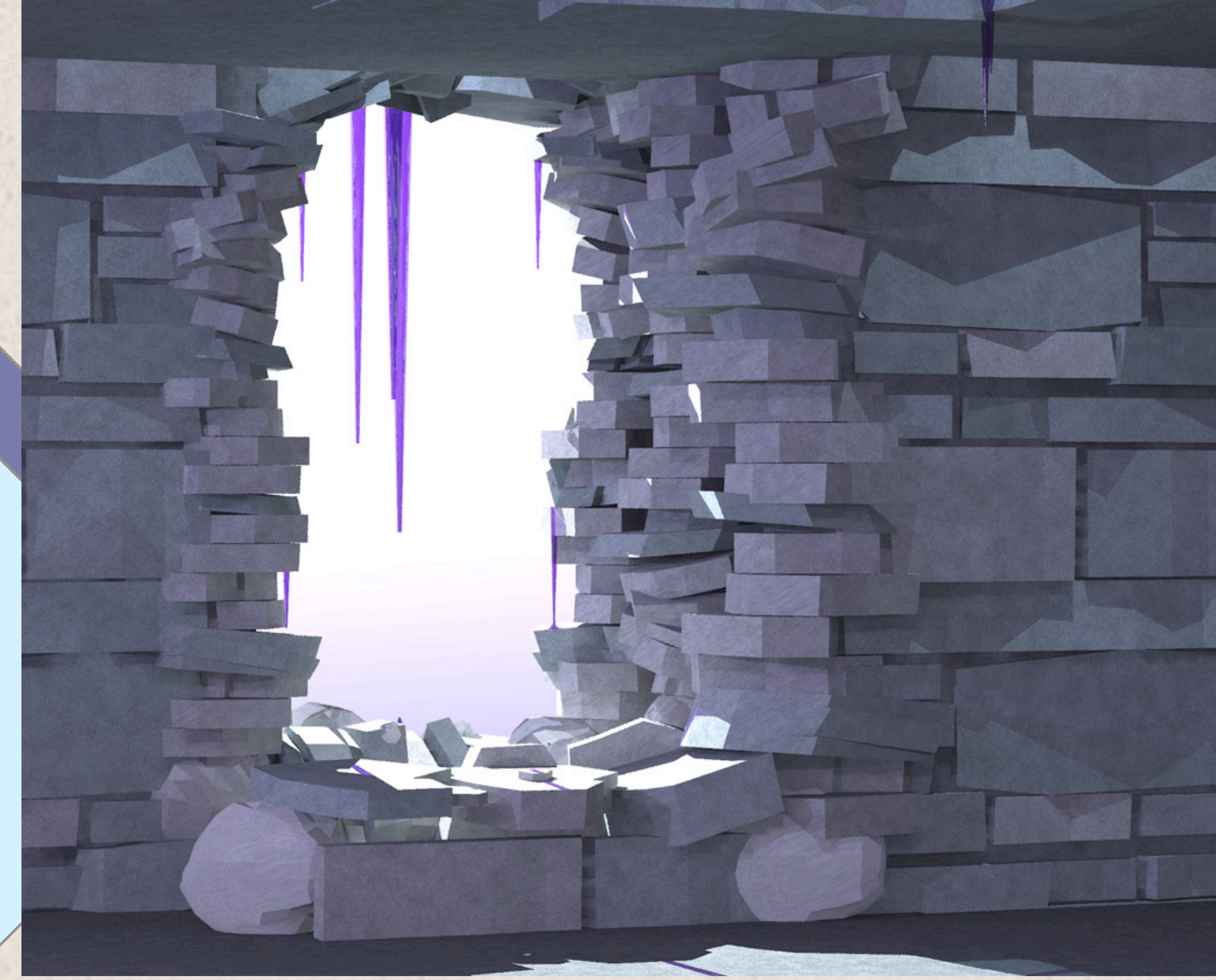
Plan of a “set” representing a castle interior



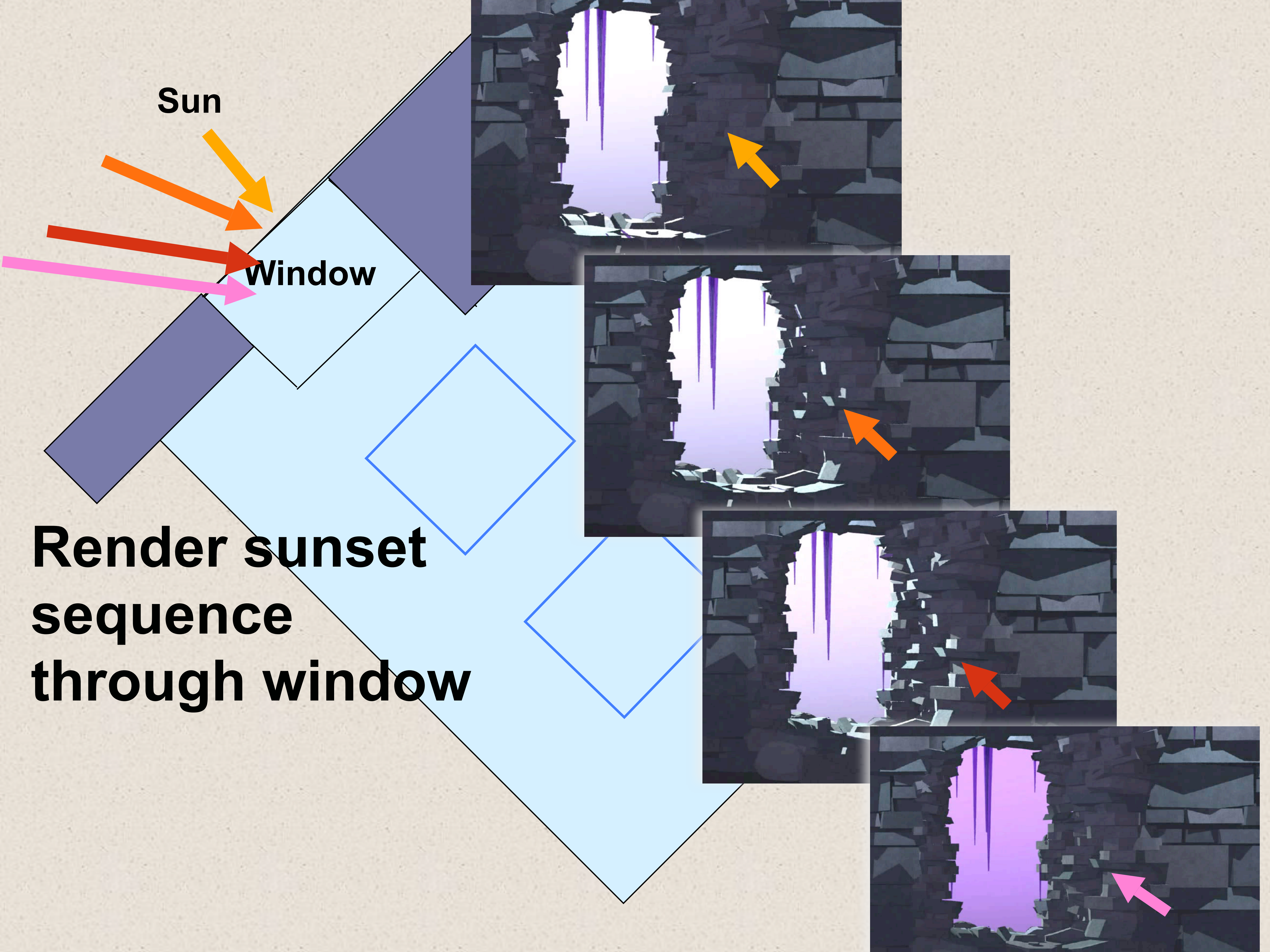
A Proof of Concept Experiment (2006)

Render the set as viewed through an RP screen

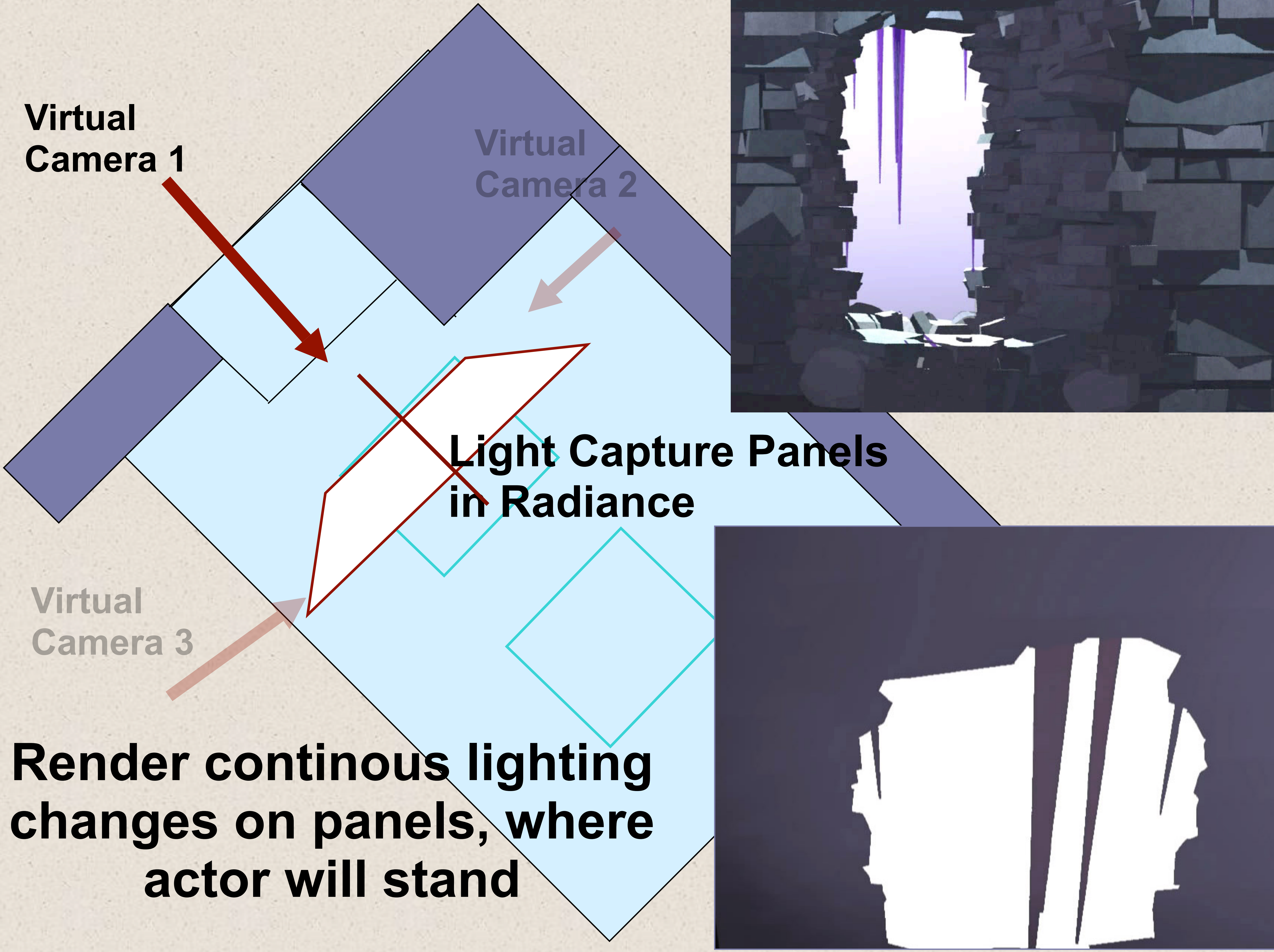




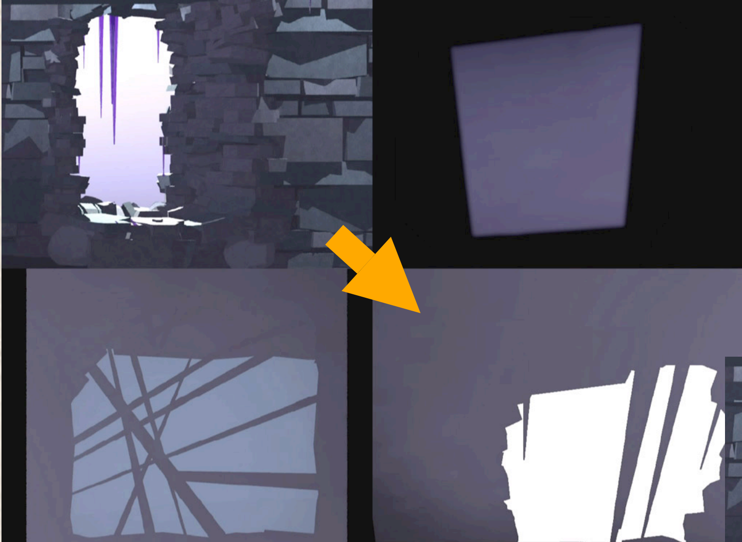
keystoned RP image



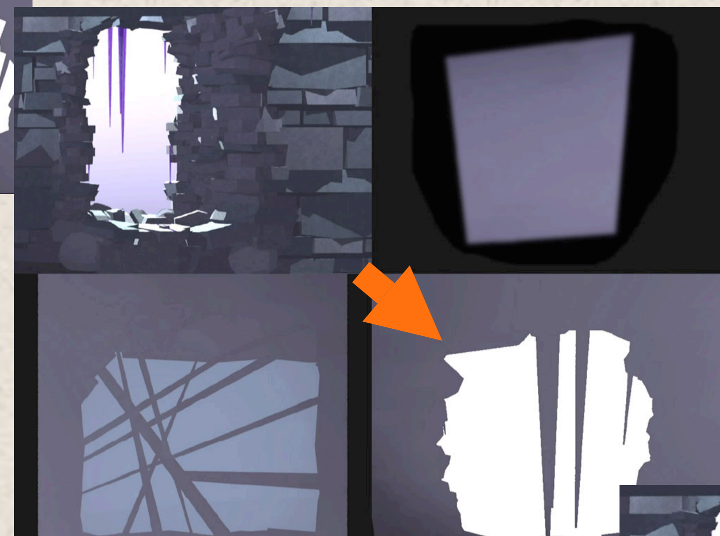
Sun
Window
Render sunset sequence through window



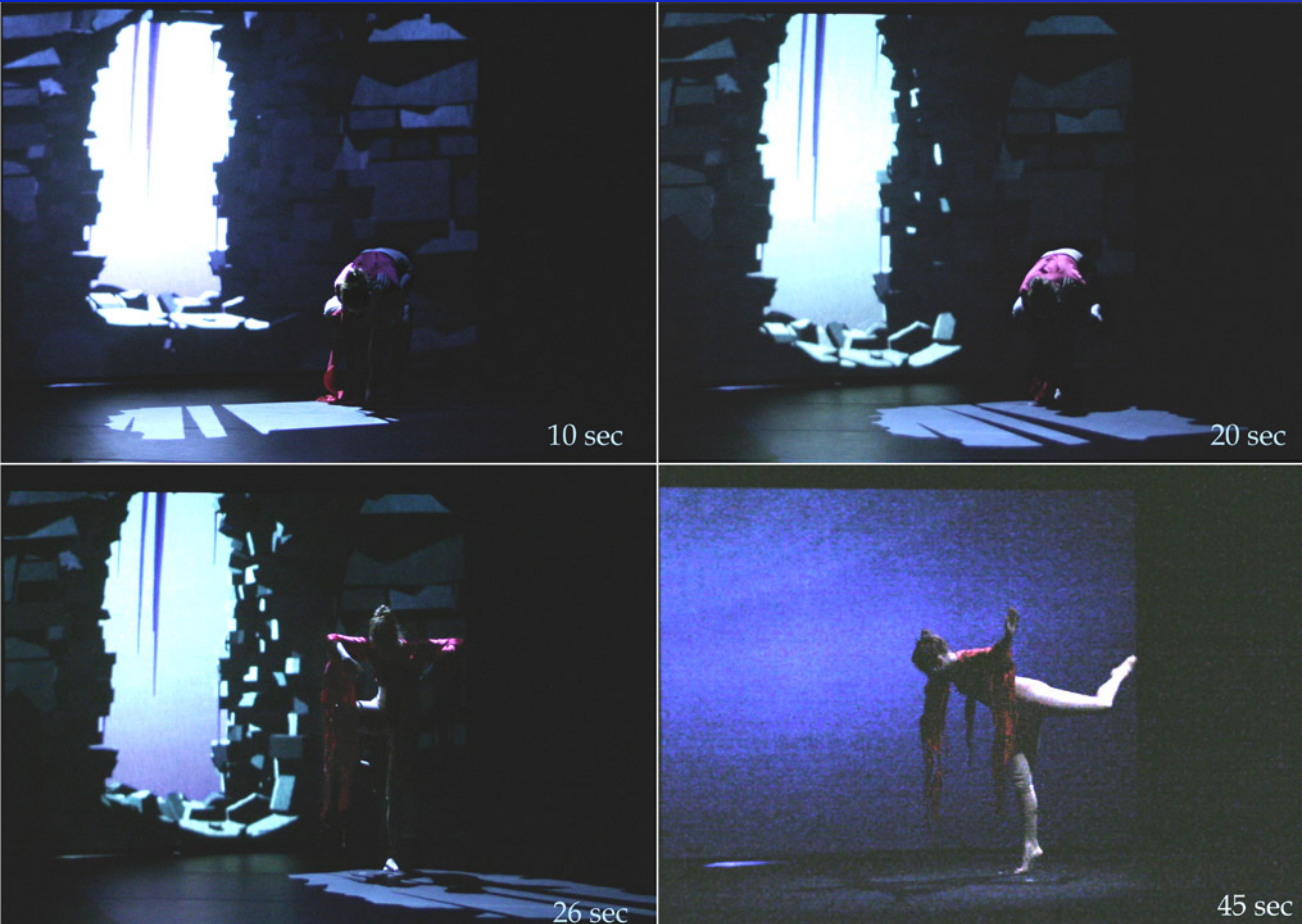
Render continous lighting changes on panels, where actor will stand



Renderings synced into a single movie.



"Lighting" played on actor using a 4 VGA out card and keyed data projectors


10 sec
20 sec
26 sec
45 sec

Towards shadowless stage light..

...reducing visual clutter (Current work)

Shadowless light exists

(well almost!)


But rarely on the stage
Though the actor’s lighting appears similar to the research, the shadow patterns create added noise.
Add more face light, see another shadow!

Shadowless light..
in our VS future?

Each lighting direction could be matted to the performer.


Shadow placement


Start with the traditional key light....
Need face light...

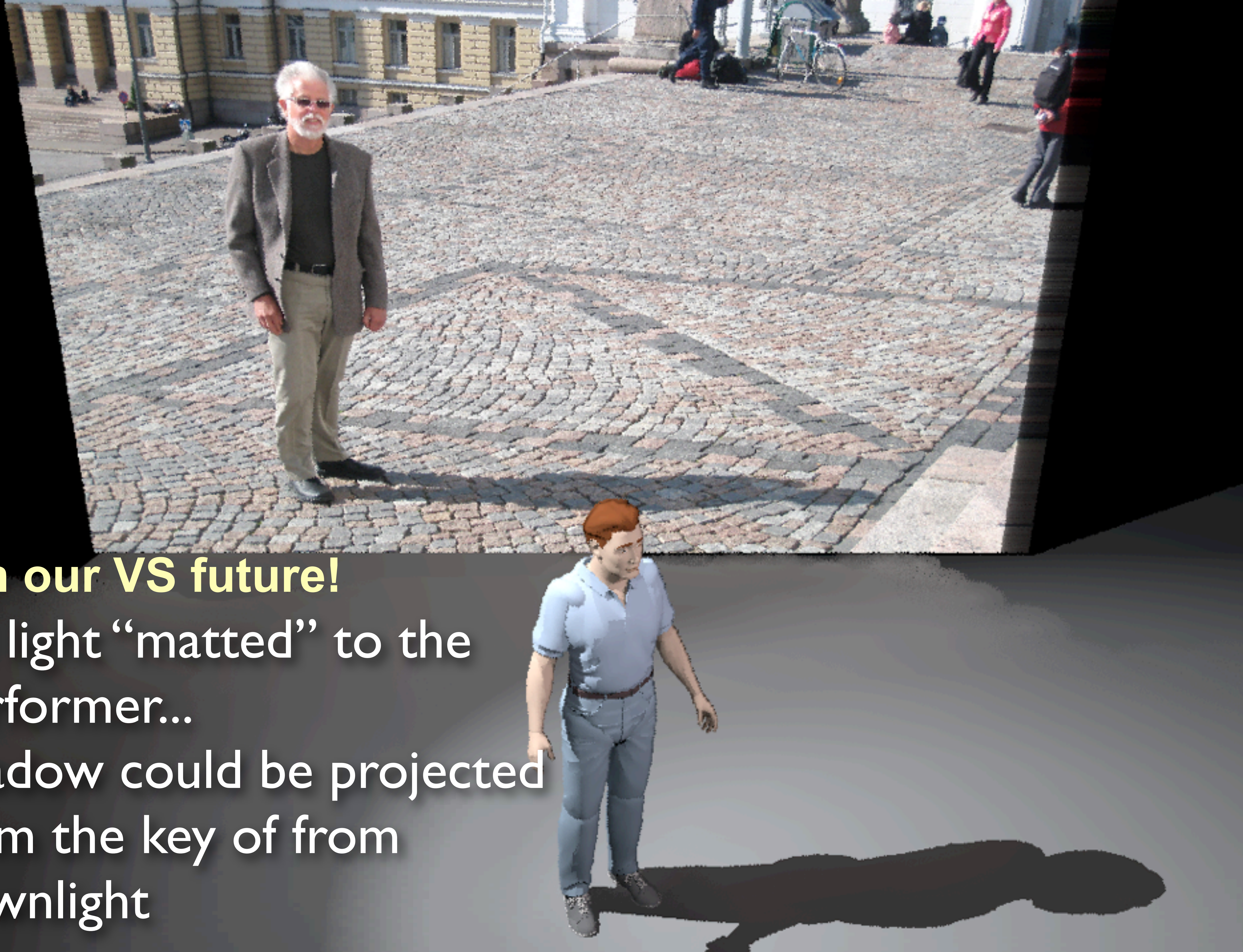

Shadows from fill light!

...in our VS future!

Fill light "matted" to the performer...

Shadow could be projected from the key of from downlight

Recall that shadow accuracy is not critical..



Challenges of creating a dynamic projection only on the performer in a lit stage environment.

-Chroma-key. Too constricting (green or blue sets)

- Binocular depth keying. Fails at distance. $$$

- Luminance-key. Tough in a lit environment

- Moving pattern capture. No light/actor discernment

- Consider Infra-red.

A step forward:

The following performance, staged in January, helped to better grasp the issues of real-time actor tracking and projecting “virtual, shadowless light”.

Another step towards migrating to data projectors as light sources on stage.

This experiment in realtime IR mattes

was developed from Mark Coniglio's work

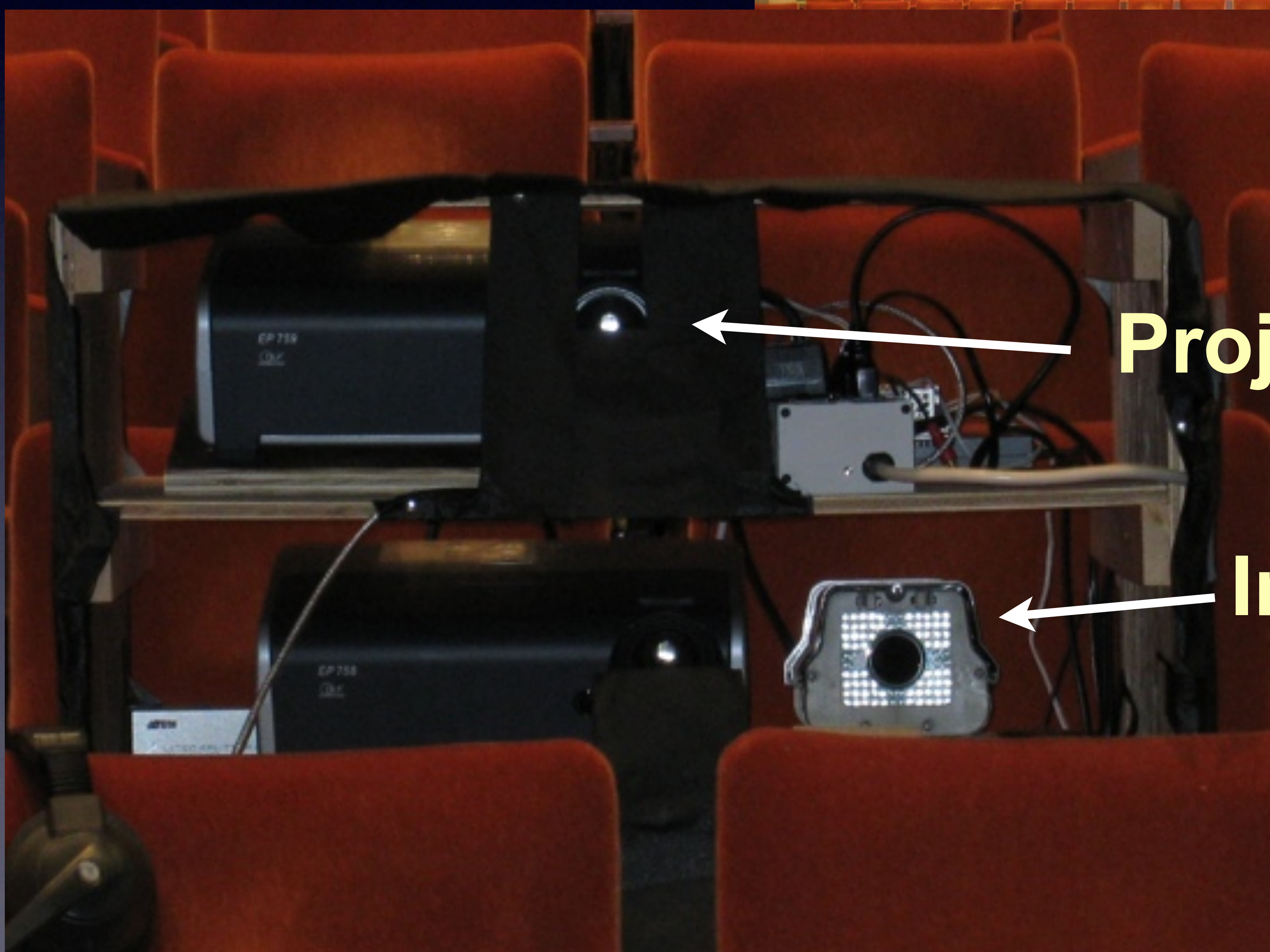
LED InfraRed backlight on CYC

Produces InfraRed silhouette of dancer

Radiance images helped to:

-determine the ideal placement of the camera/ projector system

- anticipate image reference issues

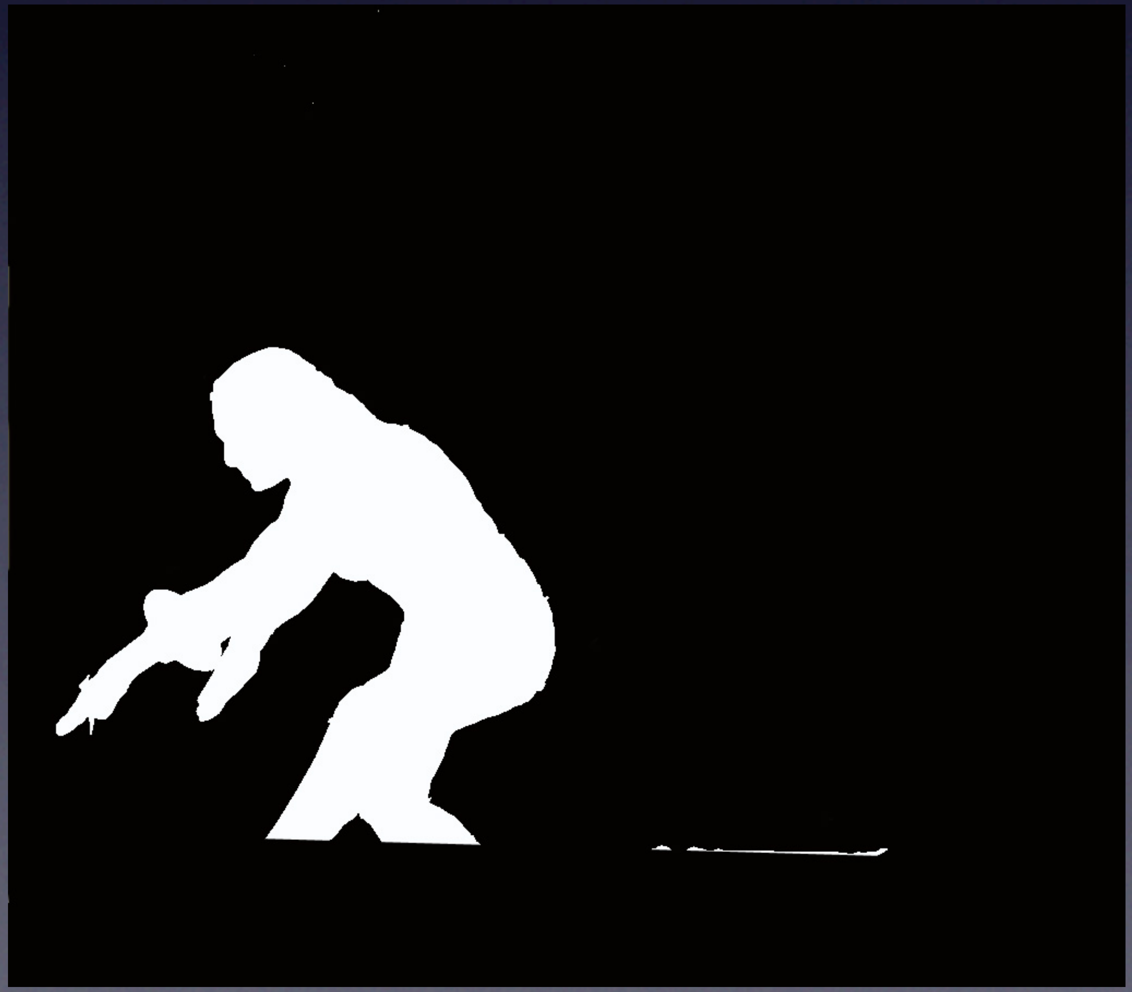


Projected light matted

InfraRed camera

built in LED’s not used

InfraRed camera view



Inverted in Isadora

Framed in Isadora

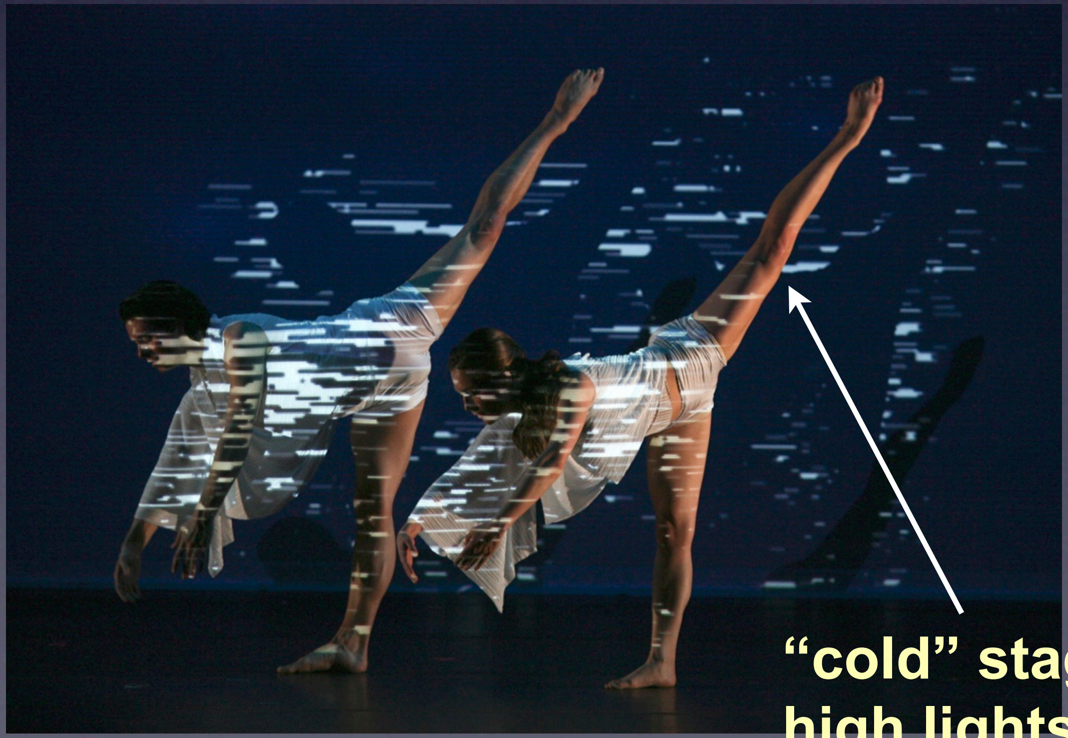
Basic matt was filled with video data

An offset colored image was added for interest

Then distorted

Found fabric invisible to IR but partially translucent to visible projection. Created multiple images.

Time delay.. dancer interacts with luminous shadow



“cold” stage light high lights dancers

Lessons...

undesirable latency (became a tool)

need high resolution to outline details

need projection “black” to be NO light

edges of projected area hard to reference

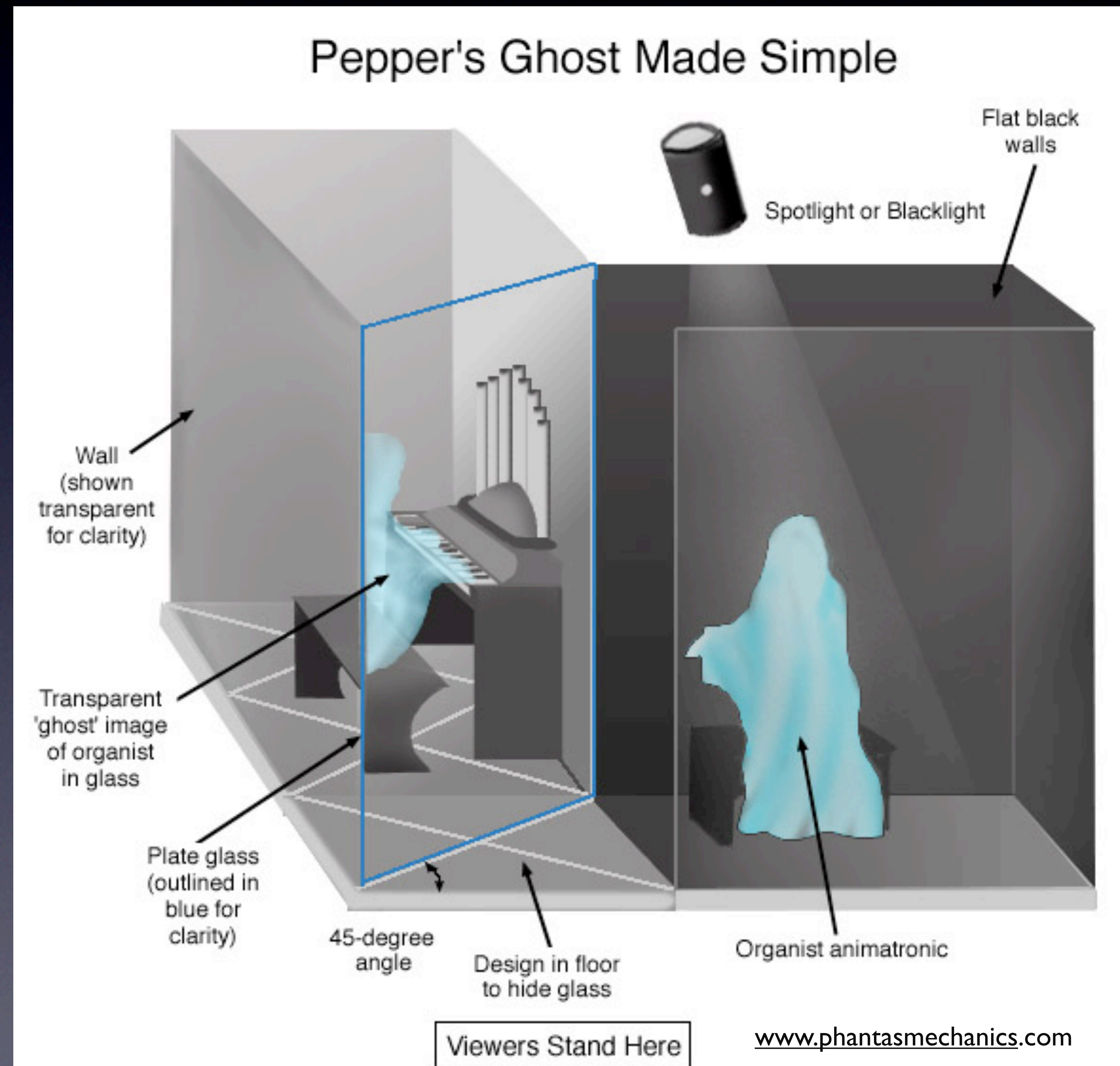
800 nm IR emitting materials needed!

Awaits continued development!

Laterna Magika, in Prague, is the only theatre in the world dedicated to the exploration of live performers and projected image.

I have been privileged to observe their work for the past month

Svoboda's last gift to Laterna Magika in Prague is the current Graffiti Virtual Scrim (1st explored in Past/ the Trap, 1999) developed from the Pepper's Ghost principle.



Graffiti

photo by: Vojtech PISARIK

Graffiti

photo by: Vojtech PISARIK

Graffiti

photo by: Vojtech PISARIK

photo by: Vojtech PISARIK

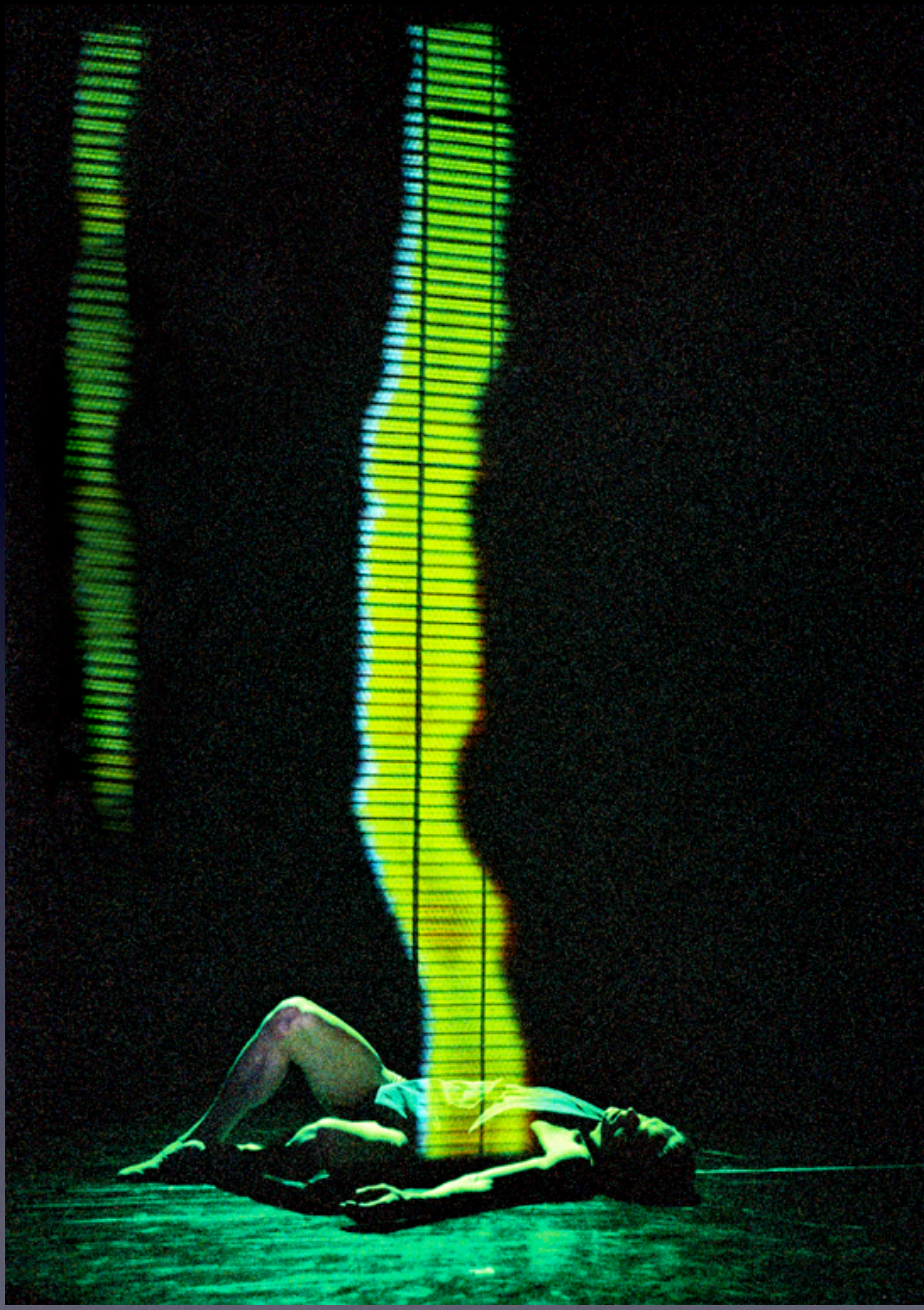
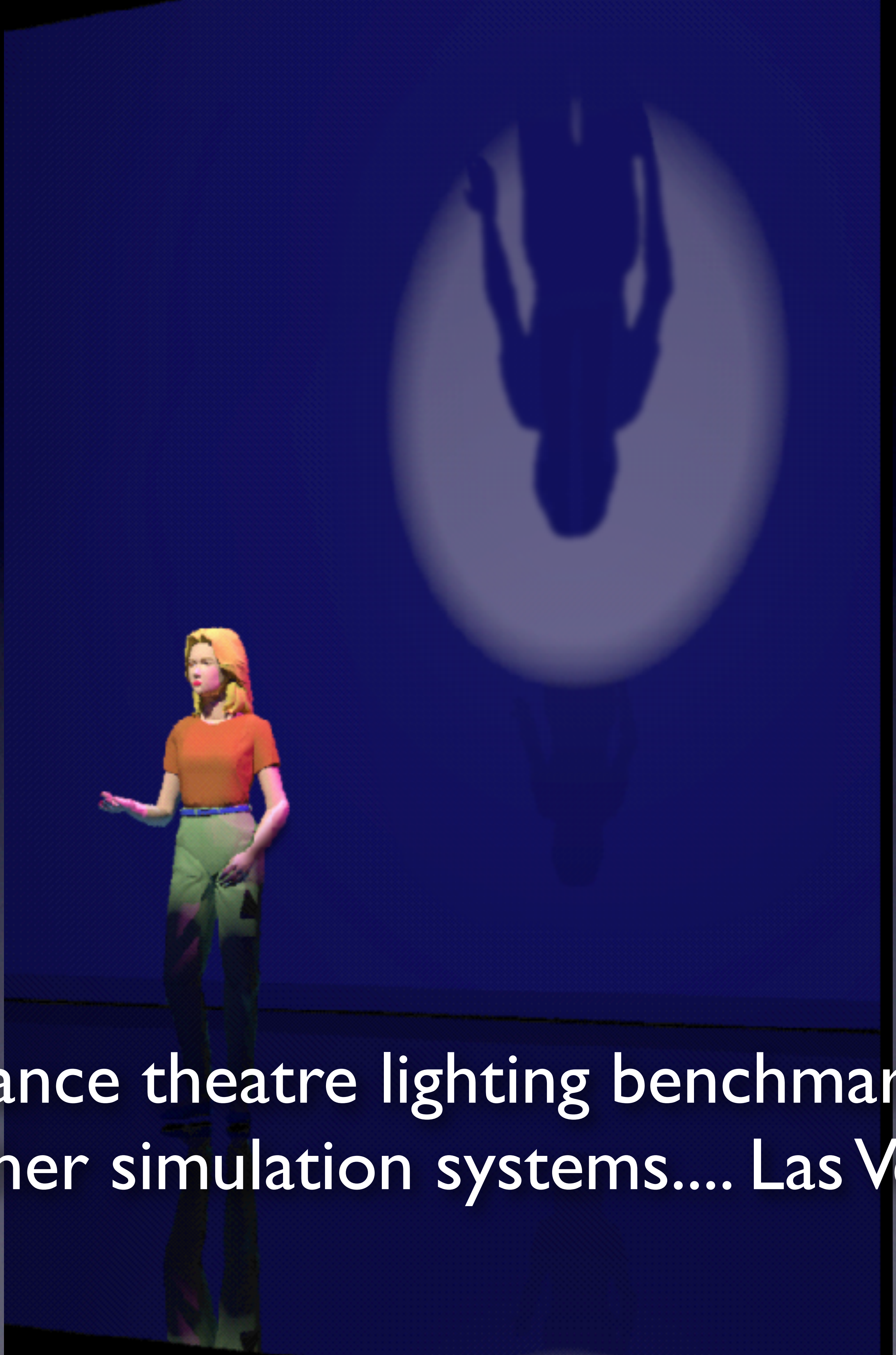

photos by: Vojtech PISARIK


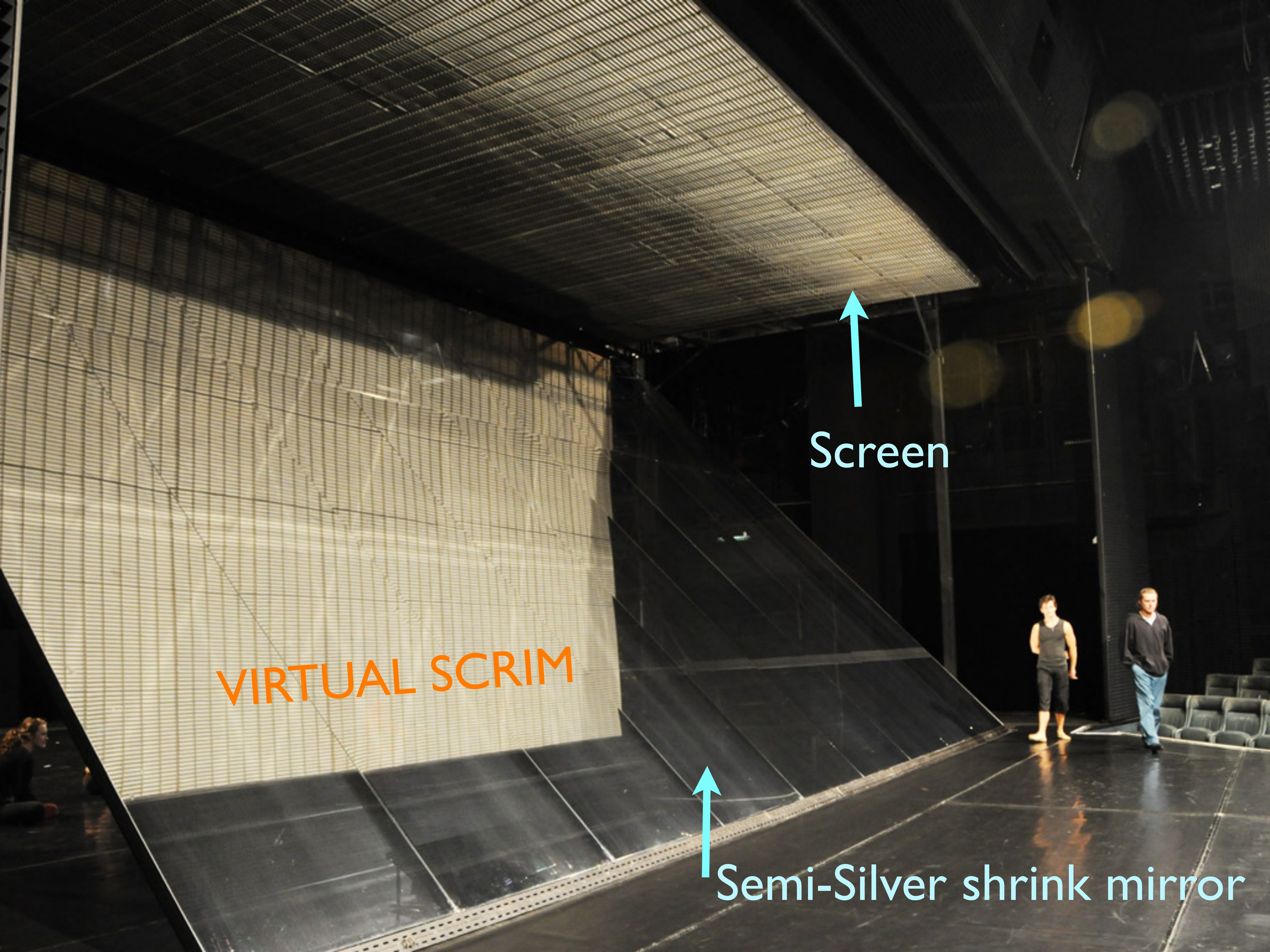

photo by:Vojtech PISARIK

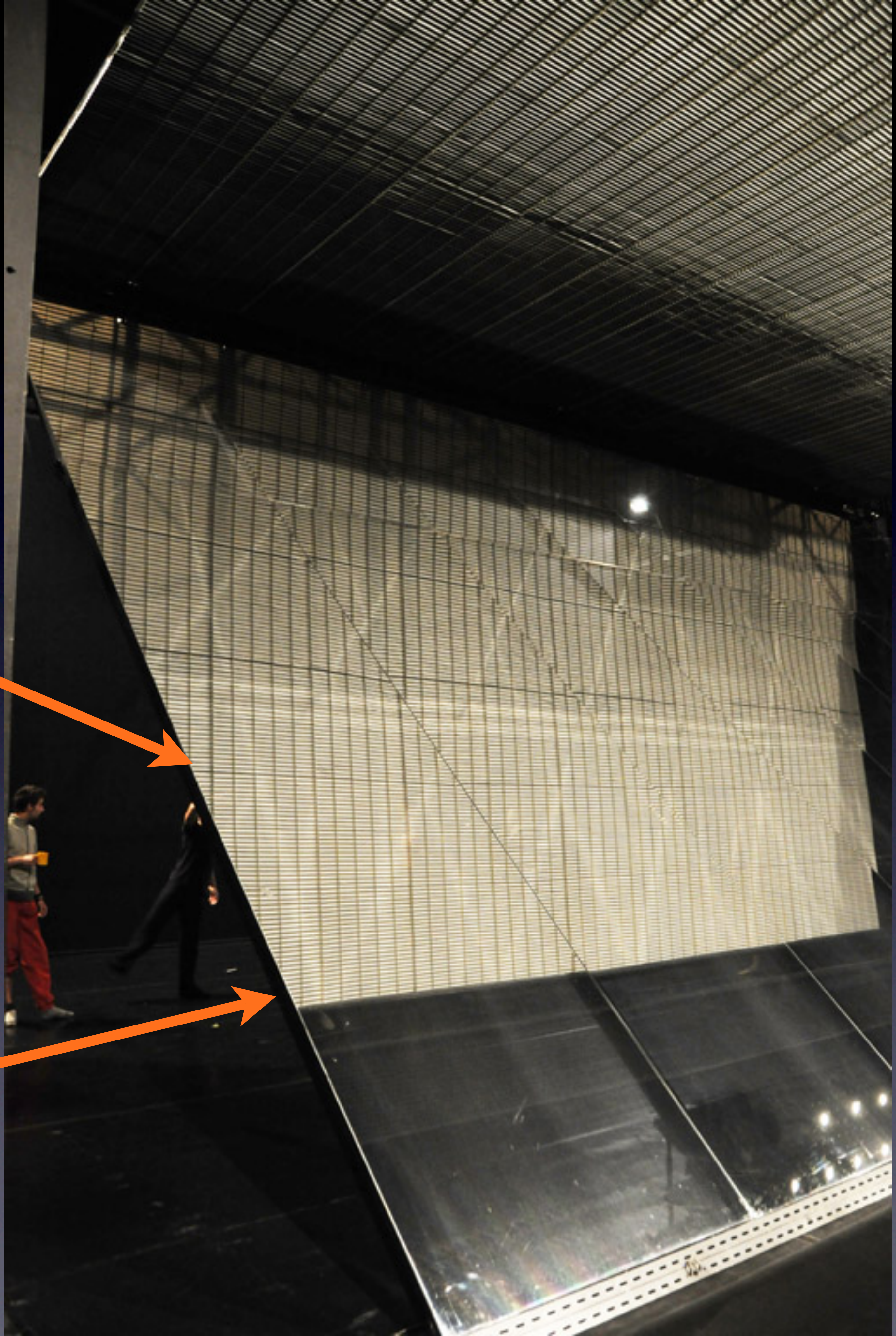


My old Radiance theatre lighting benchmark, to challenge other simulation systems.... Las Vegas Bounce!

A virtual scrim study..
..no shape clipping required!

photos by: Vojtech PISARIK


Screen
VIRTUAL SCRIM
Semi-Silver shrink mirror

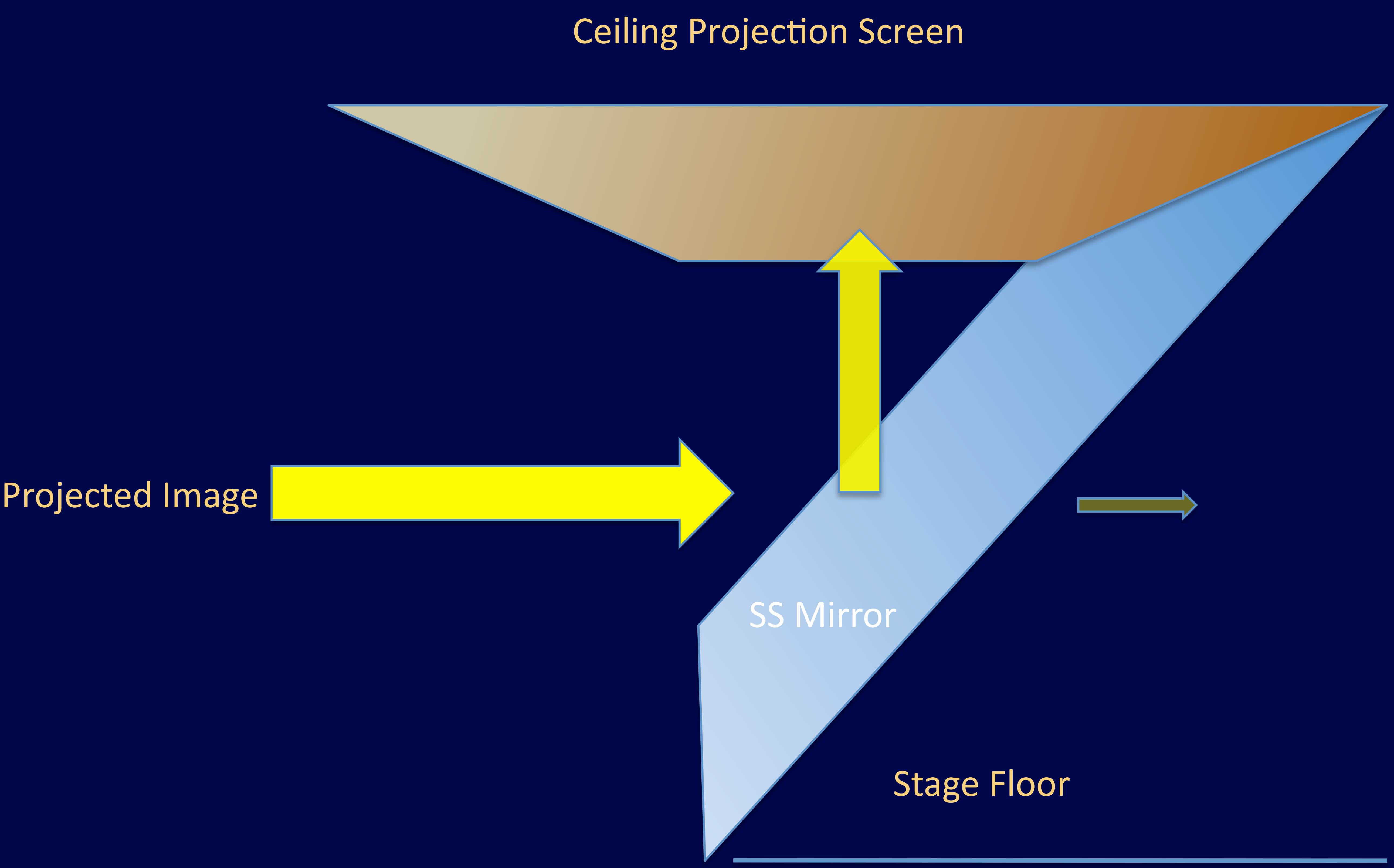


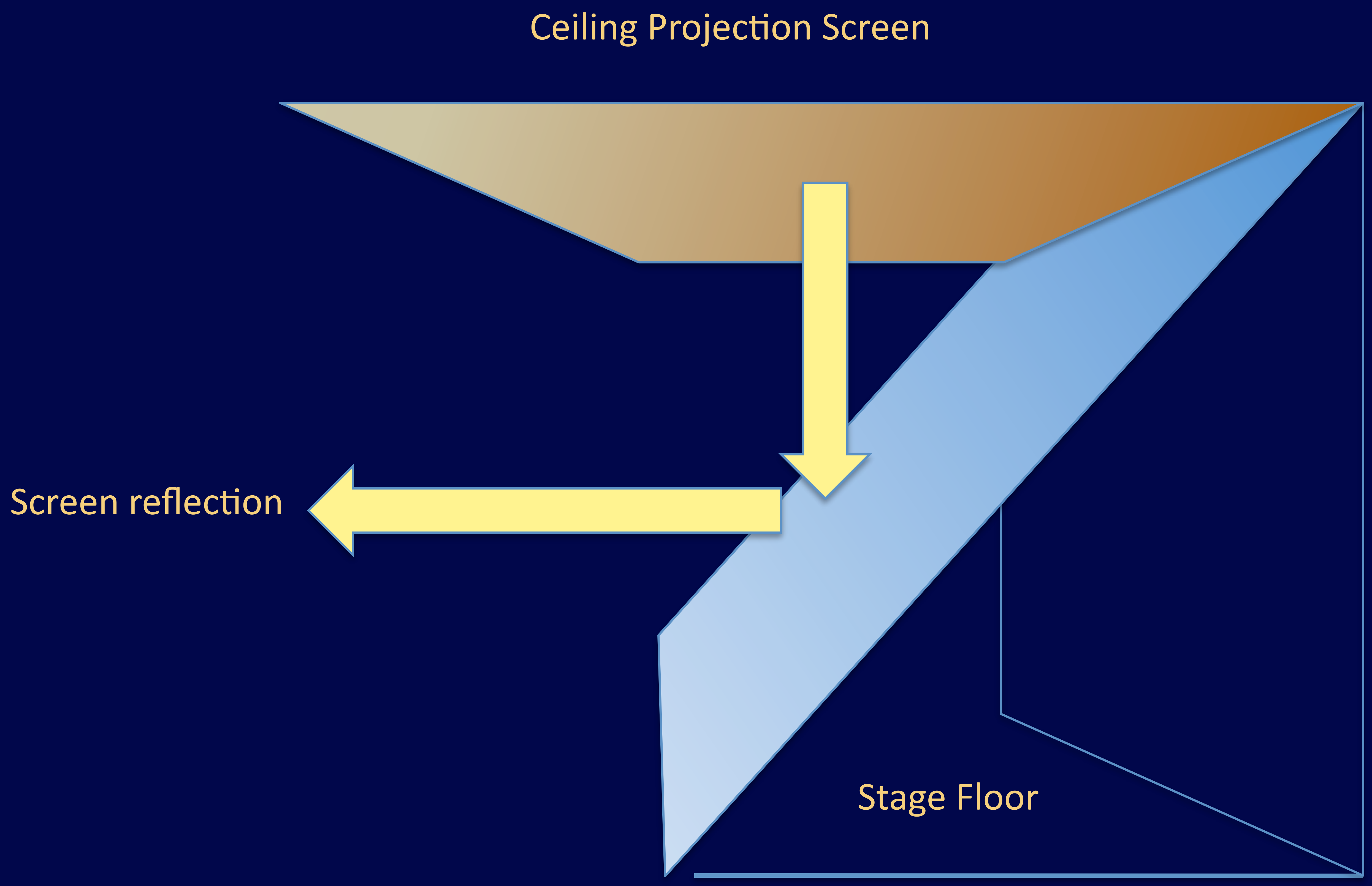
VIRTUAL SCRIM
appears opaque

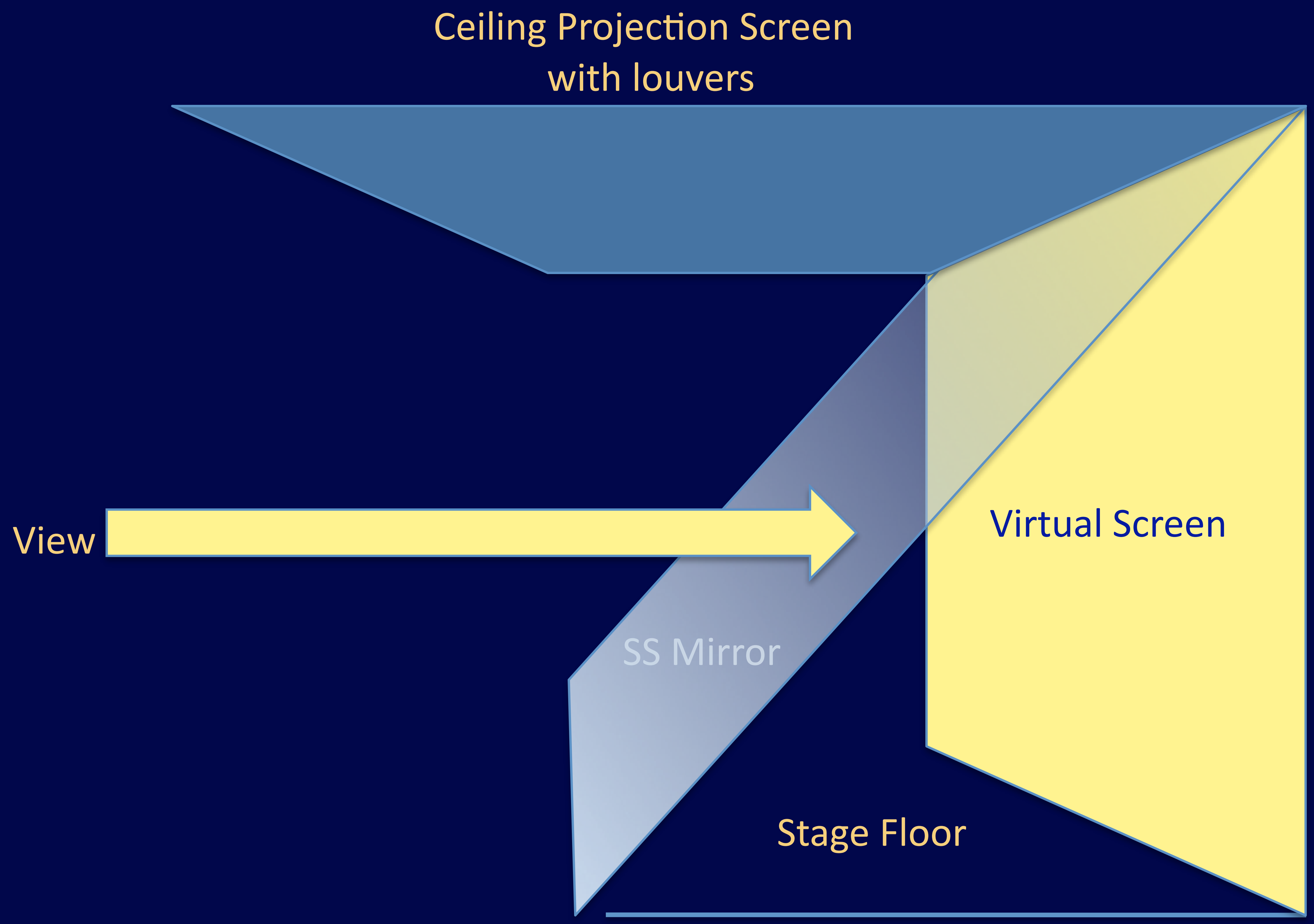
VIRTUAL SCRIM
limited by mirror

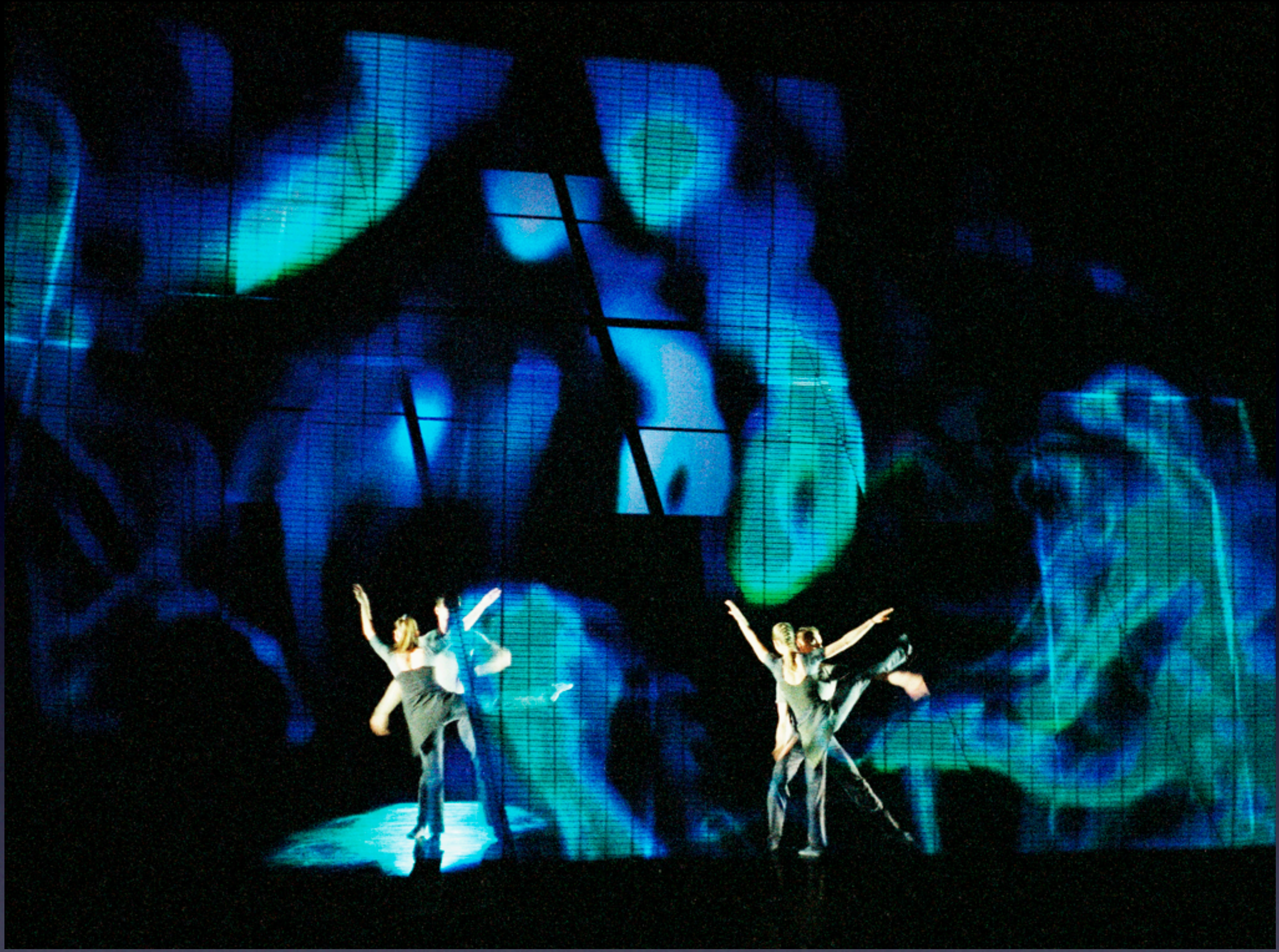

The dancer's domain


Image projection


Ceiling Projection Screen
Projected Image
SS Mirror
Stage Floor


Ceiling Projection Screen
Screen reflection
Stage Floor


Ceiling Projection Screen
with louvers
View
Virtual Screen
SS Mirror
Stage Floor



Dancers clearly visible when strongly lit and when aligned with dark sections of the projection

First attempt..
one week ago!

void trans reflect85
0
0
7 1 1 1 .80 0 .20 1

void trans pass20
0
0
7 .20 .20 .20 .80 0 1 1

void mixfunc one-way_glass
4 reflect85 pass20 if(Rdot,1,0) .
0
0

front surface back surface

Current front surface matching...

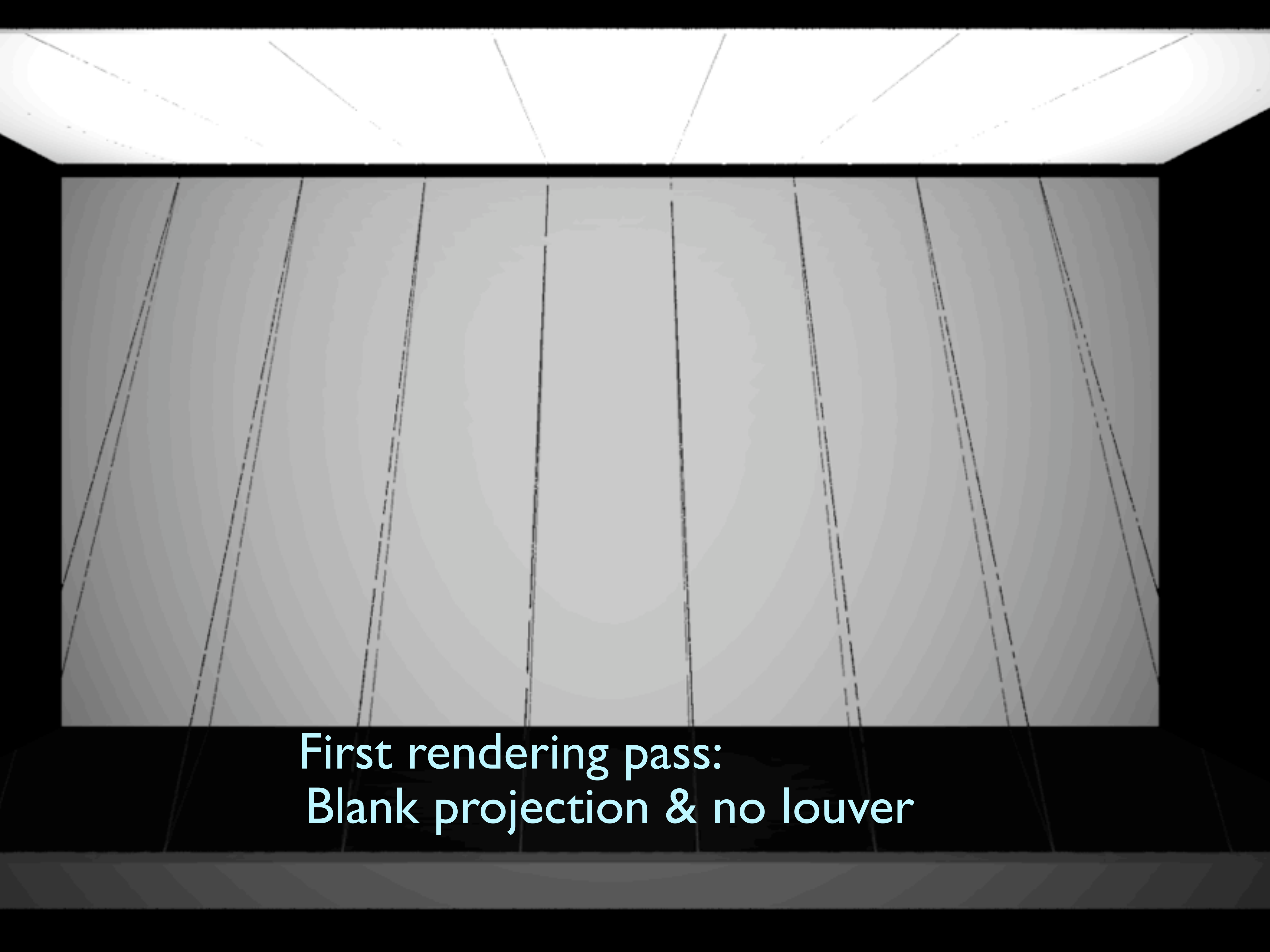
void trans pass25
0
0
7 .25 .25 .25 0.35 0 1 1

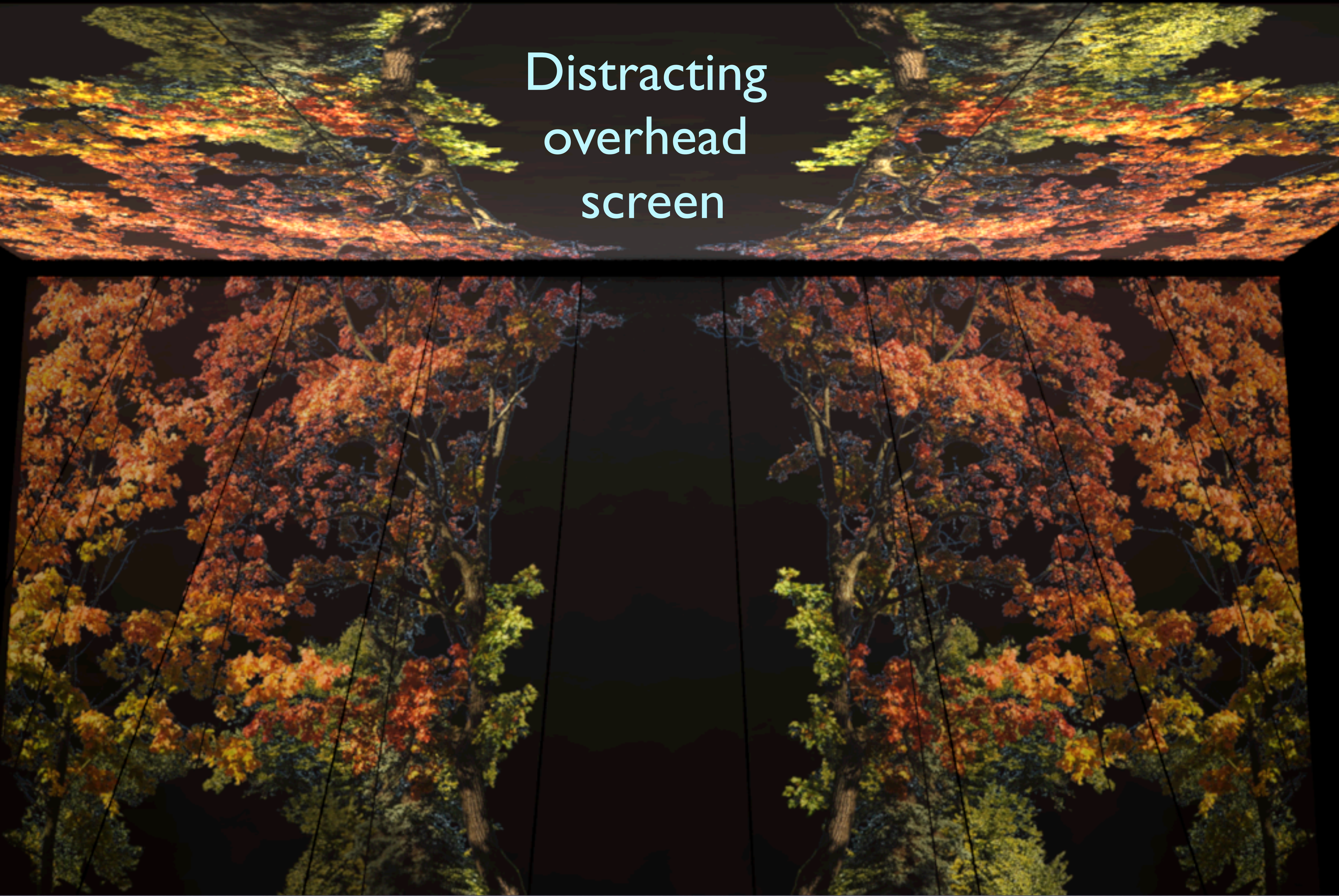
void mirror one-way_mirror
1 pass25
0
3 0.80 0.80 0.80

Future iteration..

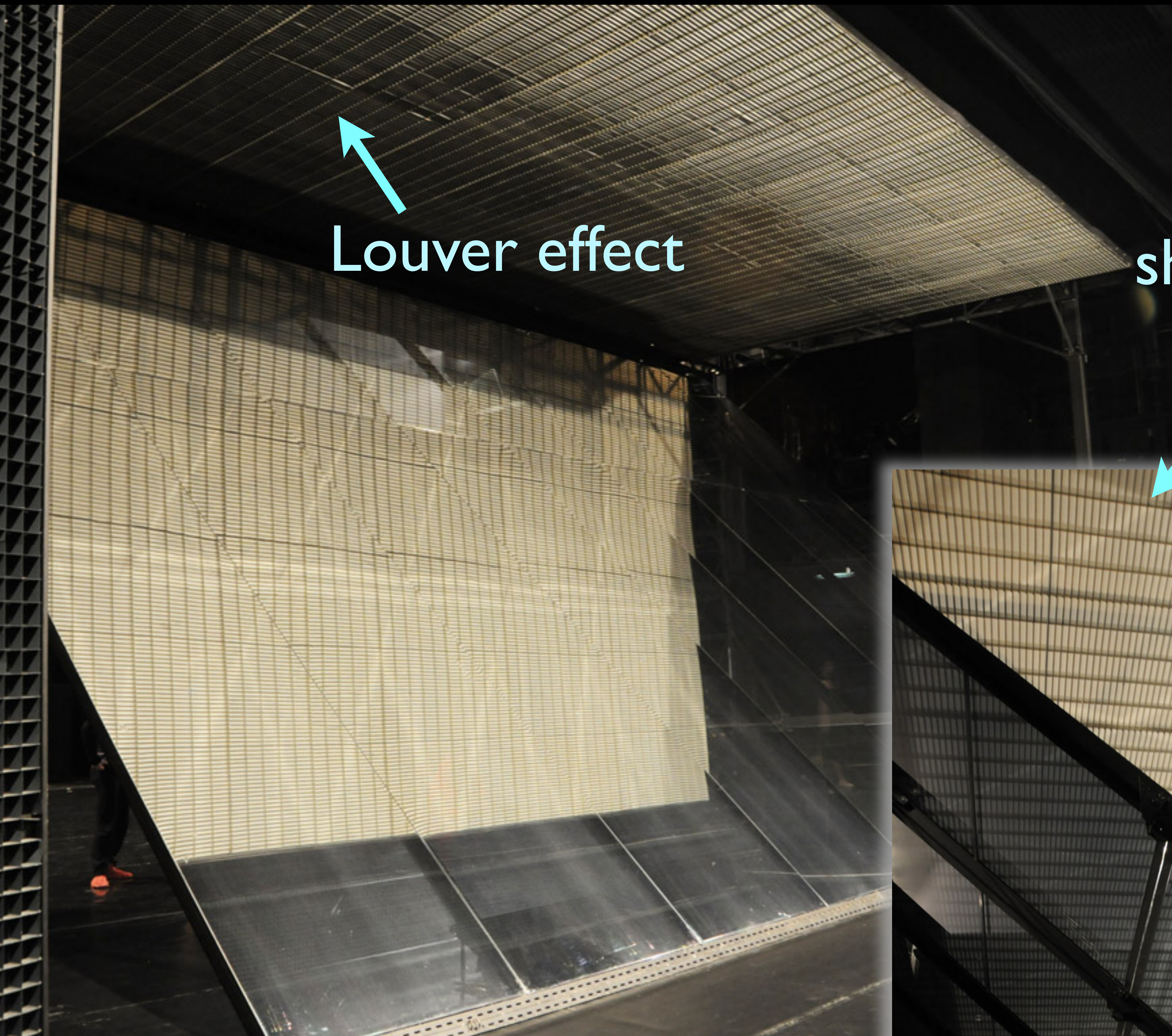
mod mat label
n x x x x ...
n
n x x x x ...

#####
...
#
#....

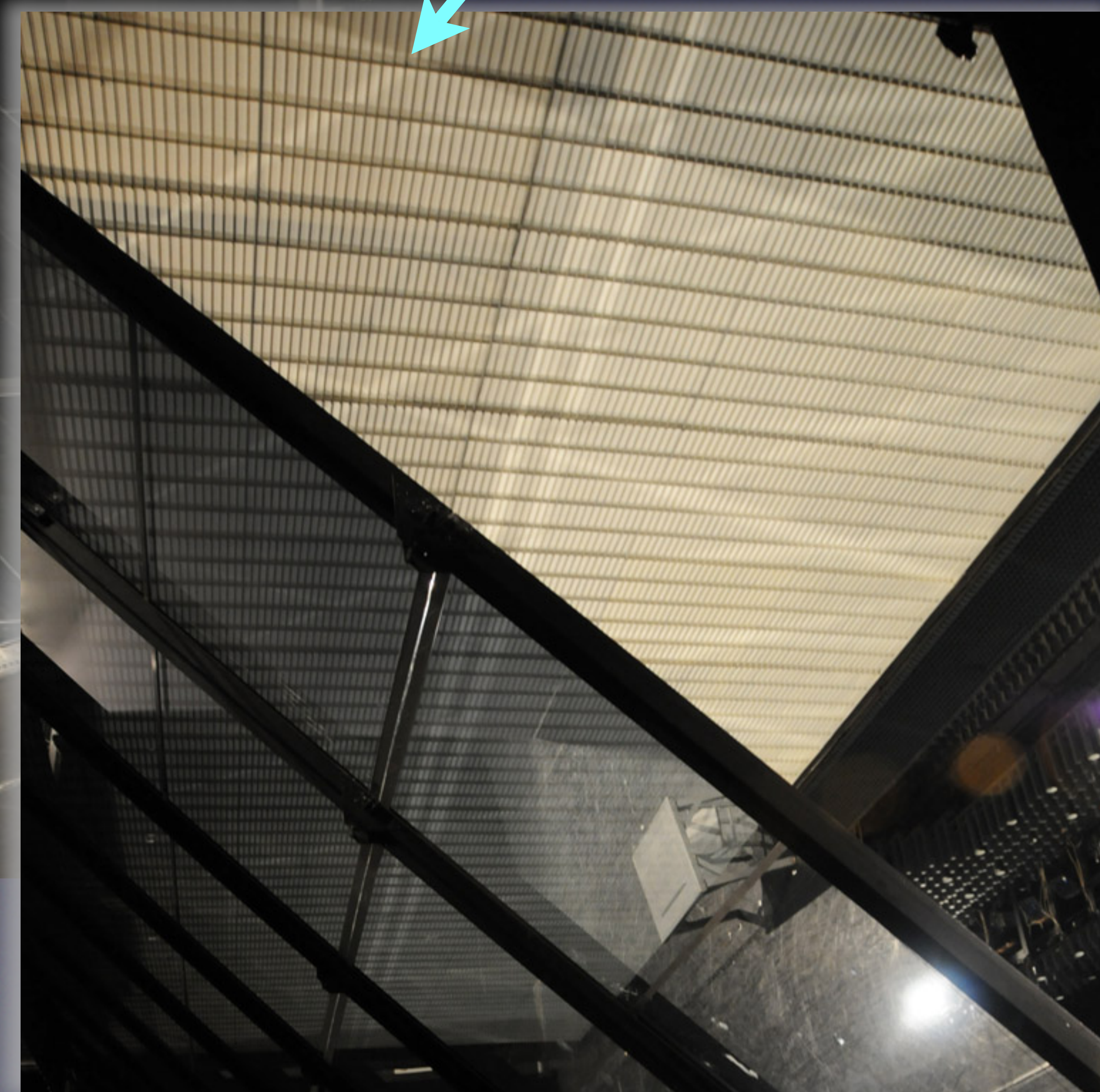

First rendering pass:
Blank projection & no louver

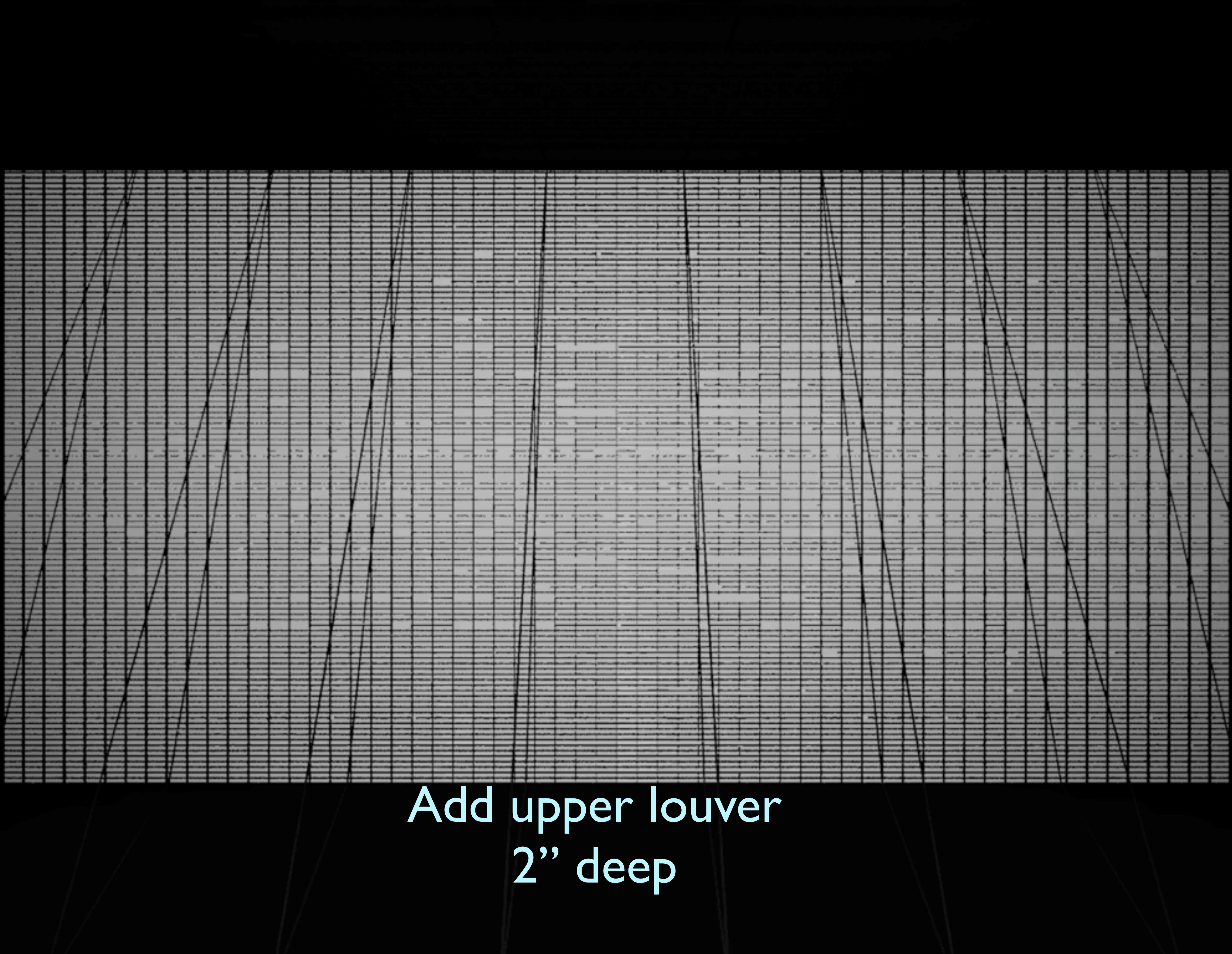


Project an image



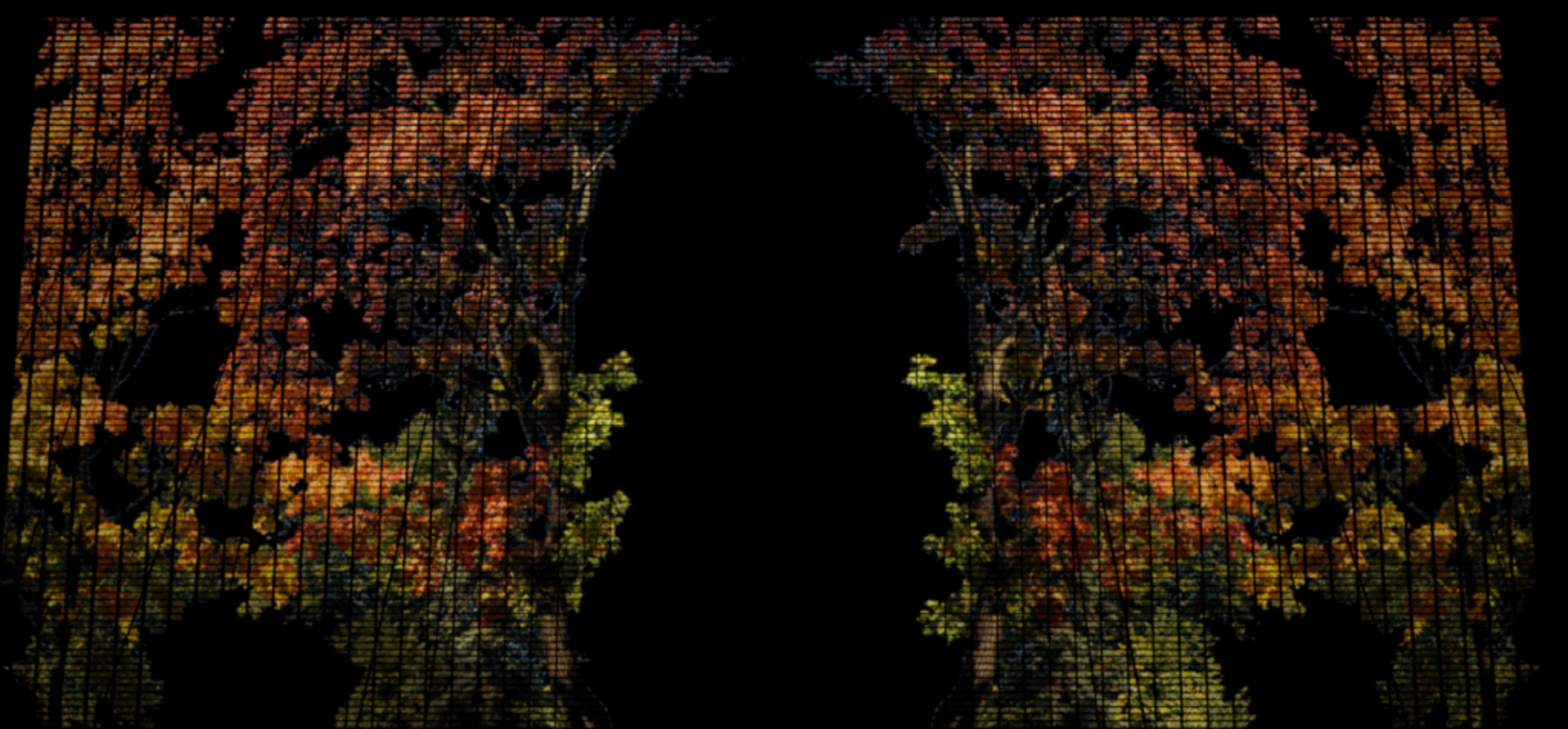
shallow louver
detail



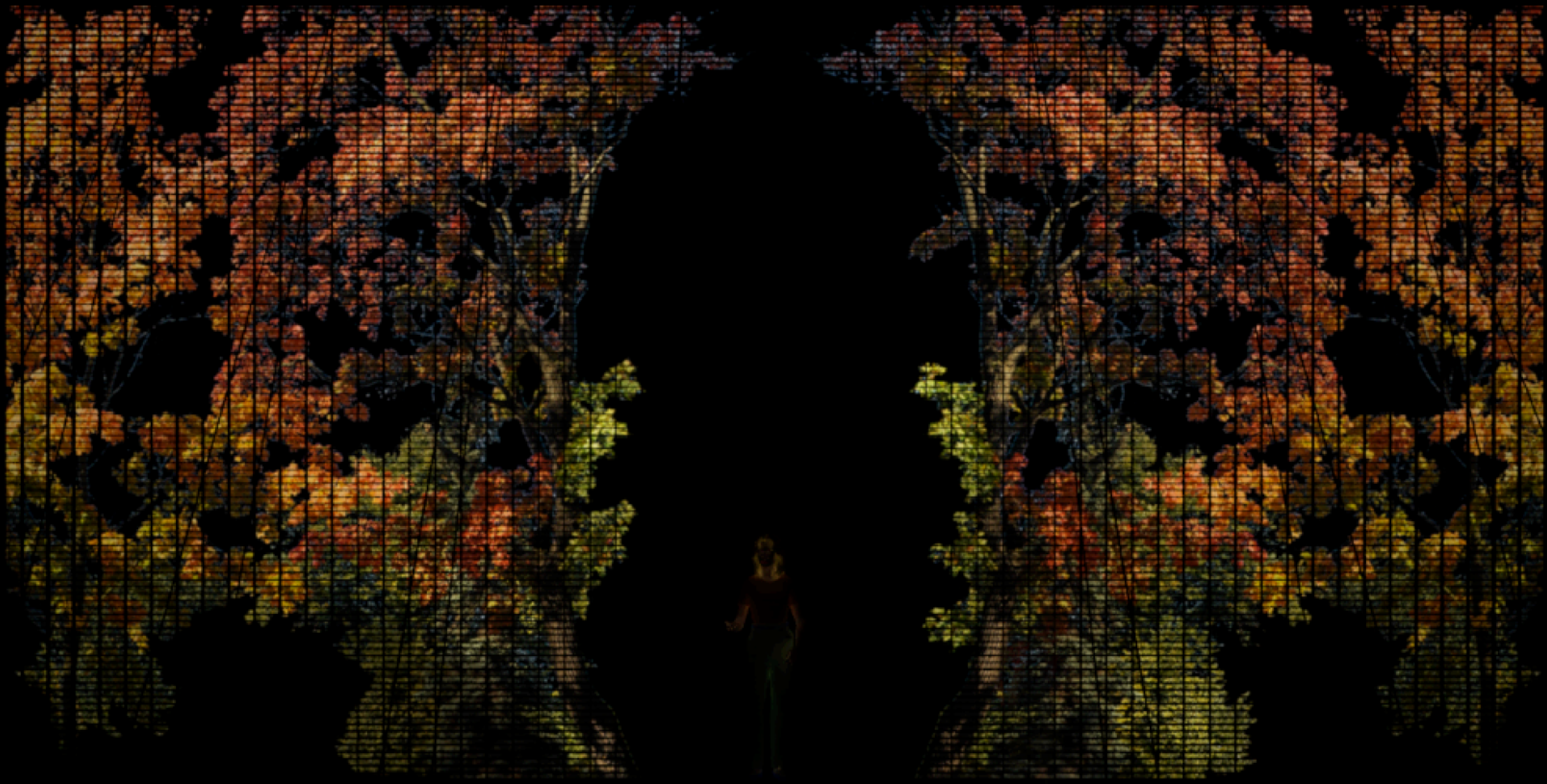


Add upper louver
2” deep

Overhead
essentially
dark

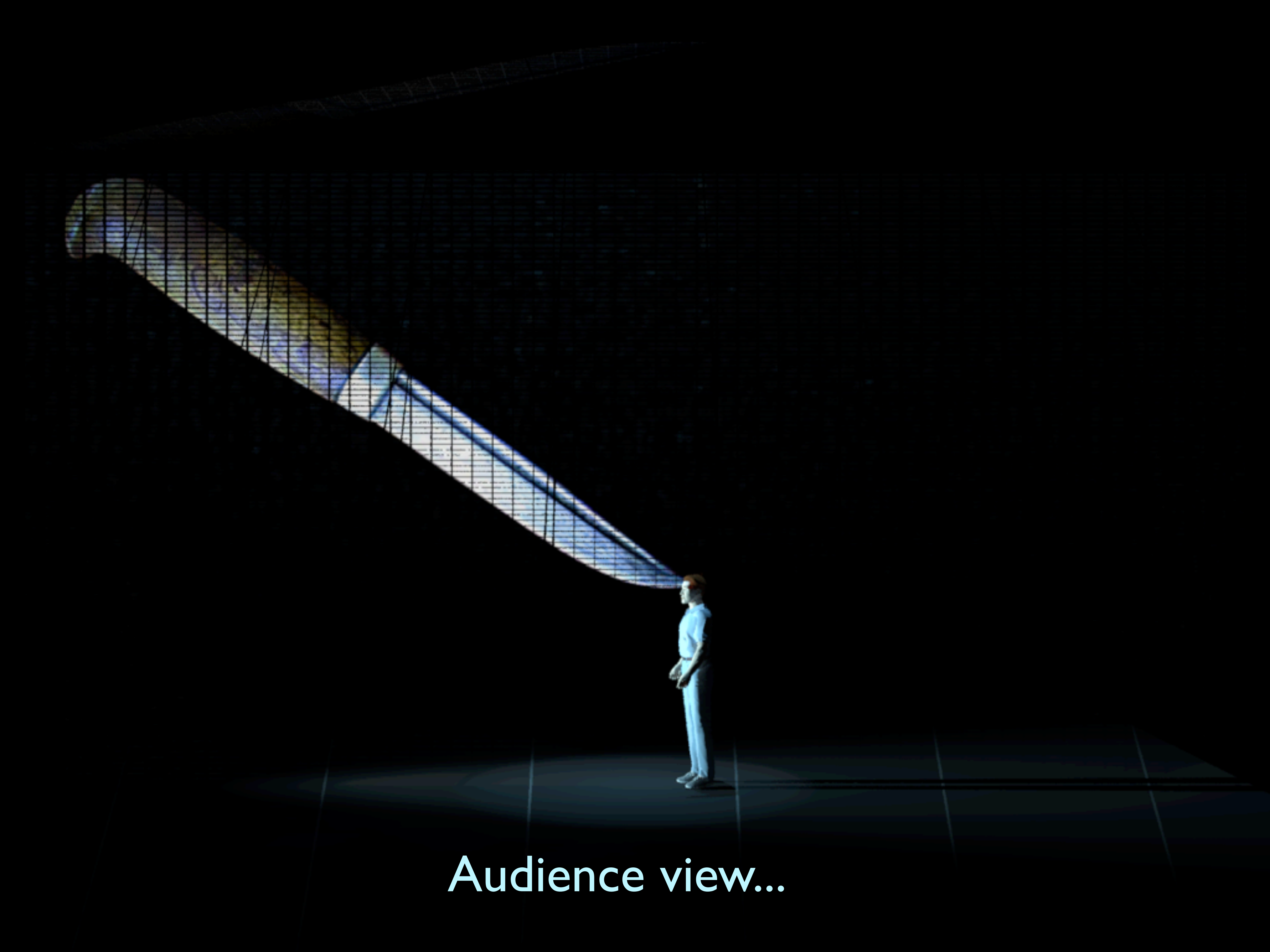


On with the show:
Opening full “opaque” projection



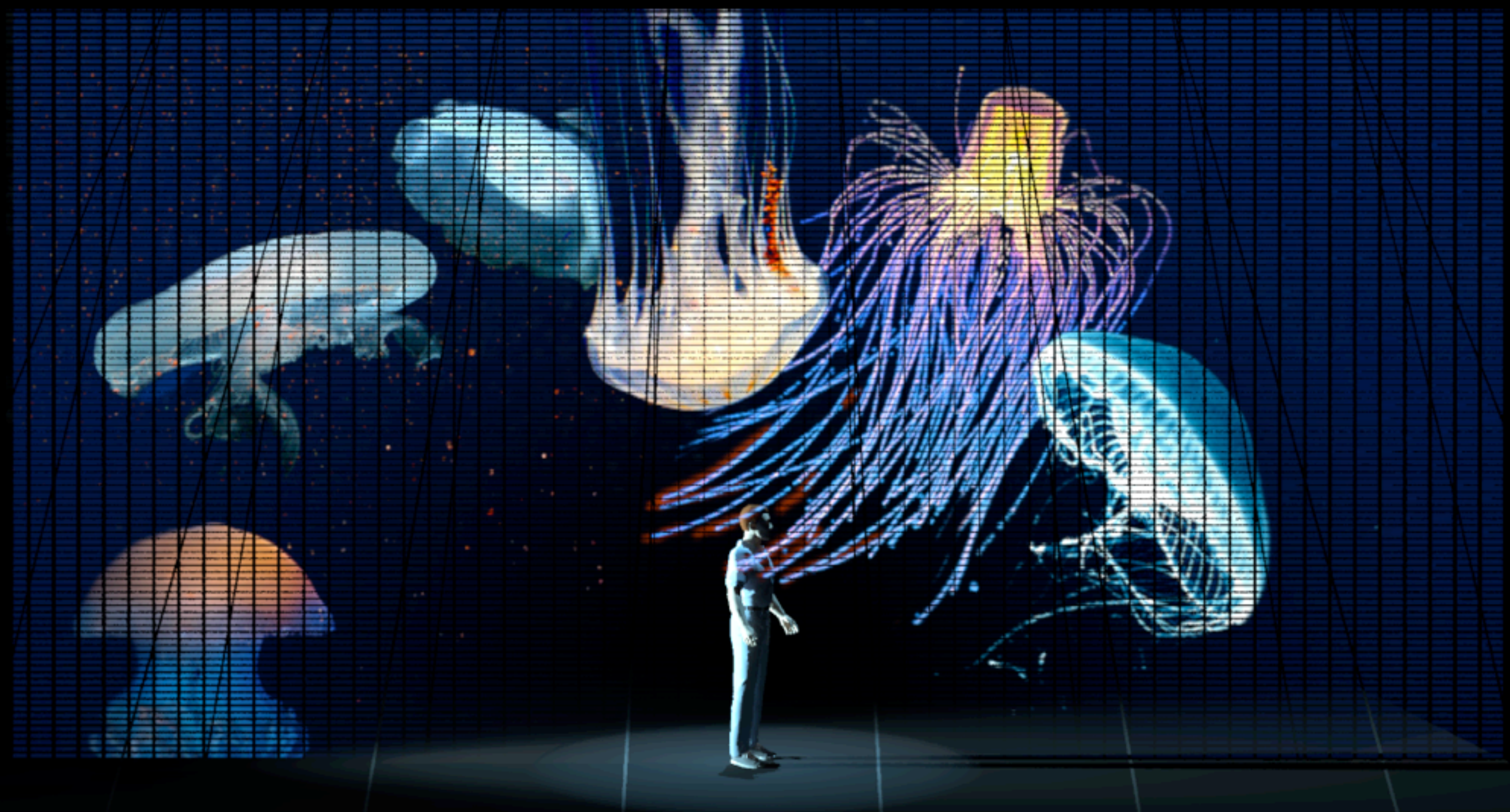
Add rear projection screen

Side seat view: zoomed

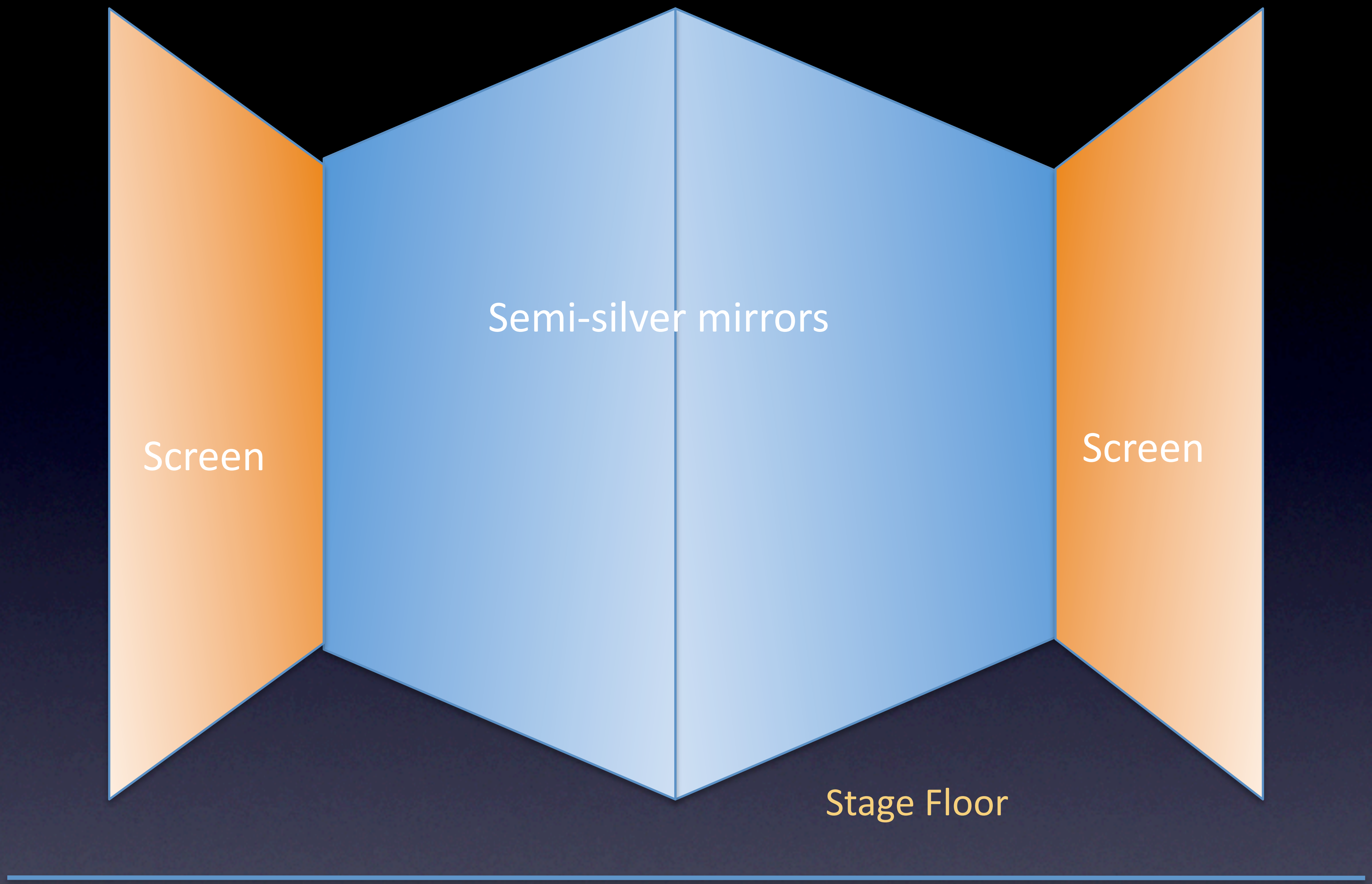


Audience view...

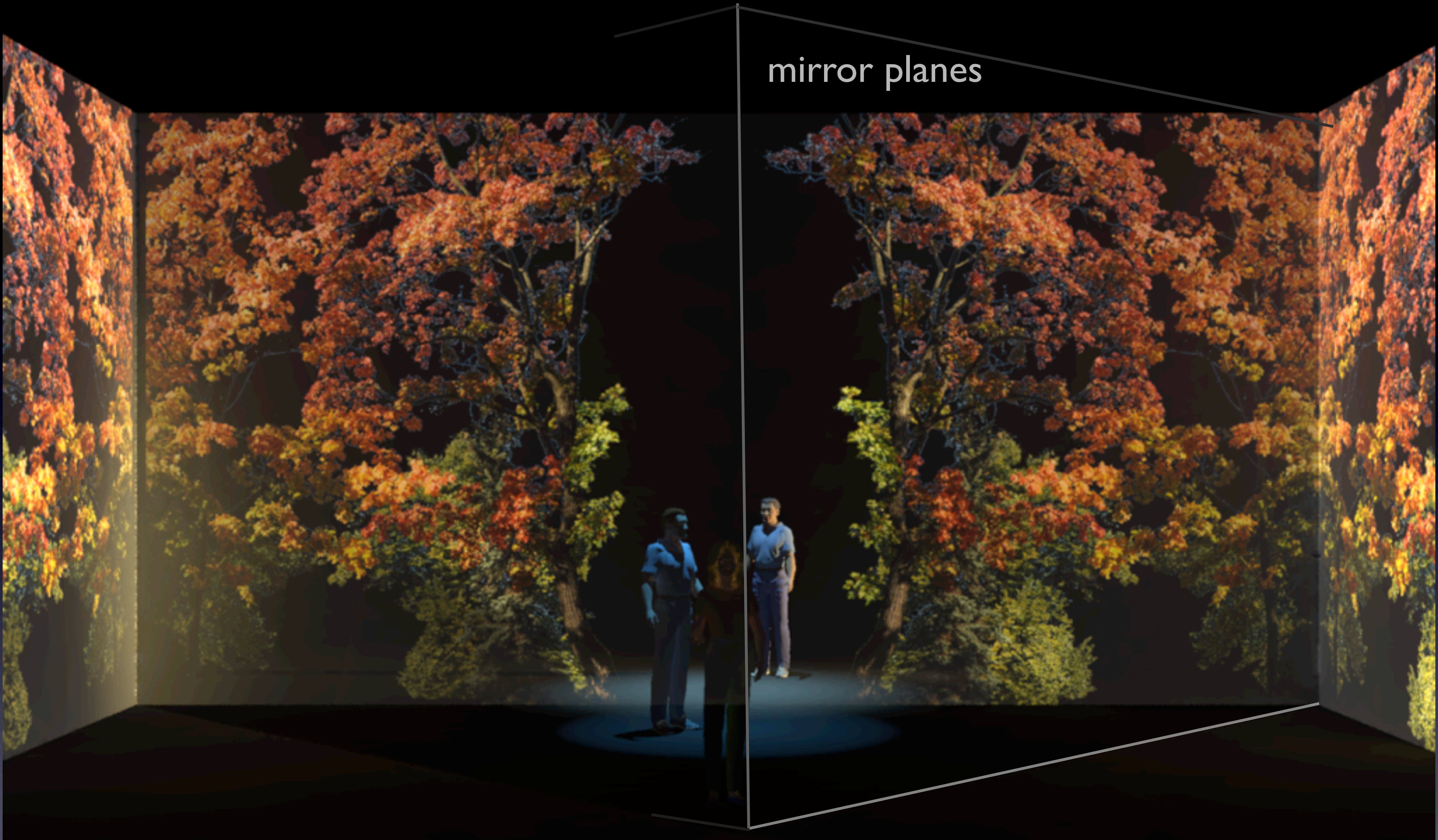
What the dancer sees!
Vivid spacial memory and IMAGINation needed



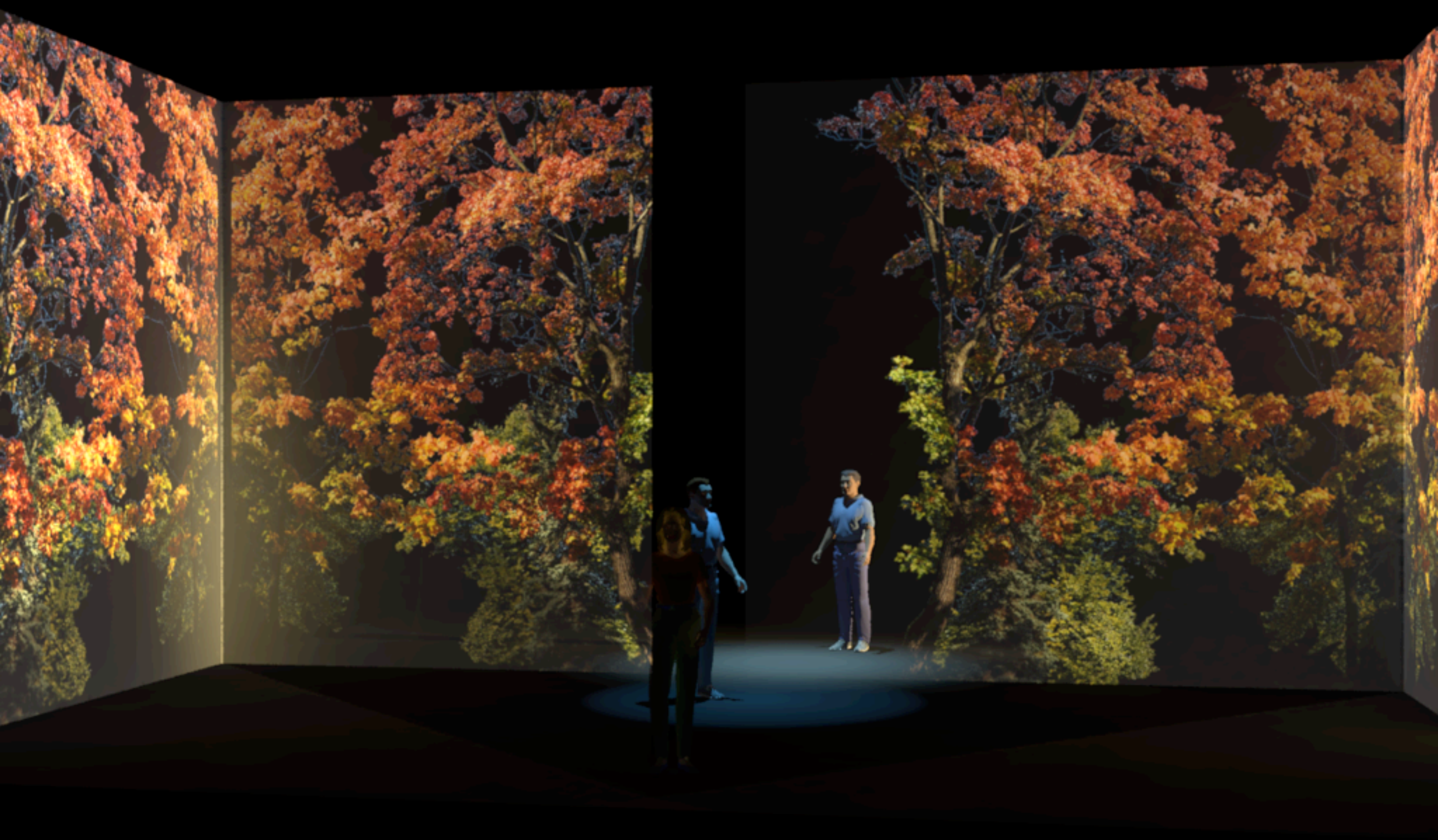
anything goes..!



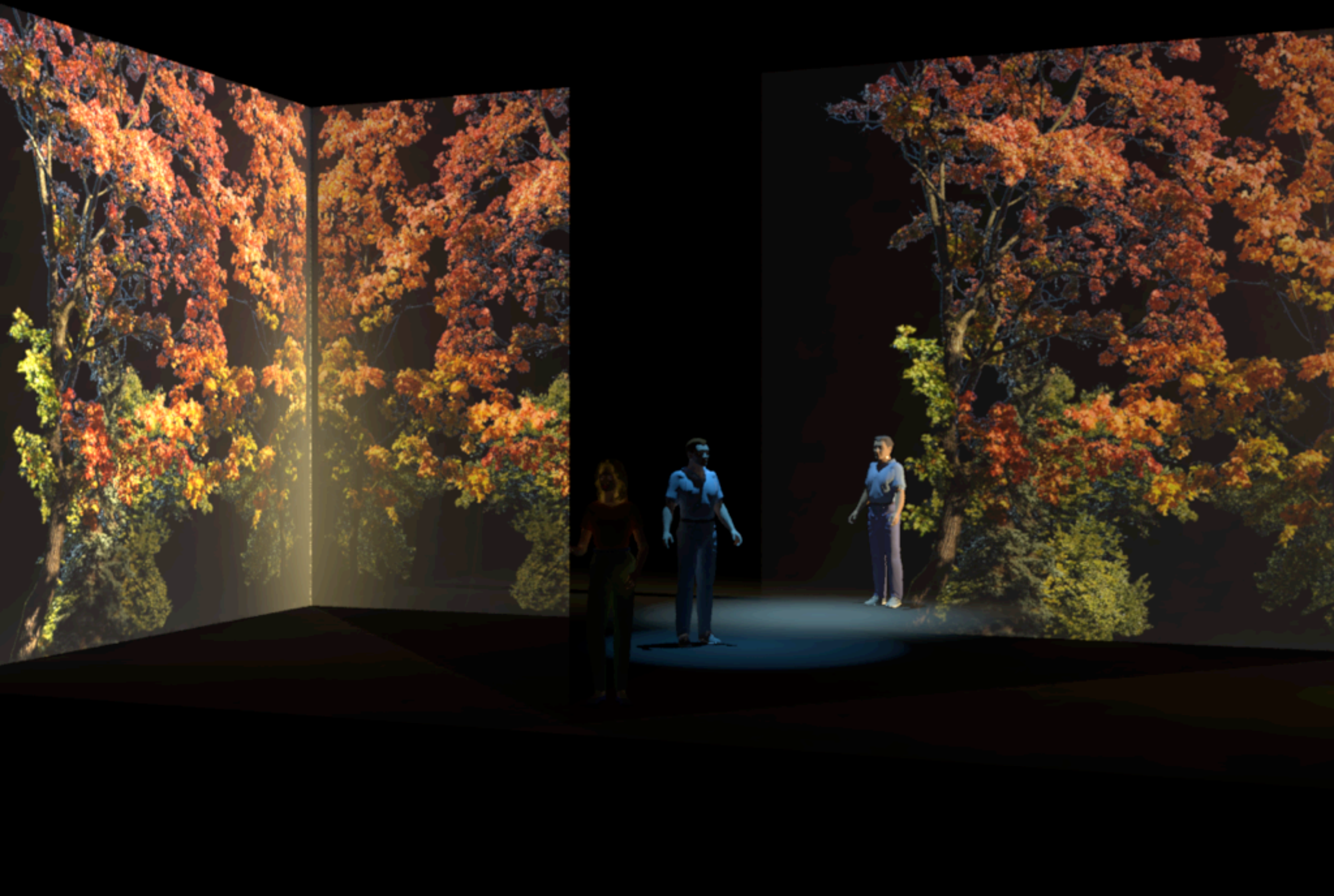
Explore a variation



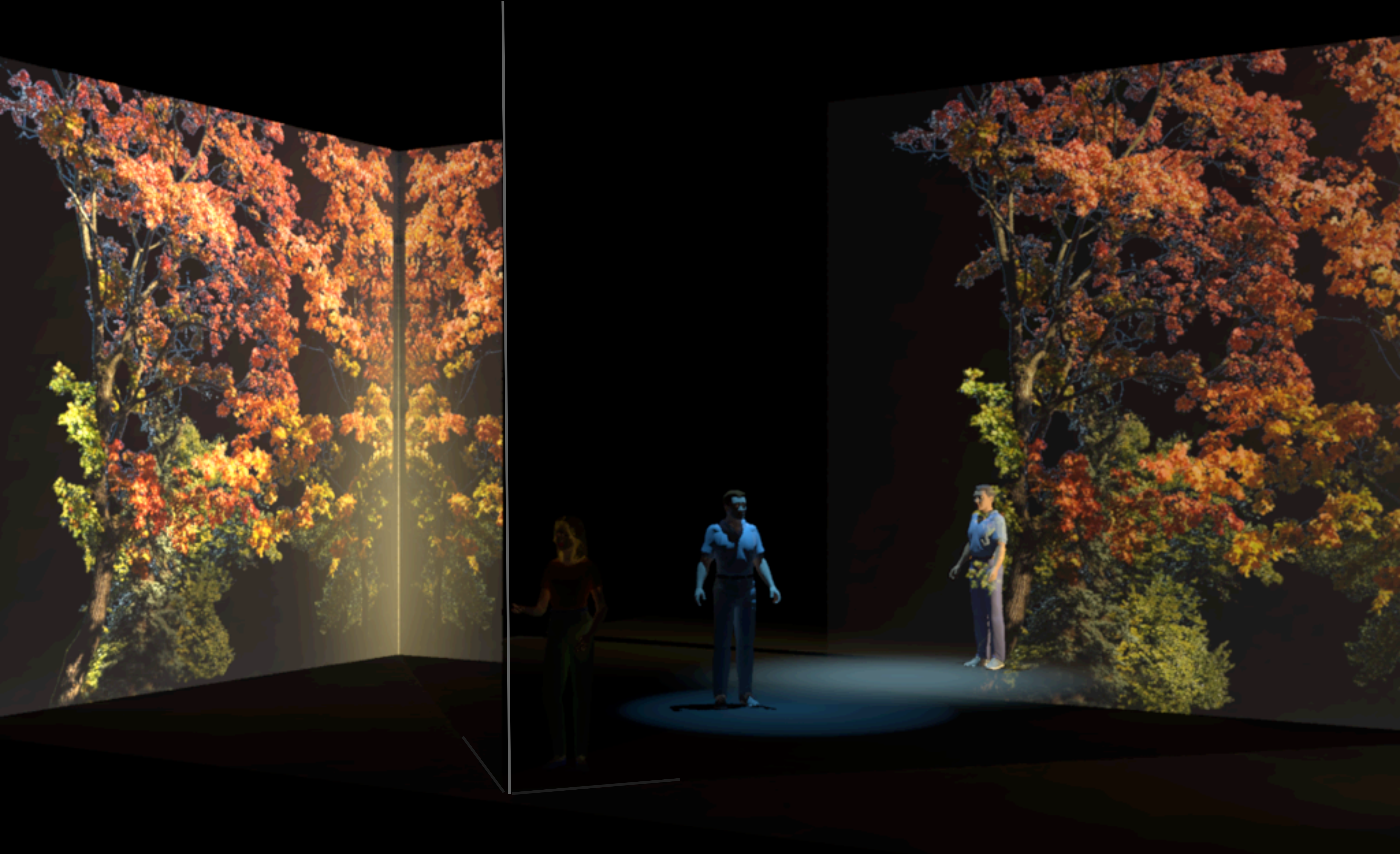
So far, so good..



pivot 10 degrees.. hmmm



pivot 20 degrees.. yikes



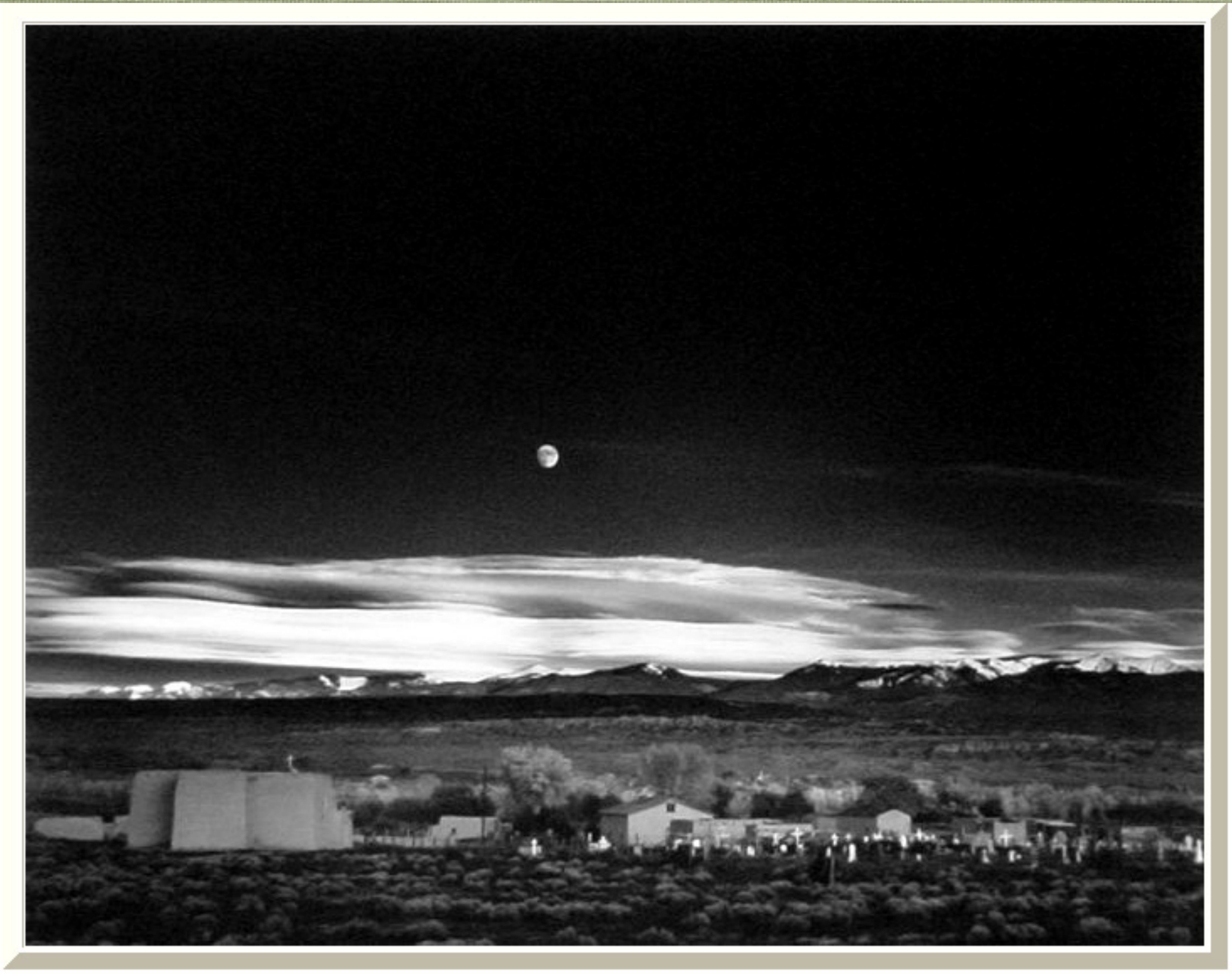
pivot 30 degrees..

back to the drawing board!

Before moving into the final topic..
some wise words from two visionary artists..

Ansel Adams - photographer

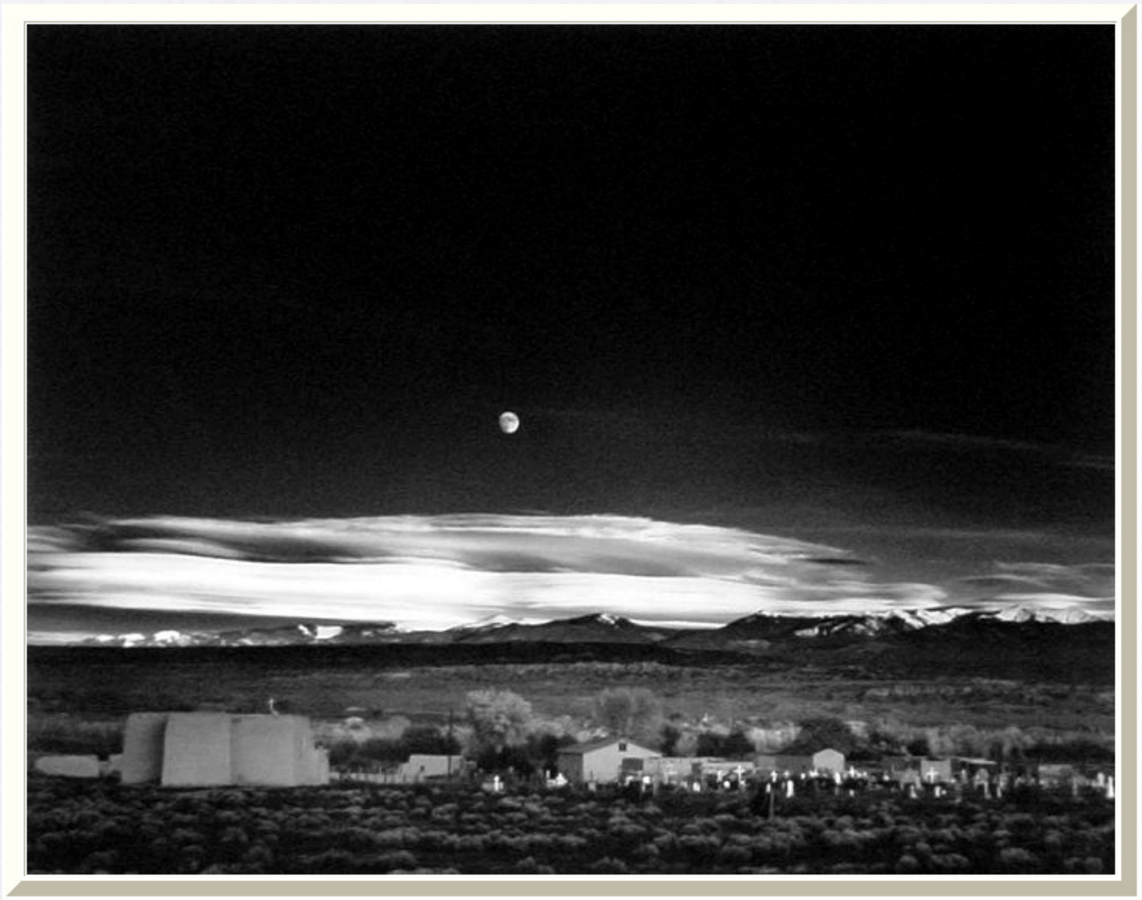
Joseph Svoboda - scenographer


Ansel Adams 1902-1984

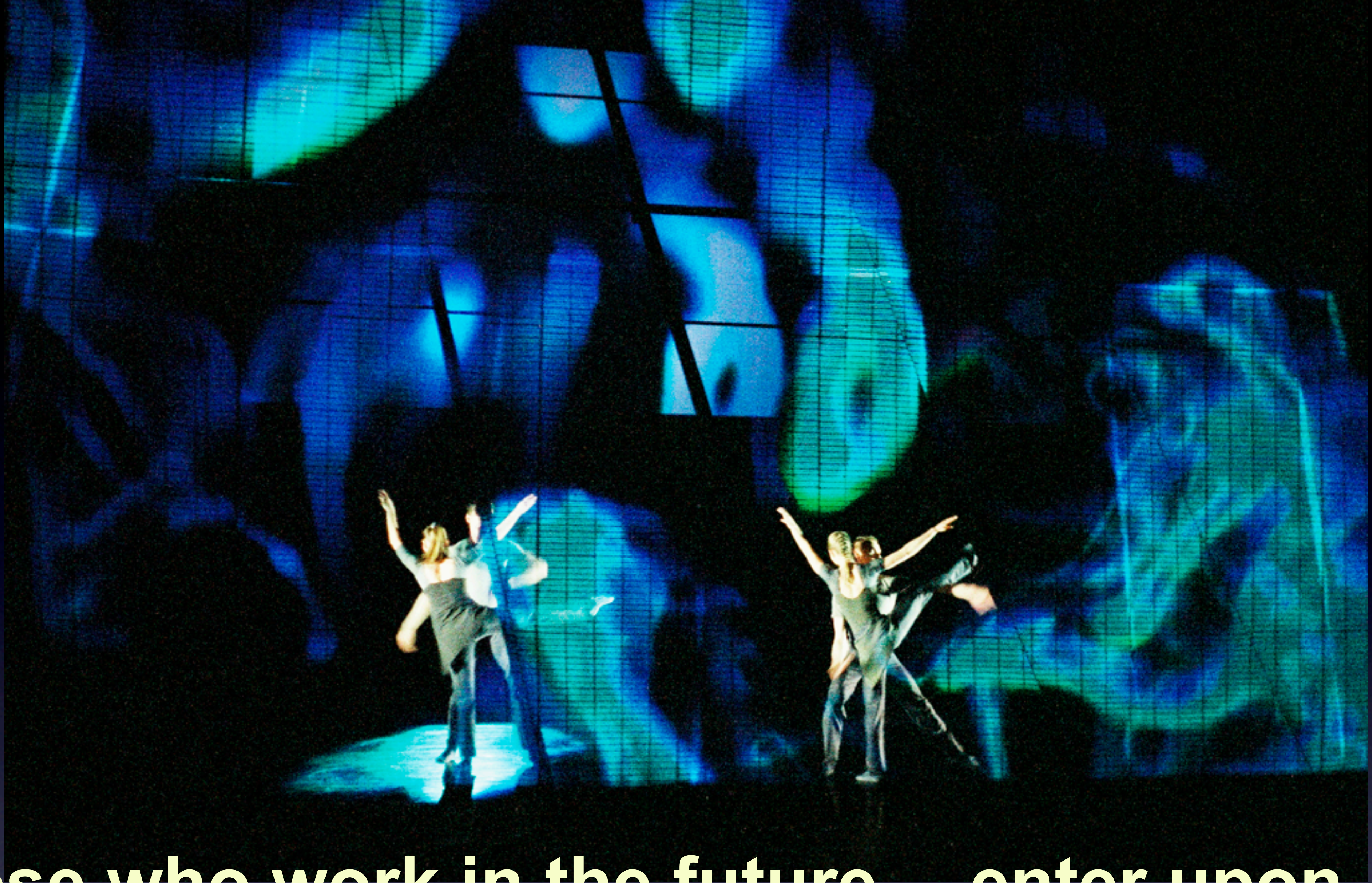
Moonrise, Hernandez, New Mexico

By the 1970's he had achieved a print that equaled the deep tones, greater intensity of light and striking contrast he has envisioned 30 years earlier.

“Image quality is not the product of a machine, but of the person who directs the machine, and there are no limits to imagination and expression.” -Ansel Adams

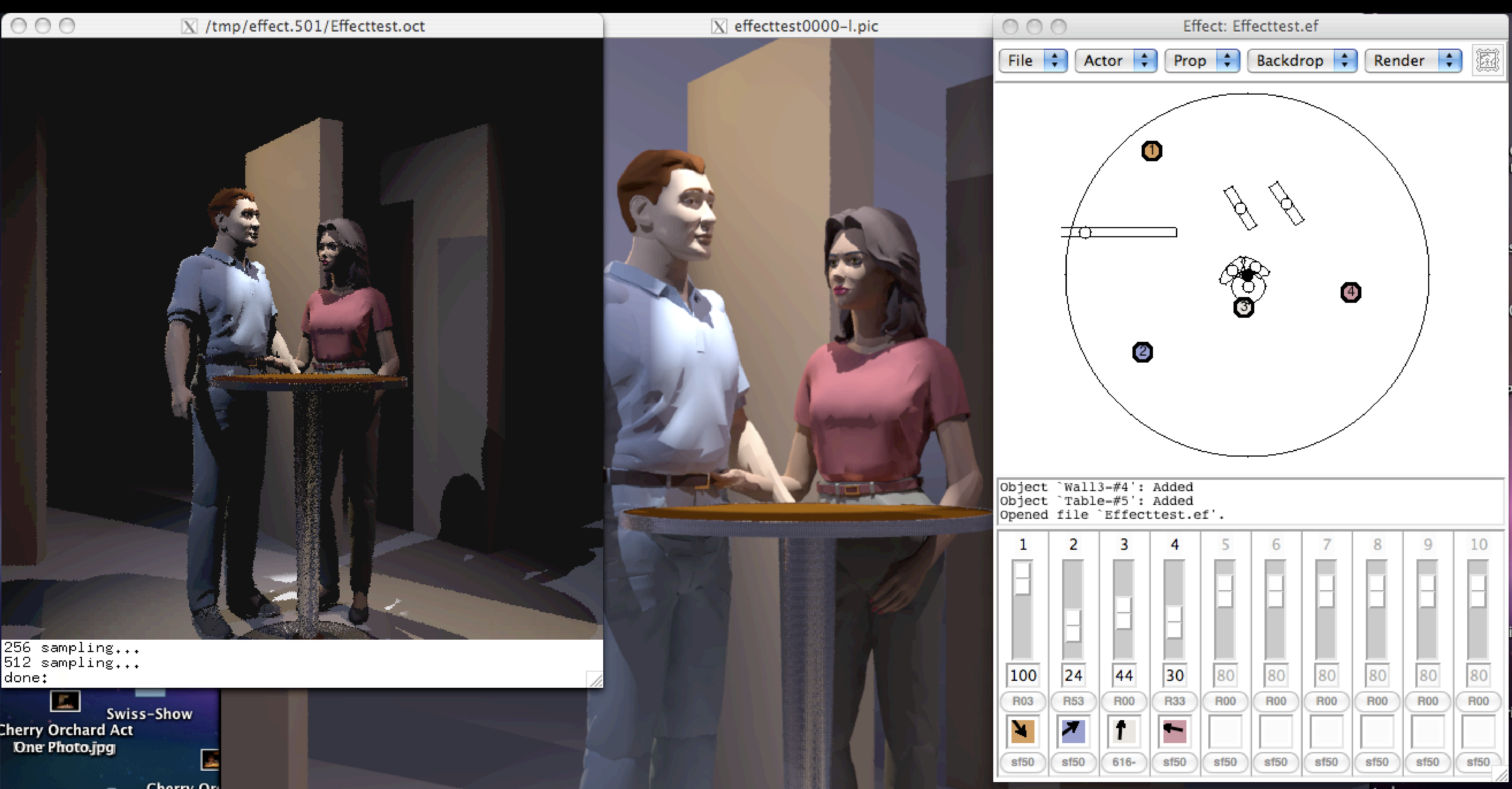


Ansel Adams 1902-1984



“Those who work in the future… enter upon the adventure of discovering the secret network of relationships between humanity and the world around it.

- Joseph Svoboda *The Secret of Theatrical Space*



EFFECT is a Radiance interface

first designed to introduce stage lighting

it is now also a collaboration tool

-rapid learning curve (2 min avg)
ideal with a 3 buttom mouse

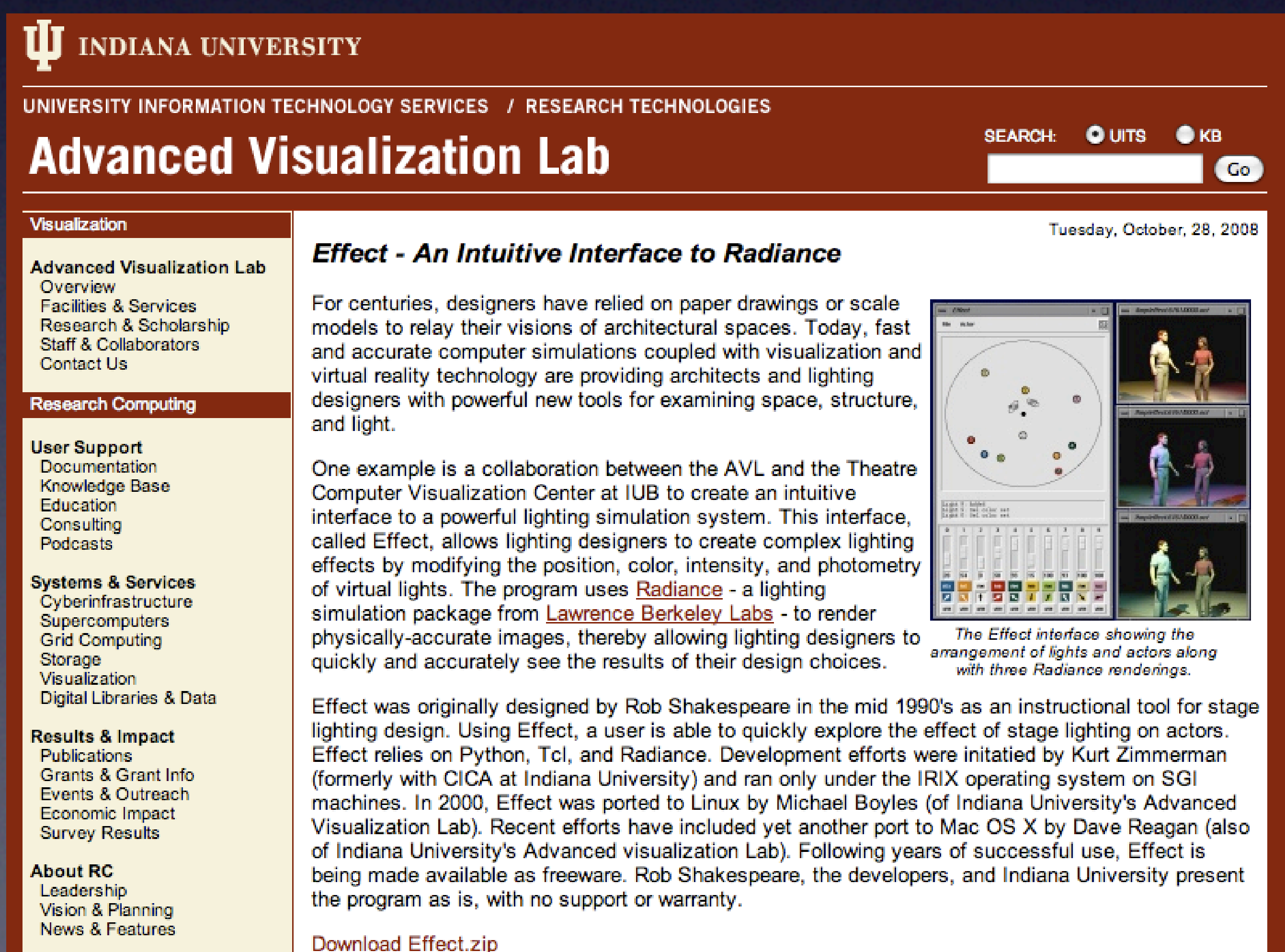
- four actors, some props, a
backdrop and basic cyc (gensky)

-uncomplicated
10 dimmer channels
80 gel colors
unlimited photometry
fixed aimpoint at headheight
launches rvu
renders 3 qualities
saves settings

Created in collaboration with Indiana University's CICA (1998) and updated by AVL, it will be available for free download.

http://www.avl.iu.edu/?projects/effect

Requires a Radiance installation :-),
Python 2.5 and OS X 10.5+


INDIANA UNIVERSITY

UNIVERSITY INFORMATION TECHNOLOGY SERVICES / RESEARCH TECHNOLOGIES

Advanced Visualization Lab

SEARCH: UITS KB Go

Visualization

Advanced Visualization Lab
Overview
Facilities & Services
Research & Scholarship
Staff & Collaborators
Contact Us

Research Computing

User Support
Documentation
Knowledge Base
Education
Consulting
Podcasts

Systems & Services
Cyberinfrastructure
Supercomputers
Grid Computing
Storage
Visualization
Digital Libraries & Data

Results & Impact
Publications
Grants & Grant Info
Events & Outreach
Economic Impact
Survey Results

About RC
Leadership
Vision & Planning
News & Features

Tuesday, October, 28, 2008

Effect - An Intuitive Interface to Radiance

For centuries, designers have relied on paper drawings or scale models to relay their visions of architectural spaces. Today, fast and accurate computer simulations coupled with visualization and virtual reality technology are providing architects and lighting designers with powerful new tools for examining space, structure, and light.

One example is a collaboration between the AVL and the Theatre Computer Visualization Center at IUB to create an intuitive interface to a powerful lighting simulation system. This interface, called Effect, allows lighting designers to create complex lighting effects by modifying the position, color, intensity, and photometry of virtual lights. The program uses Radiance - a lighting simulation package from Lawrence Berkeley Labs - to render physically-accurate images, thereby allowing lighting designers to quickly and accurately see the results of their design choices.

The Effect interface showing the arrangement of lights and actors along with three Radiance renderings.

Effect was originally designed by Rob Shakespeare in the mid 1990's as an instructional tool for stage lighting design. Using Effect, a user is able to quickly explore the effect of stage lighting on actors. Effect relies on Python, Tcl, and Radiance. Development efforts were initatied by Kurt Zimmerman (formerly with CICA at Indiana University) and ran only under the IRIX operating system on SGI machines. In 2000, Effect was ported to Linux by Michael Boyles (of Indiana University's Advanced Visualization Lab). Recent efforts have included yet another port to Mac OS X by Dave Reagan (also of Indiana University's Advanced visualization Lab). Following years of successful use, Effect is being made available as freeware. Rob Shakespeare, the developers, and Indiana University present the program as is, with no support or warranty.

Download Effect.zip


Thank You!