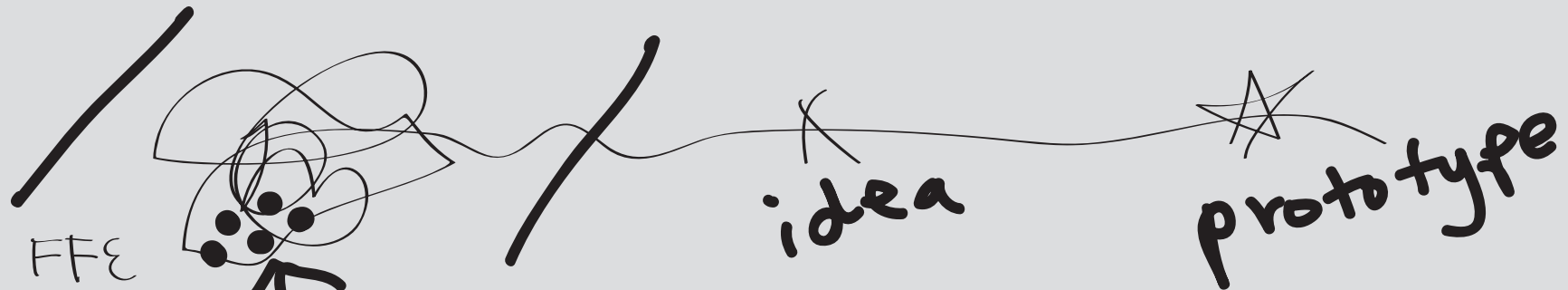


e.strouse | building virtual environments | winter 2011

e.strouse: MFA student,  
OSU design development, department of design

**thesis interests:** explore and experiment with new methods that  
enable people to express themselves in the fuzzy front end (FFE)  
of the design process



**thesis interests:** storytelling, scenario-making, enactment



# a little context: **design research**

**thesis interests:** explore and experiment with new methods that enable people to express themselves in the fuzzy front end (FFE) of the design process this research is relevant to these design research approaches,

participatory | design & emotion | co-creation | human-centered design

this methodology,

generative tools

and I'm interested in exploring and developing these methods:

**paper collage** | **sandquery** | **a virtual environment** that enables people to create and express storytelling & scenario-making experiences that evoke creator enactment

# why?

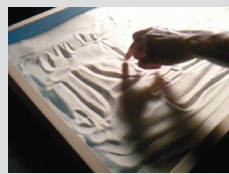
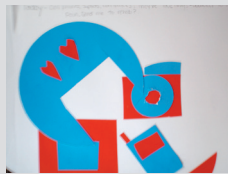
**thesis interests:** storytelling, scenario-making, enactment

I'm interested in enabling real people to tell their stories. this helps reveal unvoiced needs, and meeting unvoiced needs is one component of business. research in the FFE of the design process is important to the making innovative ideas.

# what?

**thesis research:** compare and contrast 3 different methods

**paper collage | sandquery | a virtual environment**



# how?

**thesis research:** compare and contrast 3 different methods

- paper collage
  - sandquery
  - a virtual environment
- 
- consistently-sized building space: ~20" x 30"
  - consistent families of 2D, 3D and virtual objects
  - consistent prompt and experiment structure

I'll collect and analyze qualitative data from each method & see if it's different and/or similar to the other methods

# building a virtual environment

## set-up

- a person (creator)
- a computer (PC)
- large-scale projection screen or wall
- projector
- Kinect
- Emotiv EPOC headset



# building a virtual environment

## set-up

- a person (creator)
- a computer (PC)
- large-scale projection screen or wall
- projector
- Kinect (2010)

enables users to control and interact with virtual environments without the need to touch a controller or screen through a natural user interface **using gesture** and spoken commands (paraphrased from project Natal, 2009)

- Emotiv EPOC headset (2008)

this brain-computer interface (BCI) is able to detect

- conscious thoughts
- facial expressions
- **emotions**

**excitement, meditation, frustration,  
engagement, boredom**

# building a virtual environment

## set-up

- a person (creator)
- a computer (PC)
- large-scale projection screen or wall
- projector
- Kinect
- Emotiv EPOC headset

why vertical? why a window as a building space?  
“cues to the viewer” link...

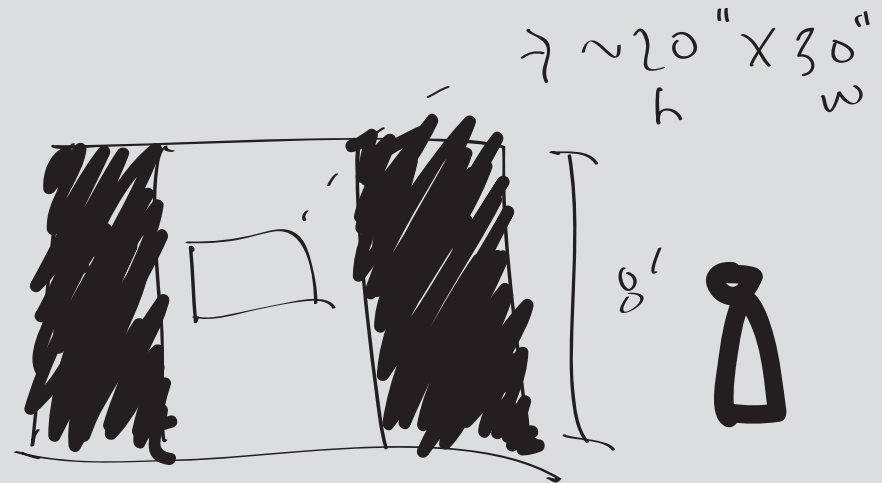
### Where's the Design in Level Design? Part One

By Tito Pagán

Gamasutra

July 16, 2001

URL: [http://www.gamasutra.com/features/20010716/pagan\\_01.htm](http://www.gamasutra.com/features/20010716/pagan_01.htm)



# building a virtual environment

## more detail...

1. the virtual world
2. animation
3. interaction design
4. interface design
5. human-computer interaction

# 1. the virtual world

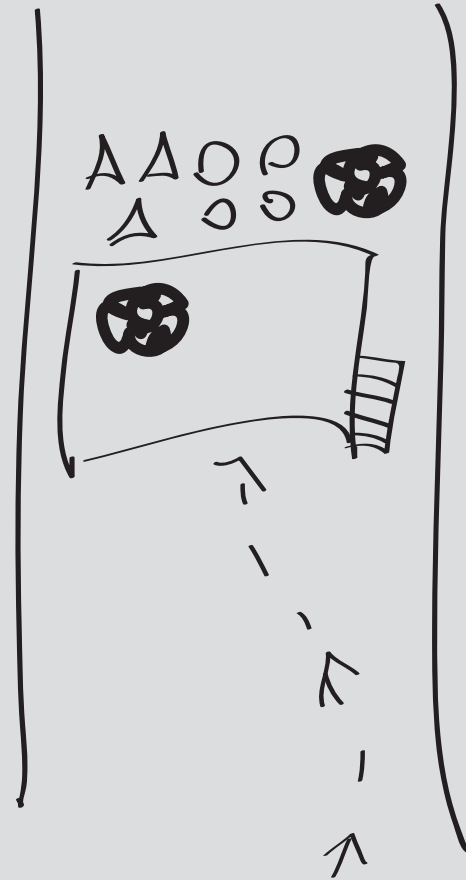
perception, expectation, experience



+ gesture = move  
stuff

ability to change  
camera  
view

w/in scene

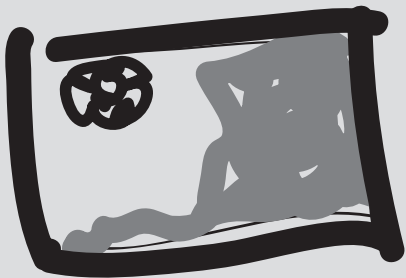


# 1. the virtual world

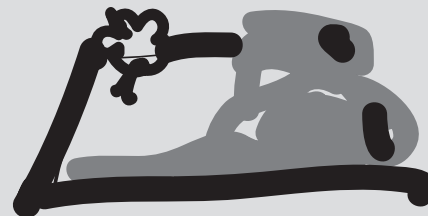
**sense of scale, point of view, cues to the viewer,  
lighting/texture/color, objects library**

why vertical? why a window as building space?

→ 24mm  
on a 35mm format → 1<sup>st</sup> person view → 3-point lighting



top



side

## 2. animation

### dynamic & alive?

yes. but only w/ 's intervention.

### move & change with / without the intervention of user?

– camera view

– camera mode: creator has the ability to take a picture or short video during the building process

– particle background layer selection, manipulation & placement

– object selection & placement within scene

– physics option applied to object  
• float or natural gravity

– color

– background (the layer beneath particle building)

– animation behavior of objects within scene could change depending on the creator's emotion at the time of its selection

## 2. animation

**pre-defined camera paths?**

yes. tilt, zoom, pan, etc.

**objects are selected & placed then move autonomously,**

**particle animations could replicate environmental effects on background object,** e.g., water, wind, sand, etc.

**objects could inherit imported animation behaviors into the environment,** i.e., frustration = hecticly-paced animated behavior,

### 3. interaction design

**how does the user's interactions correlate with responses in the system?**

user → action    system → reaction

the user has a lot of control...

**how does the user navigate the virtual world?**

Via gesture

## 3. interaction design

### flowcharts

tell a story about your day...

What was it like in your hometown growing-up?

How will we live in the future?

### pseudocode

IF user tilts both hands down  
THEN camera angle tilts

### prototype

Start Small + Simple

## 4. interface design

**what visual cues are provided to the user for feedback?**



HUD? ↑

MODS?

- Colors will be changing
- Objects will appear on scene when placed

## 4. interface design

**graphical user interface (GUI) design, usability, transparency**

how intuitive can it get?

## 5. human-computer interaction

**how does the user physically engage with the system?**

medical, physiology

Emotiv EPOC (elevated post-exercise oxygen consumption)

infrared rays + hand &/or body gesture

Kinect

**how does the user experience the environment...visually, aurally,  
~~tactile?~~**

## 5. human-computer interaction

### **input**

- other types of custom sensing device – Emotiv EPOC headset
- other gesture-based methods of input – Kinect

### **output**

- large-scale projection

# building a virtual environment

## this class, winter 2011, goals...

### Unity:

- start with mouse and personal PC to program camera view abilities
- import some simple polygon models
- create object behavior animations that correlate with emotion
- design some particle animations for background manipulation
- develop people-friendly and logical heads up display (HUD)
- make decisions about creator + camera mode capabilities
- migrate to large-scale projection
- work with Kinect and gestural commands
- experiment with Emotiv EPOC headset: color and animation behavior
- hang-out with people that like to code
- see if people want to give it a try
- ask Q's, get help, make collaborative & smart design decisions

# building a virtual environment

**hopefully this explains some of my project goals about the...**

1. the virtual world
2. animation
3. interaction design
4. interface design
5. human-computer interaction

# Q's & comments

**thanks for your attention...**