

# Note To The Reader

- These are the slides from our GDC 2010 presentation. A "director's cut" version is also available.
- You can download the speaker notes for all slides.
- Comments? [matthias@worch.com](mailto:matthias@worch.com) & [harvey@arkane-studios.com](mailto:harvey@arkane-studios.com).



"What Happened Here?"  
Environmental Storytelling

Matthias Worch  
and  
Harvey Smith  
GDC 2010, San Francisco



# Before We Get Started

- Please silence your cell phones
- Please fill out your comment cards
- Download slides for comprehensive written notes
- Richard Rouse III: "Environmental Narrative: Your World Is Your Story"

Friday, 9:00am -  
10:00am, Room  
125 (North Hall)

# Session Overview

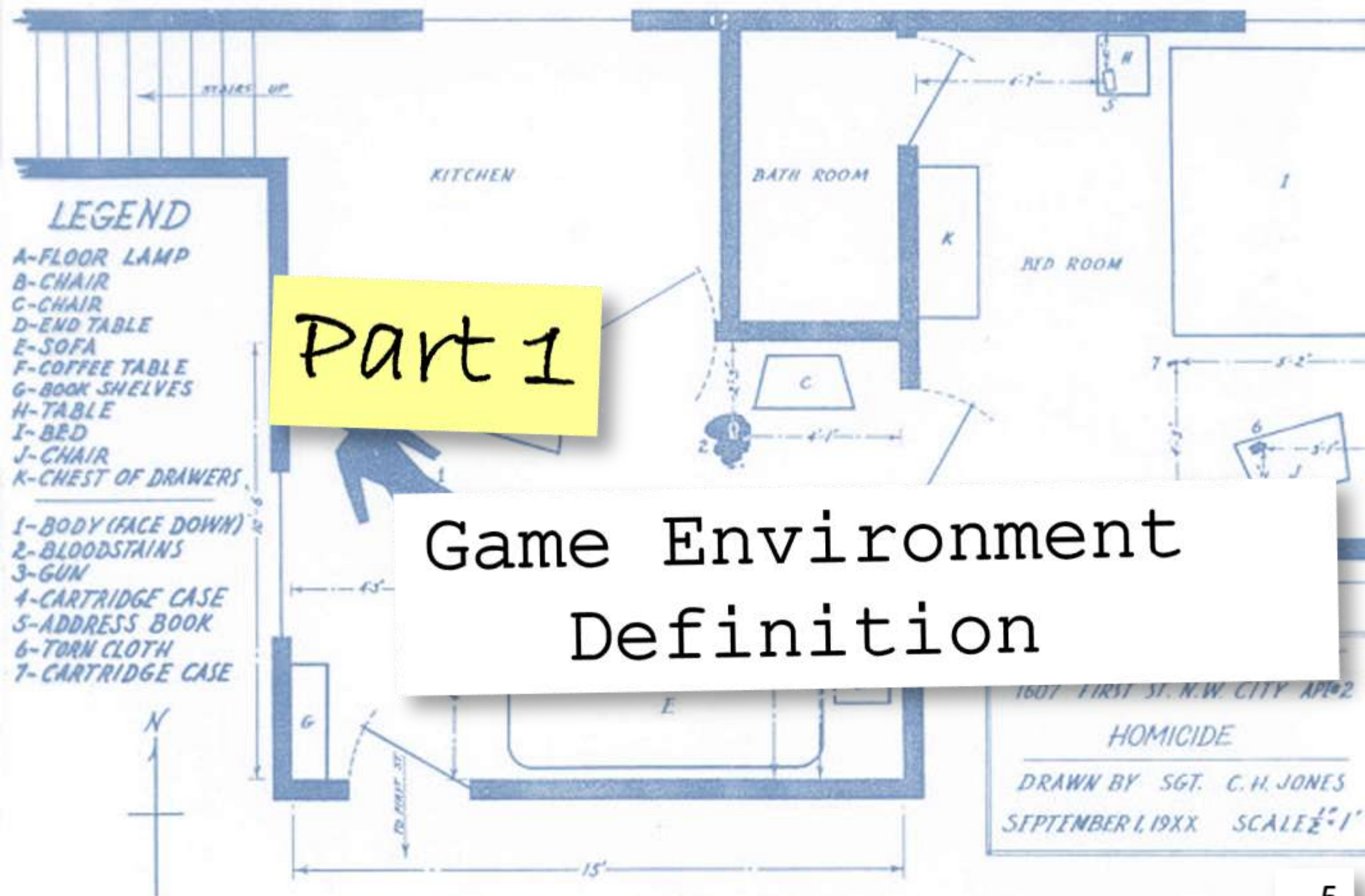
Part 1: Game Environments

Part 2: Environmental Storytelling

Part 3: Practical Techniques

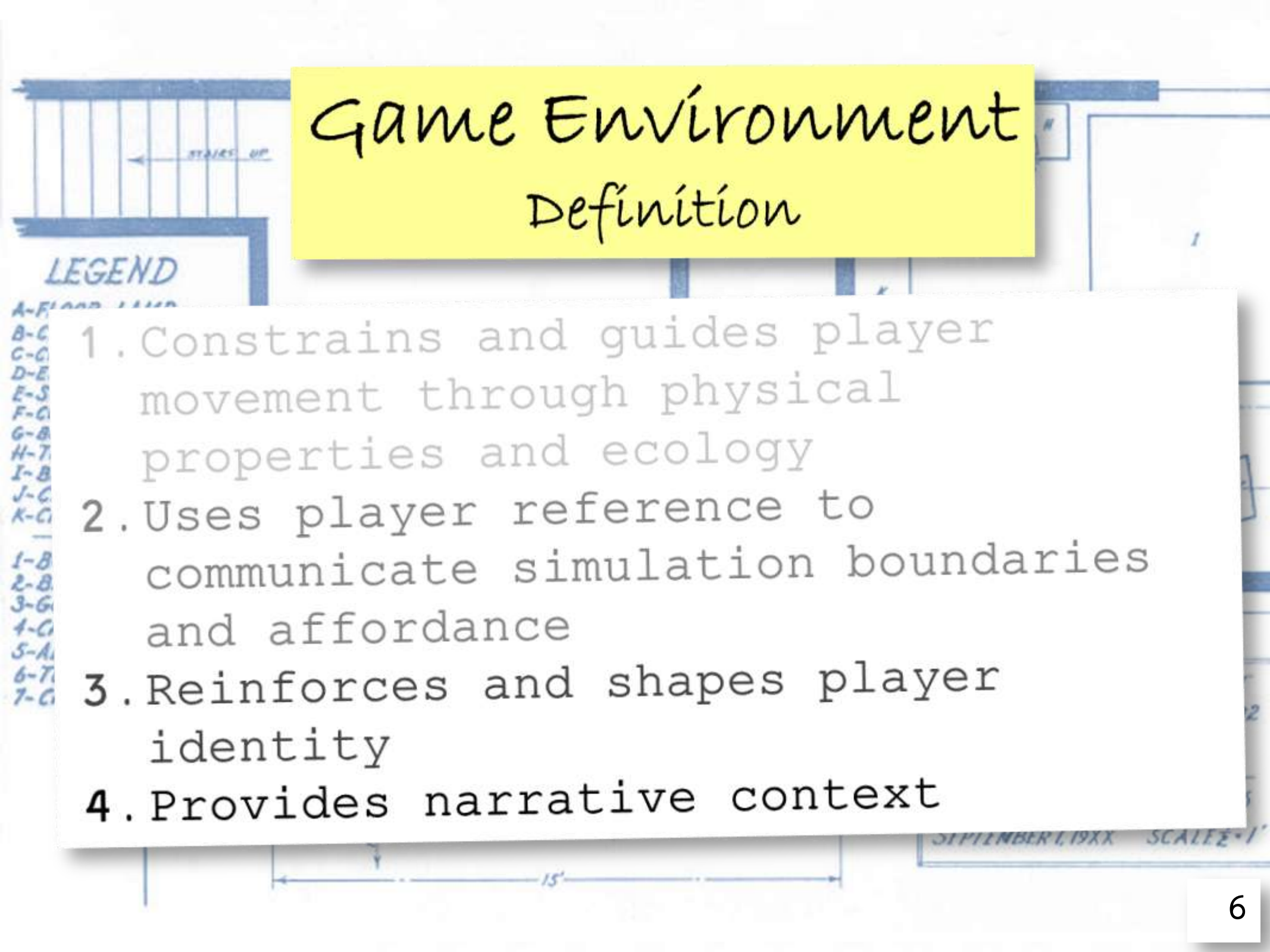
Part 4: Systemic Environmental  
Storytelling

Part 5: Conclusions and QA





# Game Environment Definition

- 
1. Constrains and guides player movement through physical properties and ecology
2. Uses player reference to communicate simulation boundaries and affordance
3. Reinforces and shapes player identity
4. Provides narrative context

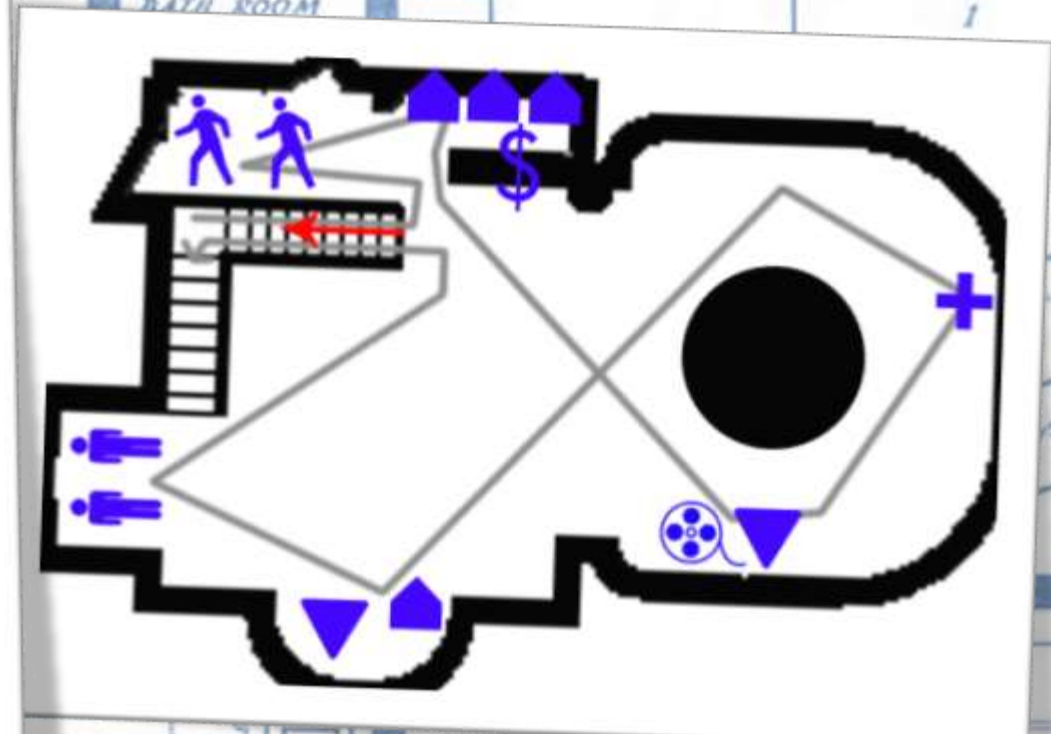
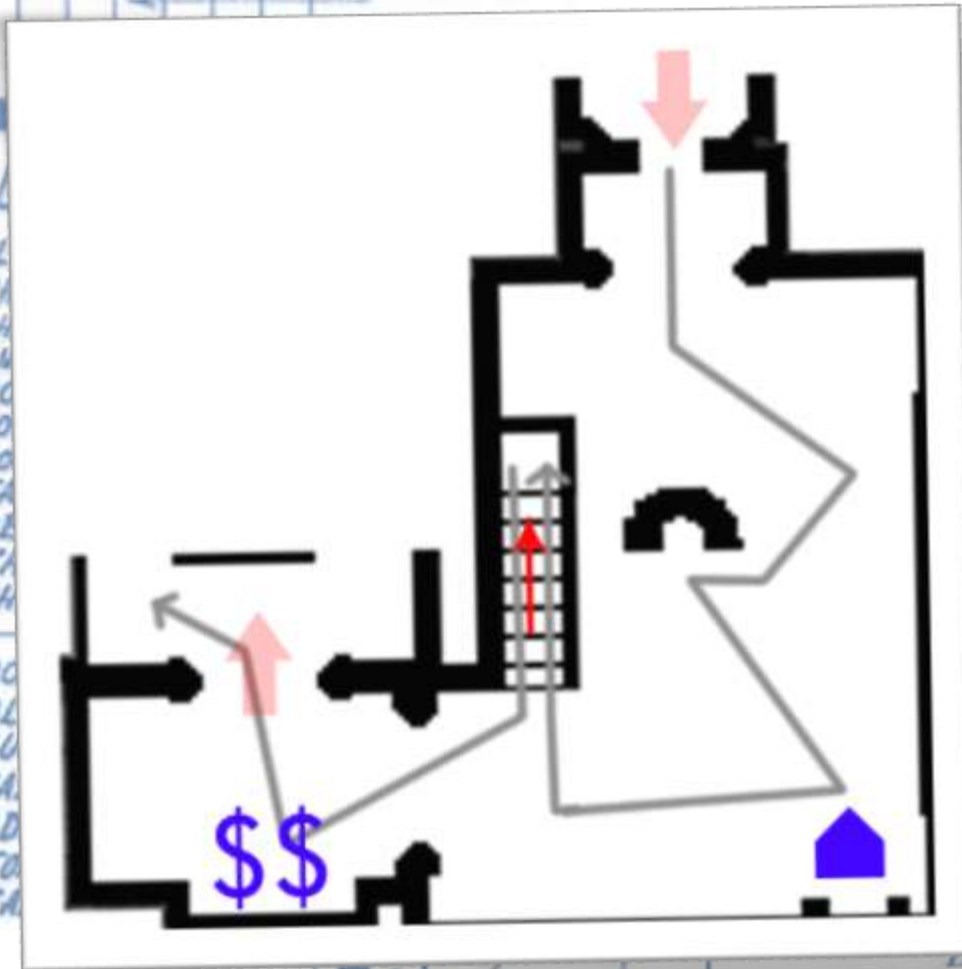
# Bioshock



A decadent new year's eve party gone wrong



# Physical Properties and Ecology



JOHN C. DOE - APARTMENT  
1607 FIRST ST. N.W. CITY APT#2

HOMICIDE

"Constrains and guides player movement through physical properties and ecology."



# Communicate Affordance



"Uses player reference to communicate affordance."

# Communicate Simulation Boundaries



Uses player reference to communicate simulation boundaries.



# Reinforces Player Identity



"The environment reinforces player identity."

Reference: "The Imago Effect"

# Reinforces Player Identity



Bashing and  
looting



Makes us feel  
like a lab rat.



J-6  
K-6  
1-BODY (FACE DOWN)  
2-BLOODSTAINS  
3-GUN  
4-CARTRIDGE CAS  
5-ADDRESS BOOK  
6-TORN CLOTH  
7-CARTRIDGE CA





# Narrative Context

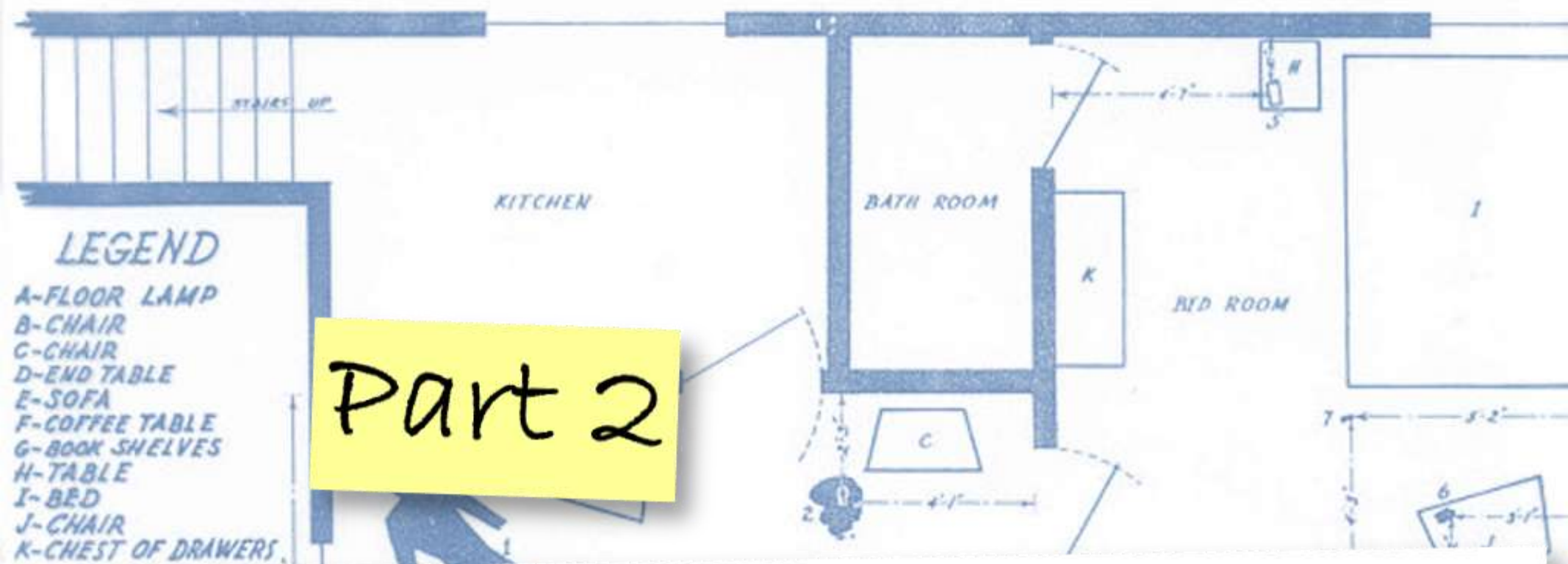


The environment provides narrative context

# Environmental Storytelling

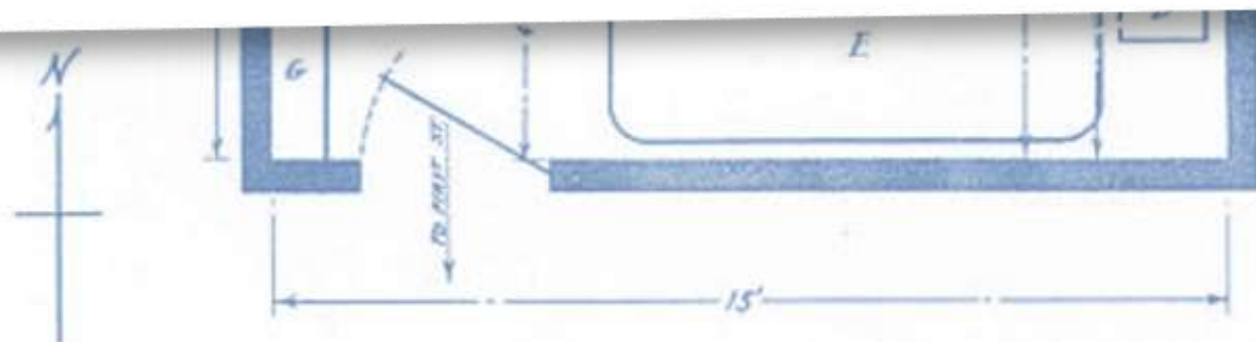






# Environmental Storytelling Definition

1-B  
2-B  
3-G  
4-C  
5-A  
6-T  
7-C



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HOMICIDE  
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# Environmental Storytelling Working Definition

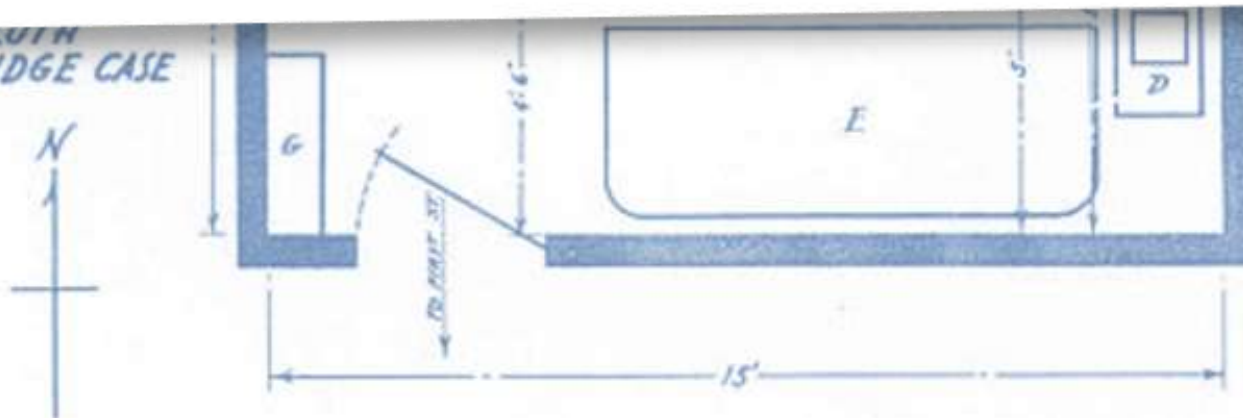
## LEGEND

- A-FLOOR LAMP
- B-CHAIR
- C-CHAIR
- D-END TABLE
- E-SOFA
- F-COFFEE TABLE



Staging player-space with environmental properties that can be interpreted as a meaningful whole, furthering the narrative of the game.

- 6-TURN CLOTH
- 7-CARTRIDGE CASE



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# Association of Elements

## LEGEND

A-FLOOR LAMP  
B-CHAIR  
C-CHAIR  
D-END TAB  
E-SOFA  
F-COFFEE  
G-BOOK SH  
H-TABLE  
I-BED  
J-CHAIR  
K-CHEST O

1-BODY (A  
2-BLOODS  
3-GUN  
4-CARTRID  
5-ADDRES  
6-TORN CL  
7-CARTRID

- A man is tying his shoes
- Breaks the lace
- Screams and curses
- Throws shoe out window
- The audience understands that he doesn't really, really hate that shoe

# Association of Elements

- Similar to embedding narrative elements in the background of a scene
- "Environmental storytelling relies on the player to associate disparate elements, interpreting them as a meaningful whole."
- Film fails to define this for games because of directed gaze





## LEGEND

A-FLOOR LAMP  
B-CHAIR  
C-CHAIR  
D-END TABLE  
E-SOFA  
F-COFFEE TABLE  
G-BOOK SHELVES  
H-TABLE  
I-BED  
J-CHAIR  
K-CHEST OF DRAWERS

1-BODY (FACE DOWN)  
2-BLOODSTAINS  
3-GUN  
4-CARTRIDGE CASE  
5-ADDRESS BOOK  
6-TORN CLOTH  
7-CARTRIDGE CASE



BED ROOM

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Mold and  
water damage

Couch on top  
of coffee table!









A-F  
B-C  
C-C  
D-E  
E-S  
F-C  
G-B  
H-7  
I-B  
J-C  
K-C  
1-B  
2-B  
3-G  
4-C  
5-A  
6-7  
7-C

5-1

NT

PT02

VES

1-1



# Robert Polidori AFTER THE FLOOD



## LEG

A-FLOOR  
B-CHAIR  
C-CHAIR  
D-END TABLE  
E-SOFA  
F-COFFEE  
G-BOOK SHELF  
H-TABLE  
I-BED  
J-CHAIR  
K-CHEST

1-BODY  
2-BLOODS  
3-GUN  
4-CARTRIDGE  
5-ADDRESS  
6-TORN CURTAIN  
7-CARTRIDGE

ENT  
APT 2

ONES  
E 1/2 1'

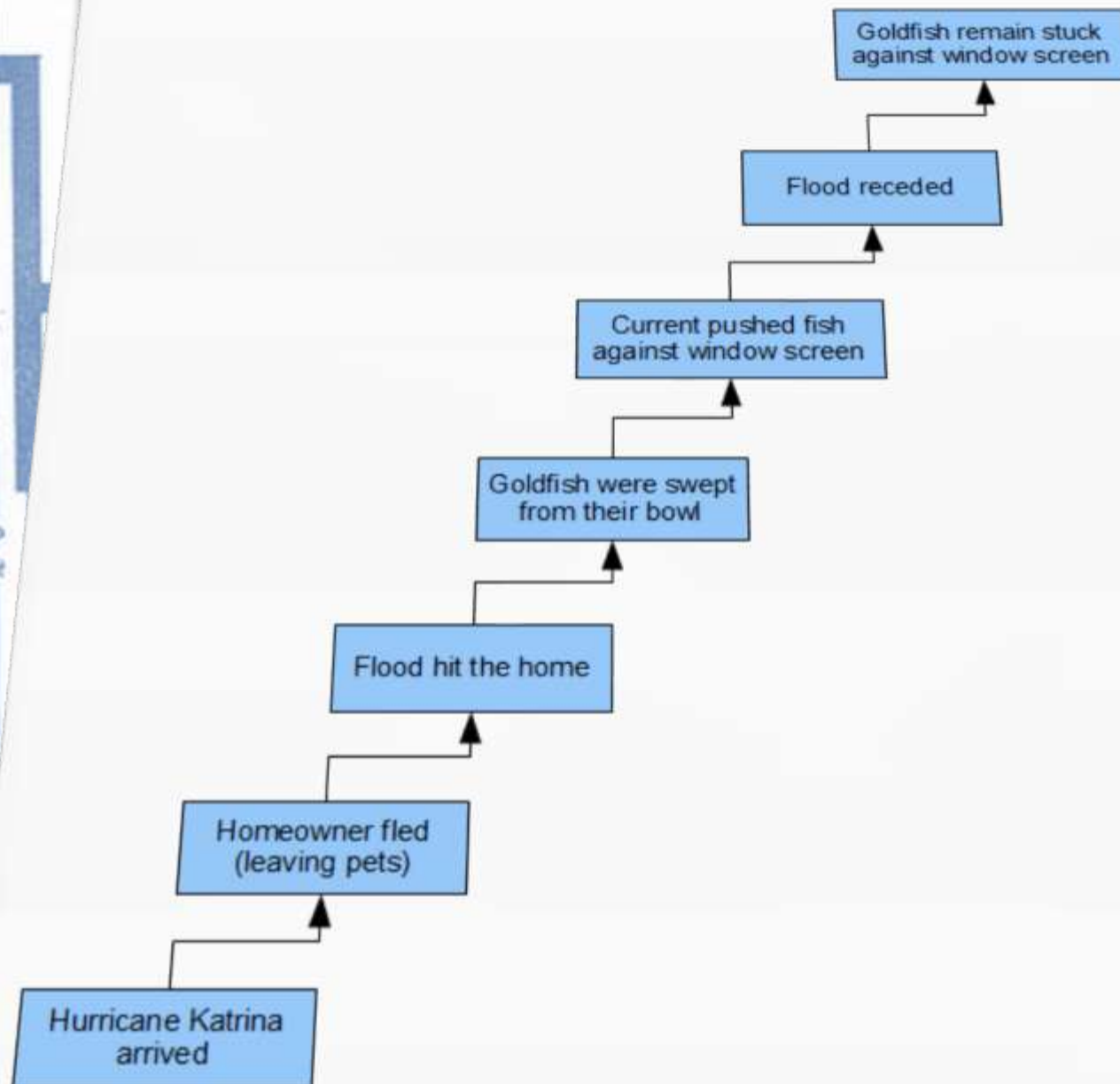


# Dead Gold Fish - Chain of Events

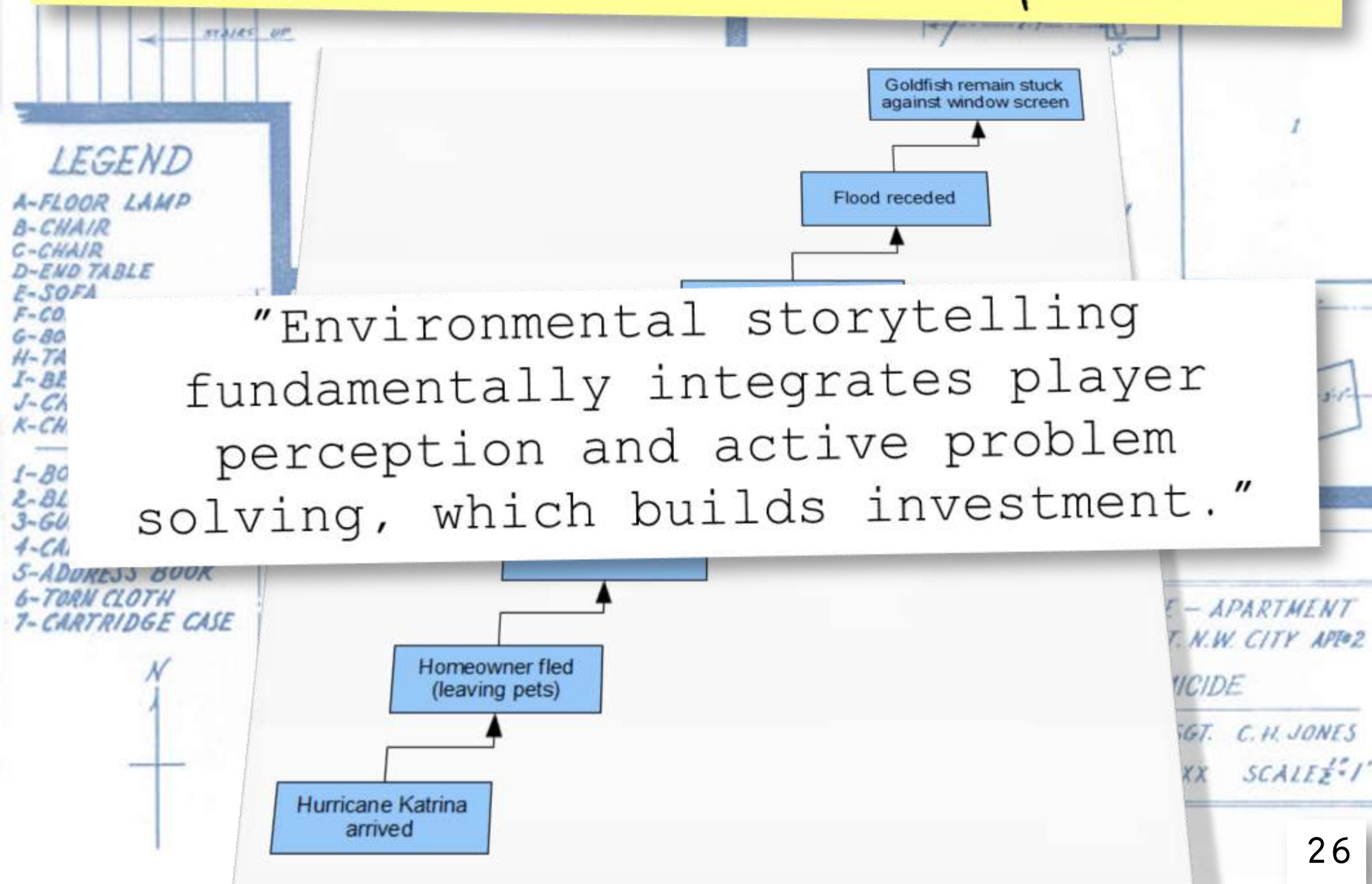
## LEGEND

A-FLOOR LAMP  
B-CHAIR  
C-CHAIR  
D-END TABLE  
E-SOFA  
F-COFFEE TABLE  
G-BOOK SHELVES  
H-TABLE  
I-BED  
J-CHAIR  
K-CHEST OF DRAWERS

1-BODY (FACE DOWN)  
2-BLOODSTAINS  
3-GUN  
4-CARTRIDGE CASE  
5-ADDRESS BOOK  
6-TORN CLOTH  
7-CARTRIDGE CASE



# Dead Gold Fish - Chain of Events





# After The Flood

Is the clock  
frozen in time?

Notice the  
water line.



LEG

A-FLOOR  
B-CHAIR  
C-CHAIR  
D-END TAB  
E-SOFA  
F-COFFEE  
G-BOOK SH  
H-TABLE  
I-BED  
J-CHAIR  
K-CHEST

1-BODY CA  
2-BLOODS  
3-GUN  
4-CARTRI  
5-ADDRES  
6-TORN CL  
7-CARTR

5-1

NT  
APL 2

NES  
1/2-1'

# Interpretation



LEG

A-FLOOR  
B-CHAIR  
C-CHAIR  
D-END TAB  
E-SOFA  
F-COFFEE  
G-BOOK SH  
H-TABLE  
I-BED  
J-CHAIR  
K-CHEST

1-BODY  
2-BLOODS  
3-GUN  
4-CARTR  
5-ADDRES  
6-TORN C  
7-CARTR

APARTMENT  
W. CITY APT#2  
DE

C. H. JONES  
SCALE  $\frac{1}{2}'' = 1'$



# Interpretation



DOE - APARTMENT  
1ST ST. N.W. CITY APT#2  
HOMICIDE  
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ER/L19XX SCALE 1/2"=1'

# Interpretation

- Problem that we didn't get that?
- Designer had intentions, but believes in player interpretation

See also: Jordan Thomas,  
"White Space"

Speech given at Teeside  
University, UK

"Environmental Storytelling invites interpretation of situations and meaning according to players' views and experience."



# Telegraphing



4-CARTRIDGE CASE  
5-ADDRESS BOOK  
6-TORN CLOTH  
7-CARTRIDGE CASE



# Telegraphing



4-CARTRIDGE CASE  
5-ADDRESS BOOK  
6-TORN CLOTH  
7-CARTRIDGE CASE





# Telegraphing



"Can help the player navigate an area by telegraphing. "



# Environmental Storytelling

- Relies on the player to associate disparate elements, interpreting them as a meaningful whole.
- Fundamentally integrates player perception and active problem solving, which builds investment.
- Invites interpretation of situations and meaning according to players' views and experience.
- Can help the player navigate an area by telegraphing.



# Why Is This Compelling?

- It's *active*; it involves the player  
See Jean Piaget!
- Player brings his own experience, so the act of interpretation gains personal meaning
- The player is *pulling* the narrative, which makes it self-paced, less expository

# Why Is This Compelling?





# Implying a Larger World

"What changes *Guard\_03* from an abstract obstacle into a person? Did someone get hurt in this alley? What does the innkeeper do with his free time? Answering these questions transforms the game space into a coherent world. Meaningful narrative is inferred by players if you give them cues but leave them the space to imagine."

◦ Steve Powers, Disney

# Implying a Larger World

## LEGEND

A-FLOOR LAMP  
B-CHAIR  
C-CHAIR  
D-END TABLE  
E-SOFA  
F-COFFEE TABLE  
G-BOOK SHELVES  
H-TABLE  
I-BED  
J-CHAIR  
K-CHEST OF DRAWERS

1-BODY (FACE DOWN)  
2-BLOODSTAINS  
3-GUN  
4-CARTRIDGE CASE  
5-ADDRESS BOOK  
6-TORN CLOTH  
7-CARTRIDGE CASE

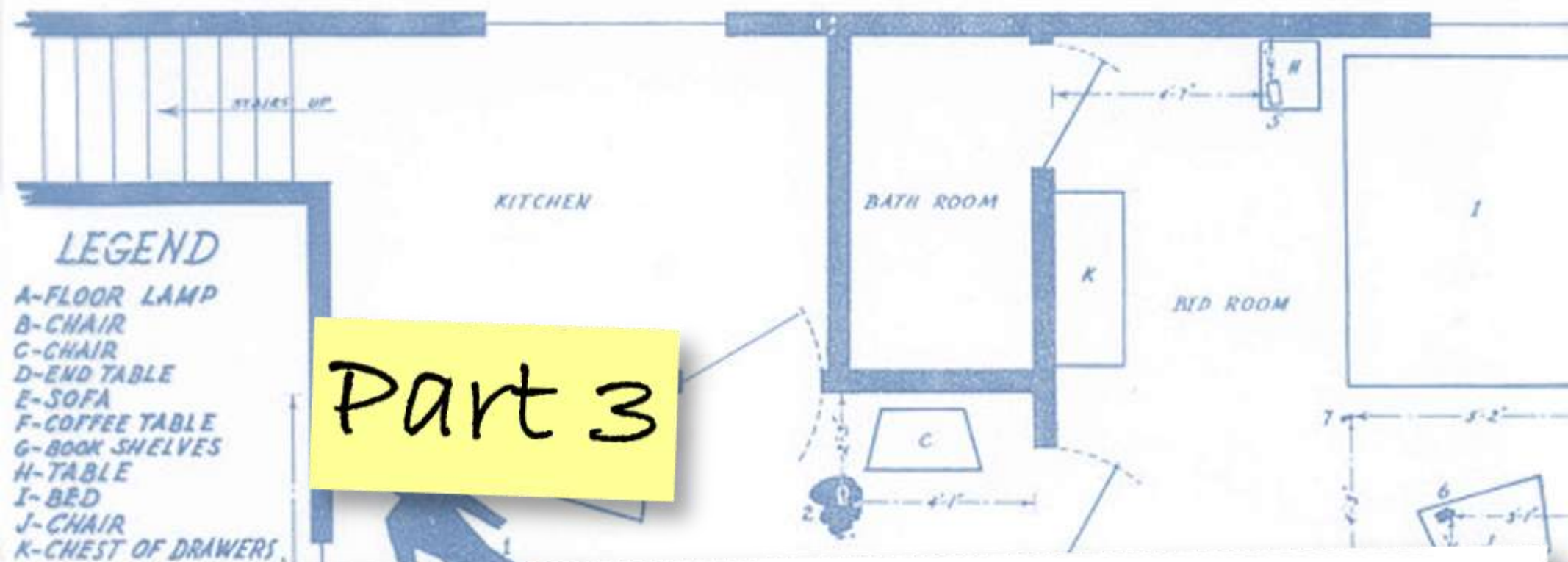


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HOMICIDE  
BY SGT. C.H. JONES  
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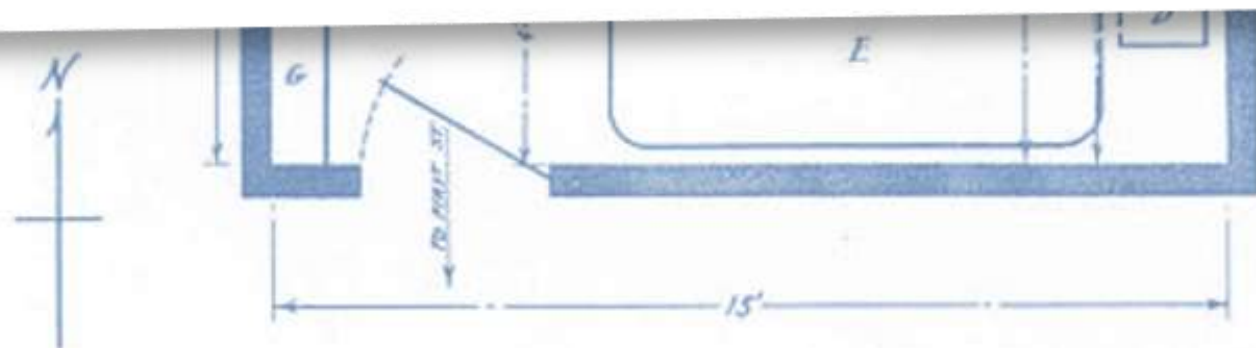


## Part 02 Summary

- Relies on the player to associate disparate elements, interpreting them as a meaningful whole
  - Interpretation is compelling
- Fundamentally integrates player perception and active problem solving
  - Builds investment
- Invites interpretation of situations and meaning according to player's views and experience
  - The Law of Closure
- Helps the player navigate an area by telegraphing



# Practical Techniques for Environmental Storytelling



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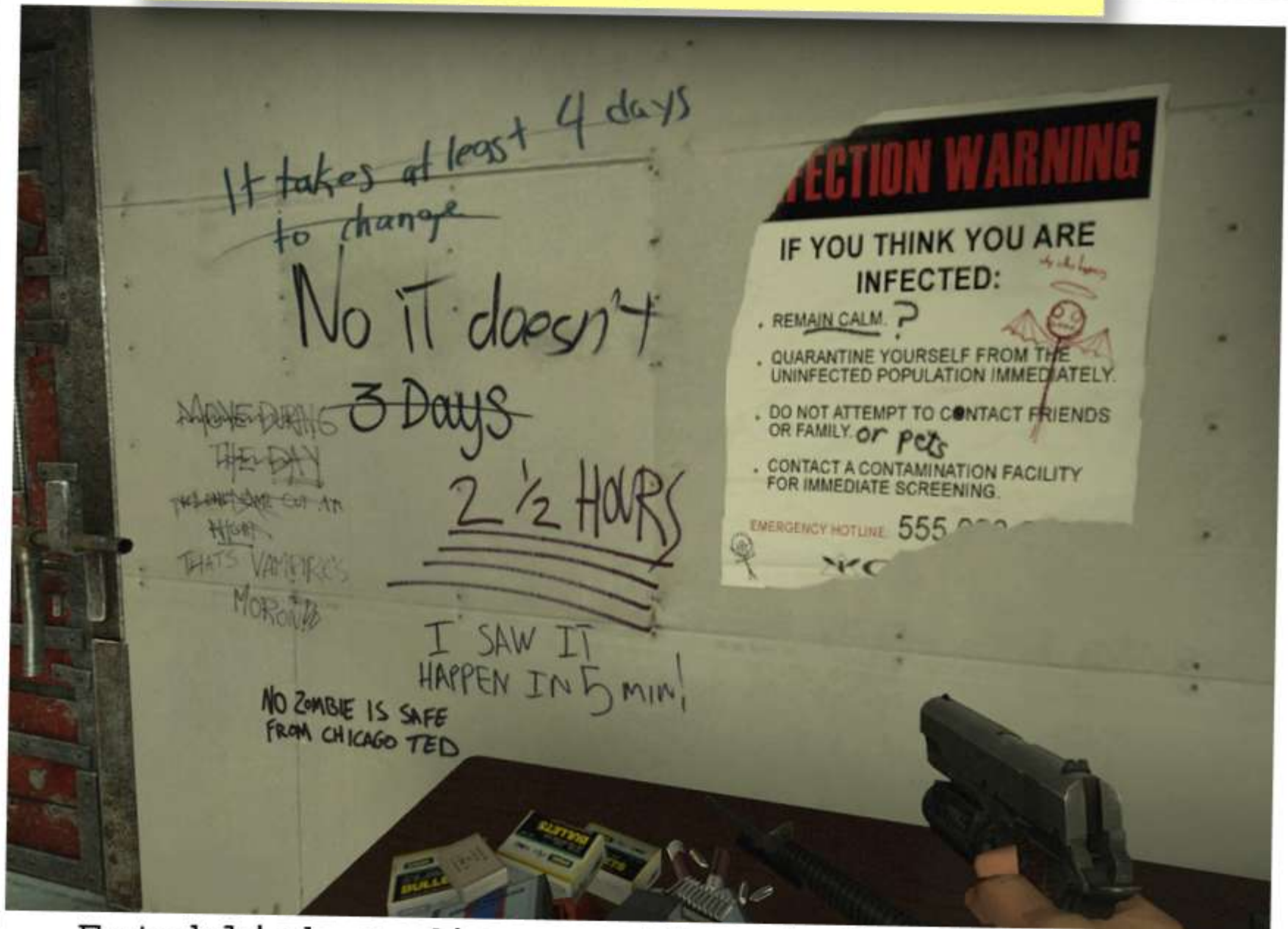
# Practical Techniques

LEGEND

- Establish a discernible chain of events
- Ensure that event engages the player
- Echo the world at large
- Create characterization
- Minimize disconnects between the player's possible actions and pre-scripted setups

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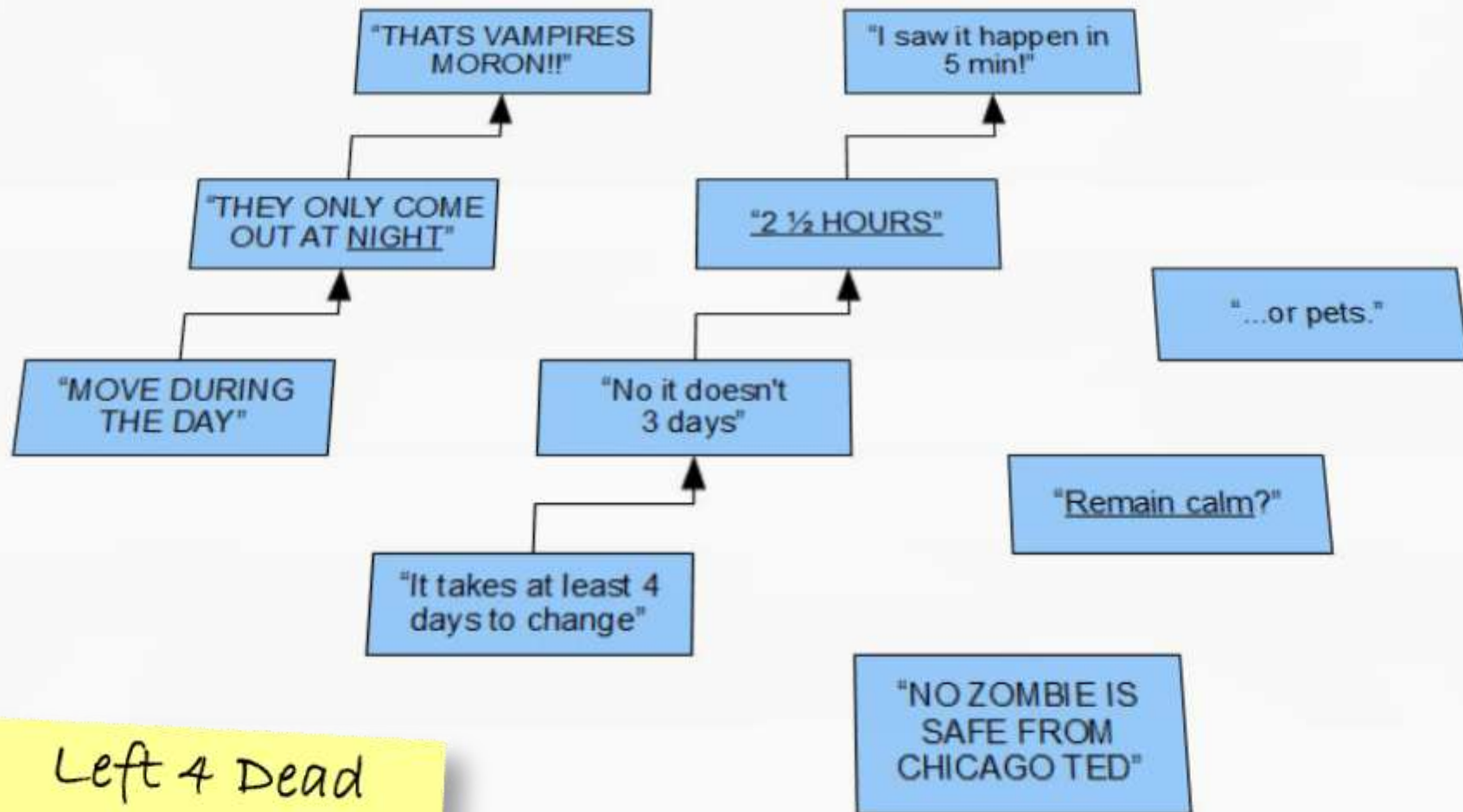
# Chain Of Events



Establish a discernable chain of events!

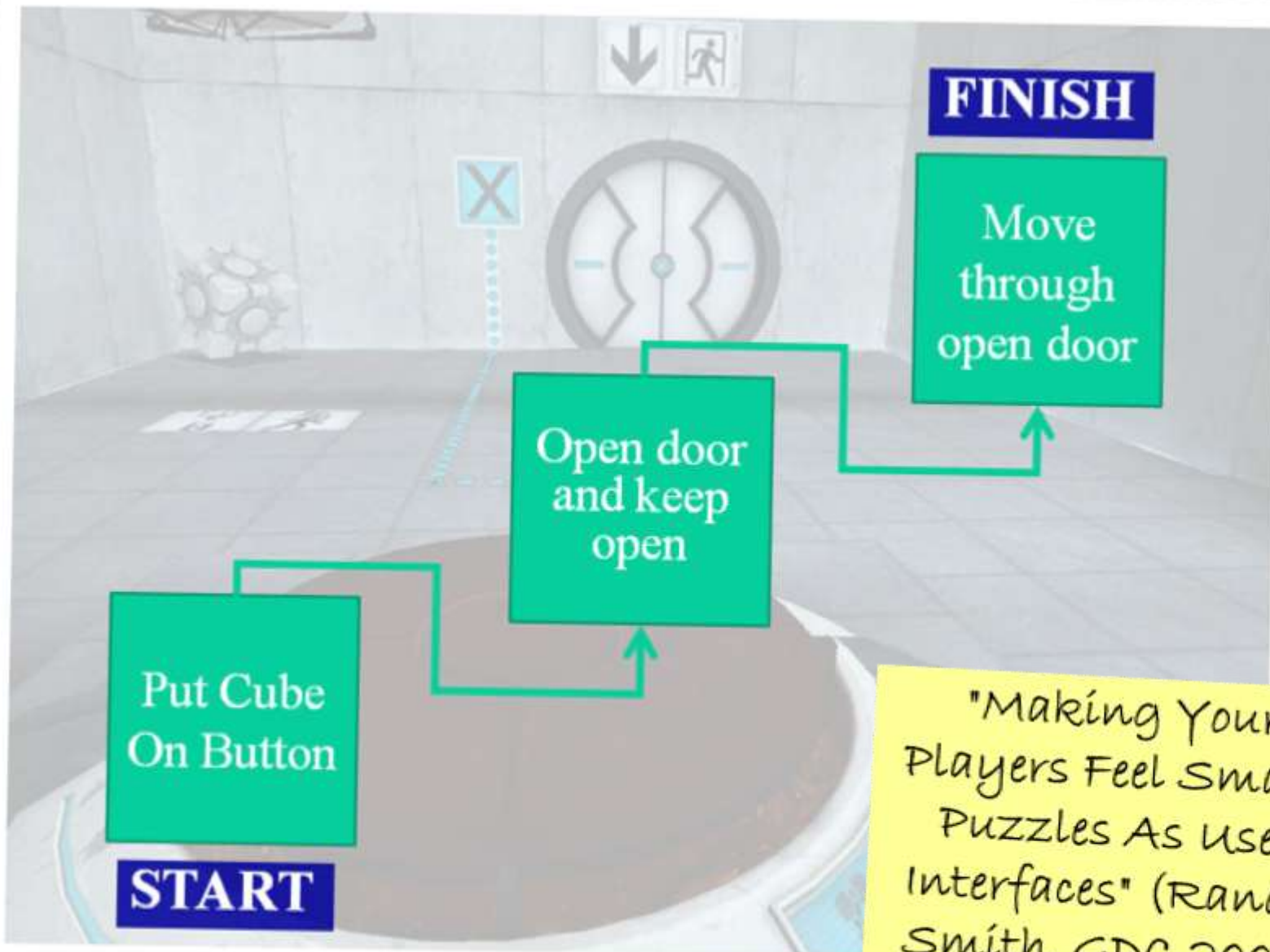


# Chain of Events



Left 4 Dead  
Whiteboard

# Puzzle Structures



"Making Your Players Feel Smart: Puzzles As User Interfaces" (Randy Smith, GDC 2009)



# Puzzle Structures

- Try authoring puzzle structures for your environmental storytelling setups

## Set Dressing

- When placing pieces of set dressing, figure out how pieces of set dressing connect





# Player Opinion



Ensure that event engages the player!

# Player Opinion

ATMs are  
associated  
with money

Represent  
Savings!

Water to  
remind us  
of setting

Splicers = Social  
ideals gone wrong

Ensure that event engages the player!



# Player Opinion



Ensure that event engages the player!

# Echoes

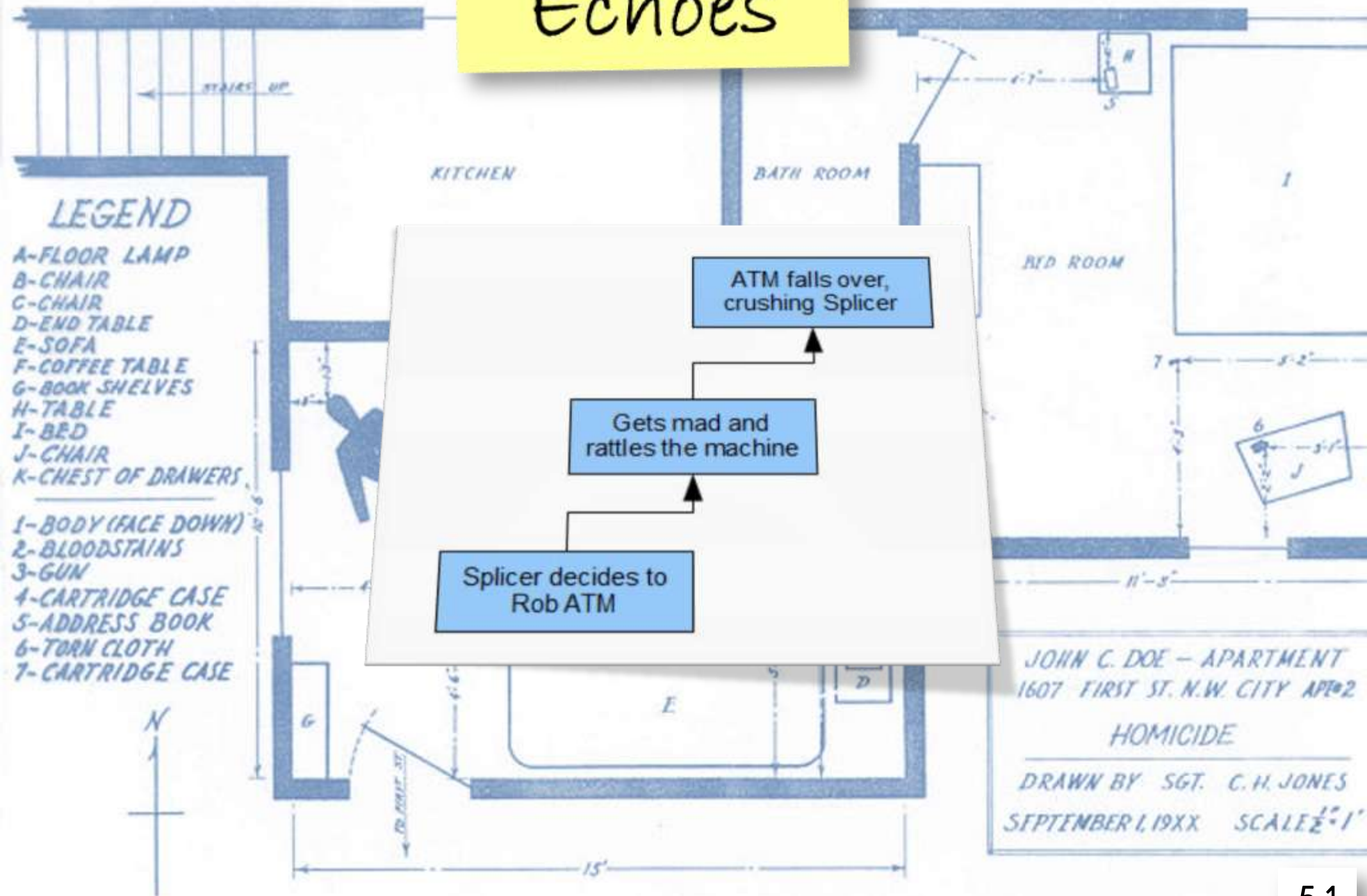
## "Echo The World At Large"

- Key to the ATM example
  - "The event reinforces Bioshock's larger theme of societal decay"
- Without this evocative premise, the storytelling moment wouldn't be nearly as effective

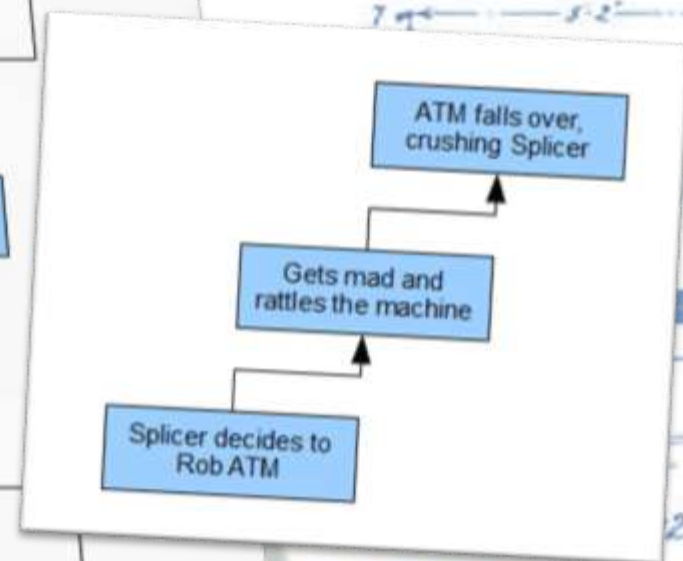
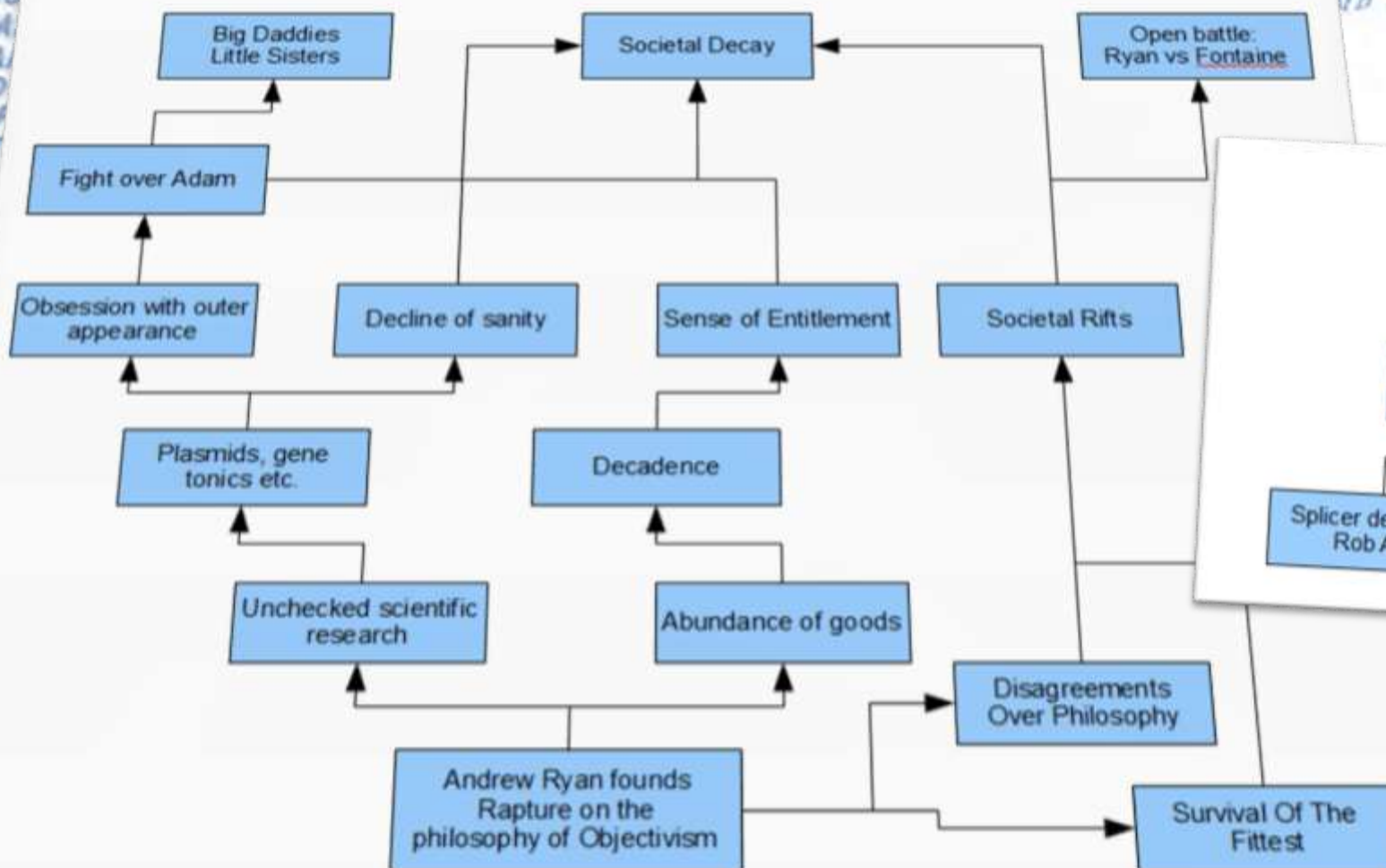
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# Echoes



# Backstory + Event





# Echoes

- Environmental storytelling moments should draw from the story premise:
  - Self-reinforcing loop
  - Premise spawns events, events remind player of premise



# Echoes





# Echoes



# Echoes





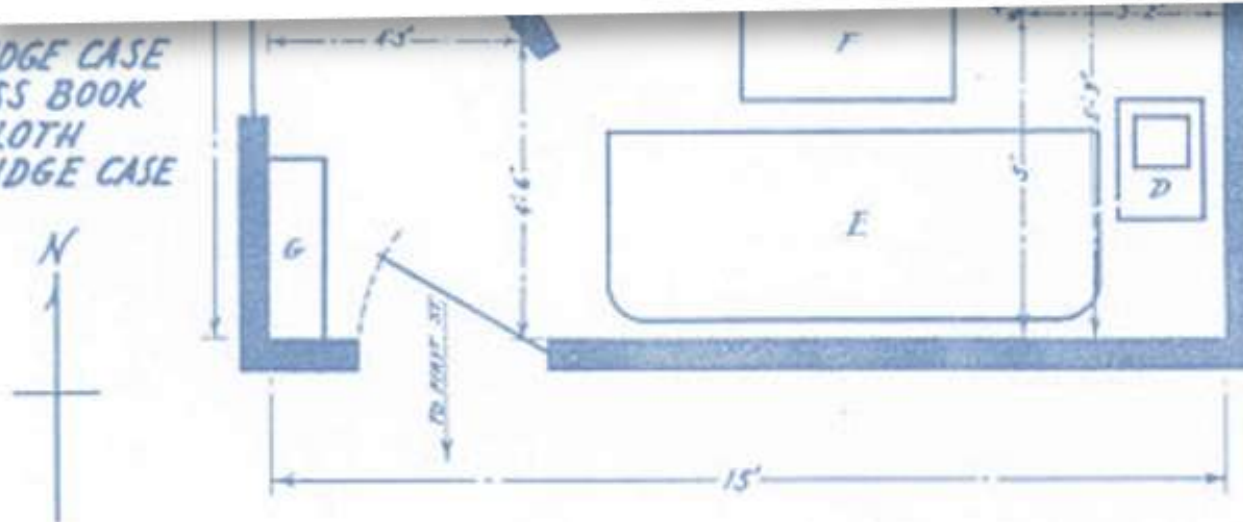
# Avoiding Disconnects

## LEGEND

A-FLOOR LAMP  
B-CHAIR  
C-CHAIR  
D-END TABLE  
E-SOFA  
F-COFFEE TABLE  
G-BOOK  
H-TABLE  
I-BED  
J-CHAIR  
K-CHEST

1-BODY  
2-BLOOD  
3-GUN  
4-CARTRIDGE CASE  
5-ADDRESS BOOK  
6-TORN CLOTH  
7-CARTRIDGE CASE

"Minimize disconnects between the player's possible actions and pre-scripted setups."



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# Avoiding Disconnects



The "Two Lovers"



# Avoiding Disconnects



Can we get on a motorcycle and play Evil Knieval?

# Avoiding Disconnects

- Do create situations that are clearly outside the player's gameplay domain
  - Fallout 3's lovers are fine: The game doesn't carry expectations related to cuddling
- Don't create situations we would want to create ourselves!
  - Dead NPCs squashed by doors



# Avoiding Disconnects



- Do cre  
outsid
- Fal  
gam  
rel
- Don't  
to cre
- Dea

clearly  
domain  
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tions

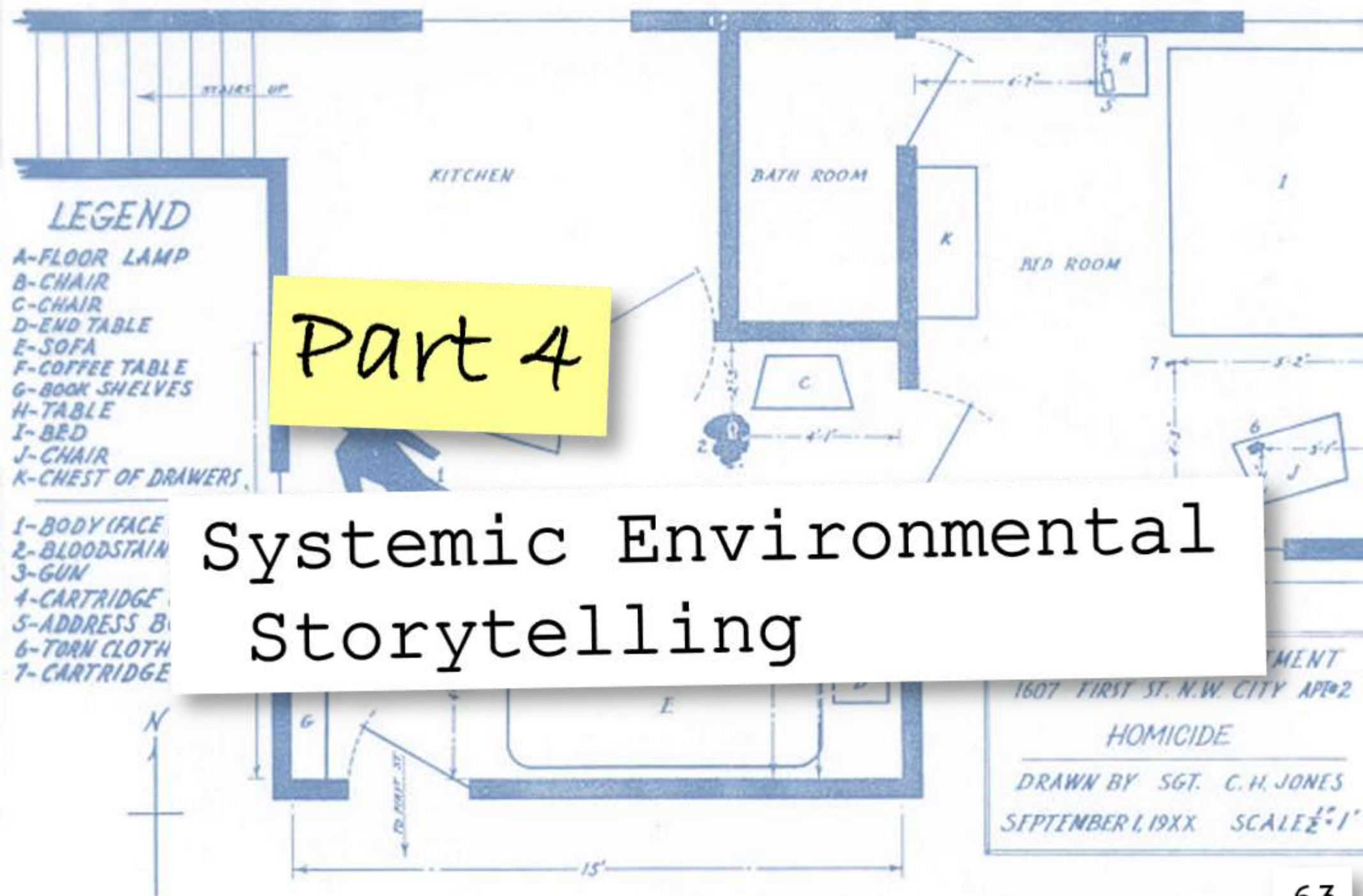
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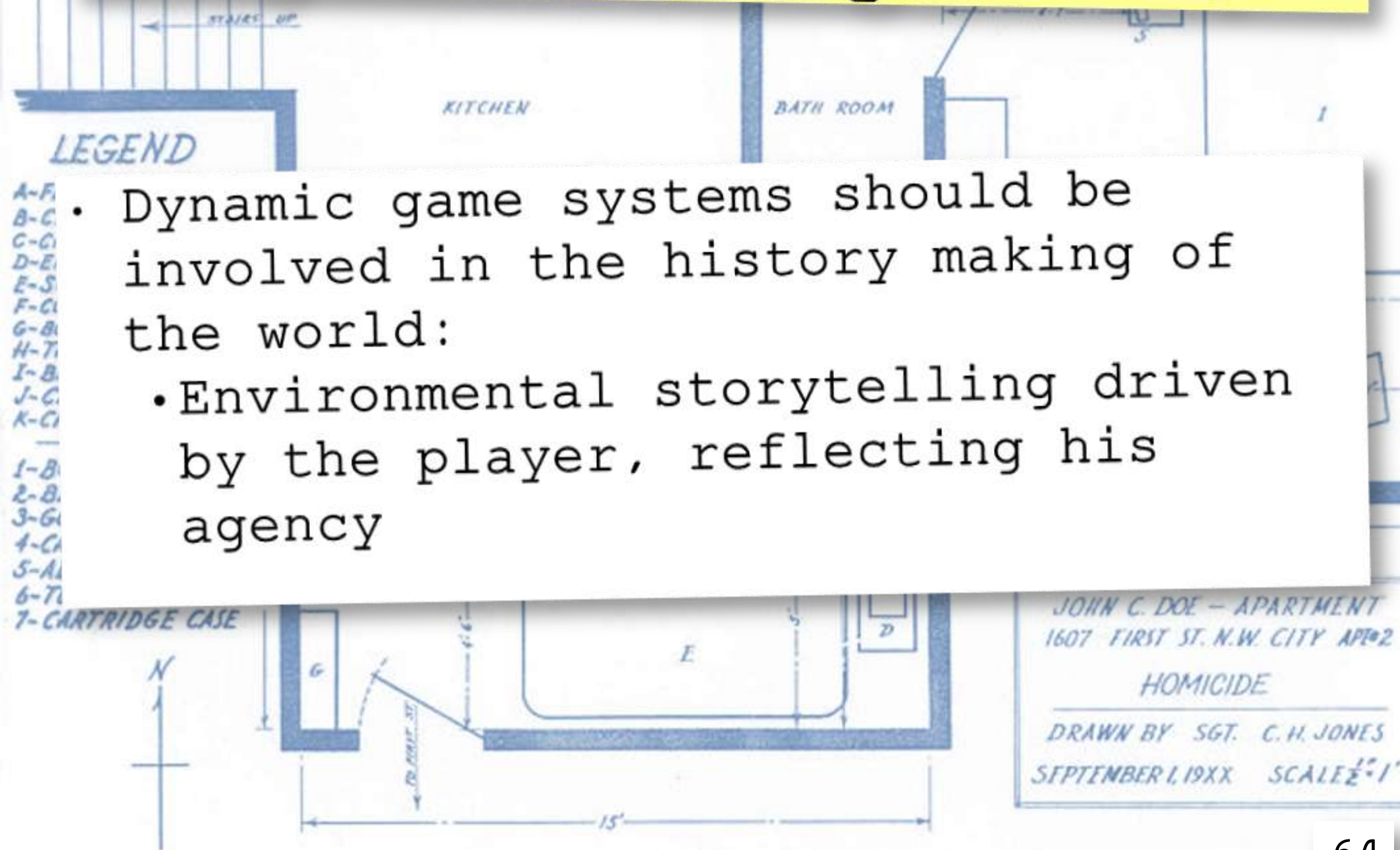
# Part 3 Summary

- Establish a discernible chain of events
- Ensure that event engages the player
- Echo the world at large
- Create characterization
- Minimize disconnects between the player's possible actions and pre-scripted setups





# Dynamic History Making





# Dynamic History Making

- Dynamic game systems should be involved in the world:
  - Environment by the player agency

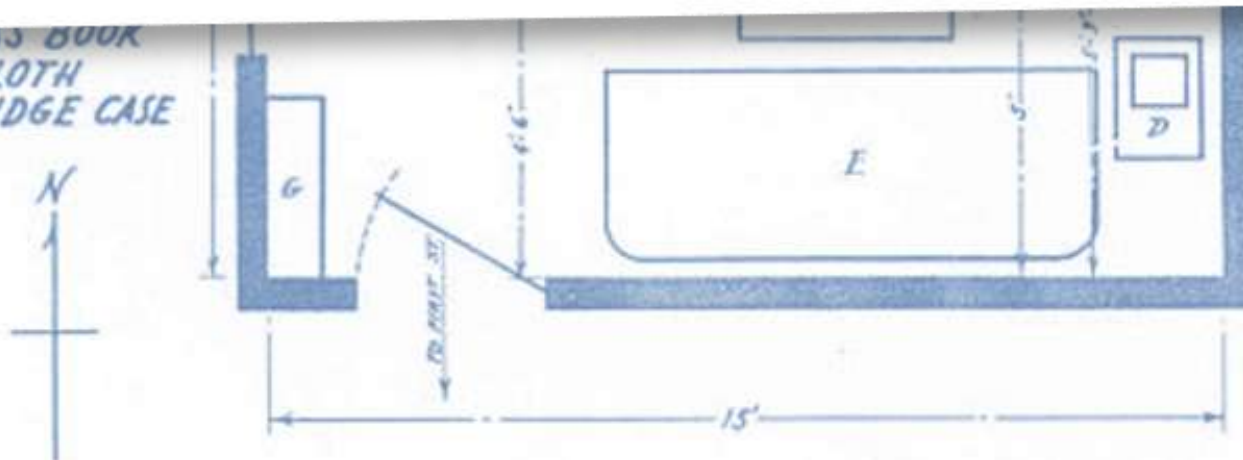


# Decals and Breakables

## LEGEND

- Decals and breakables tell the visual history of combat
  - Often seeing the site of a battle again triggers the memory of what happened there

5-ADDRESS BOOK  
6-TORN CLOTH  
7-CARTRIDGE CASE



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# Half-Life Deathmatch





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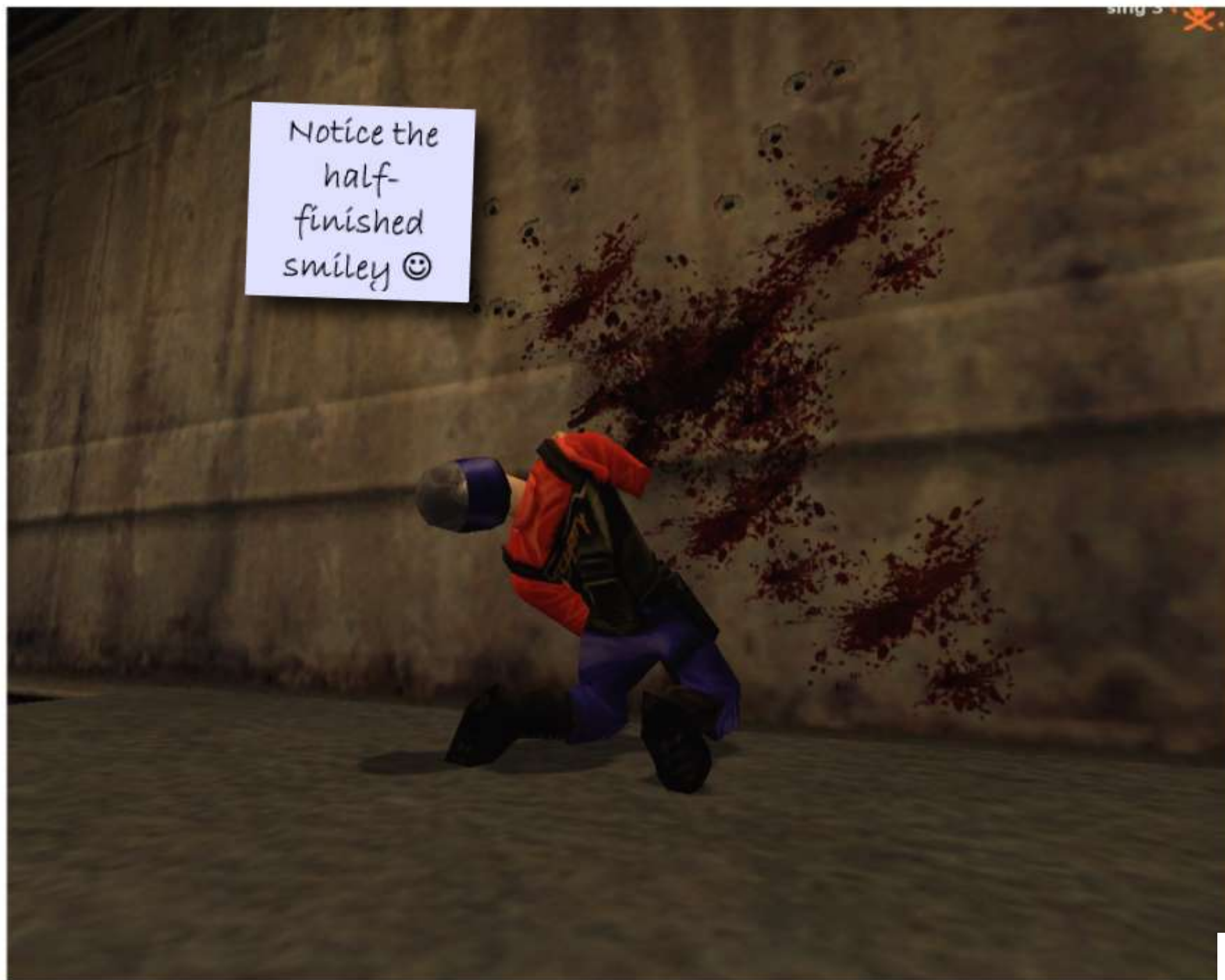




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C. H. JONES  
SCALE  $\frac{1}{2}'' = 1'$

Notice the  
half-  
finished  
smiley ☺





# Linear/Circular Story-based Games

## LEGEND

- Multiplayer games are often circular by nature
  - Repeatedly expose the player to environmental interactions
- Linear single-player games don't have this benefit as players rarely revisit areas

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# Solutions

- Create geographically circular single-player spaces
- Devise systems that 'look back' at earlier areas
  - Player-placed cameras
  - Security monitors
  - "Detective Mode"



# Technical Constraints vs Design Choices

## LEGEND

A-FLOOR LAMP

B-CHAIR

C-CHAIR

D-CHAIR

E-CHAIR

F-CHAIR

G-CHAIR

H-CHAIR

I-CHAIR

J-CHAIR

K-CHAIR

L-CHAIR

M-CHAIR

N-CHAIR

O-CHAIR

P-CHAIR

Q-CHAIR

R-CHAIR

S-CHAIR

T-CHAIR

U-CHAIR

V-CHAIR

W-CHAIR

X-CHAIR

Y-CHAIR

Z-CHAIR

"Of course you have to cache out bodies, debris and decals, due to memory constraints. But remember that's also a *design decision*. Players get value when they see that their acts are persistent in the world. It's memorable to come back and see your own mess."

(Raphael Colantonio, Arkane Studios)

# Technical Constraints vs Design Choices

## LEGEND

A-FLOOR LAMP  
B-CHAIR  
C-CHAIR

D-CHAIR  
E-CHAIR  
F-CHAIR  
G-CHAIR  
H-CHAIR  
I-CHAIR  
J-CHAIR  
K-CHAIR  
1-  
2-  
3-  
4-  
5-  
6-  
7-

"Of course you have bodies, debris and memory constraints that's also a design choice. Players get value from their acts are in the world. It's memory and see your own (Raphael Colantonio)





# A Fictional Bioshock



# Spider--The Secret of Bryce Manor



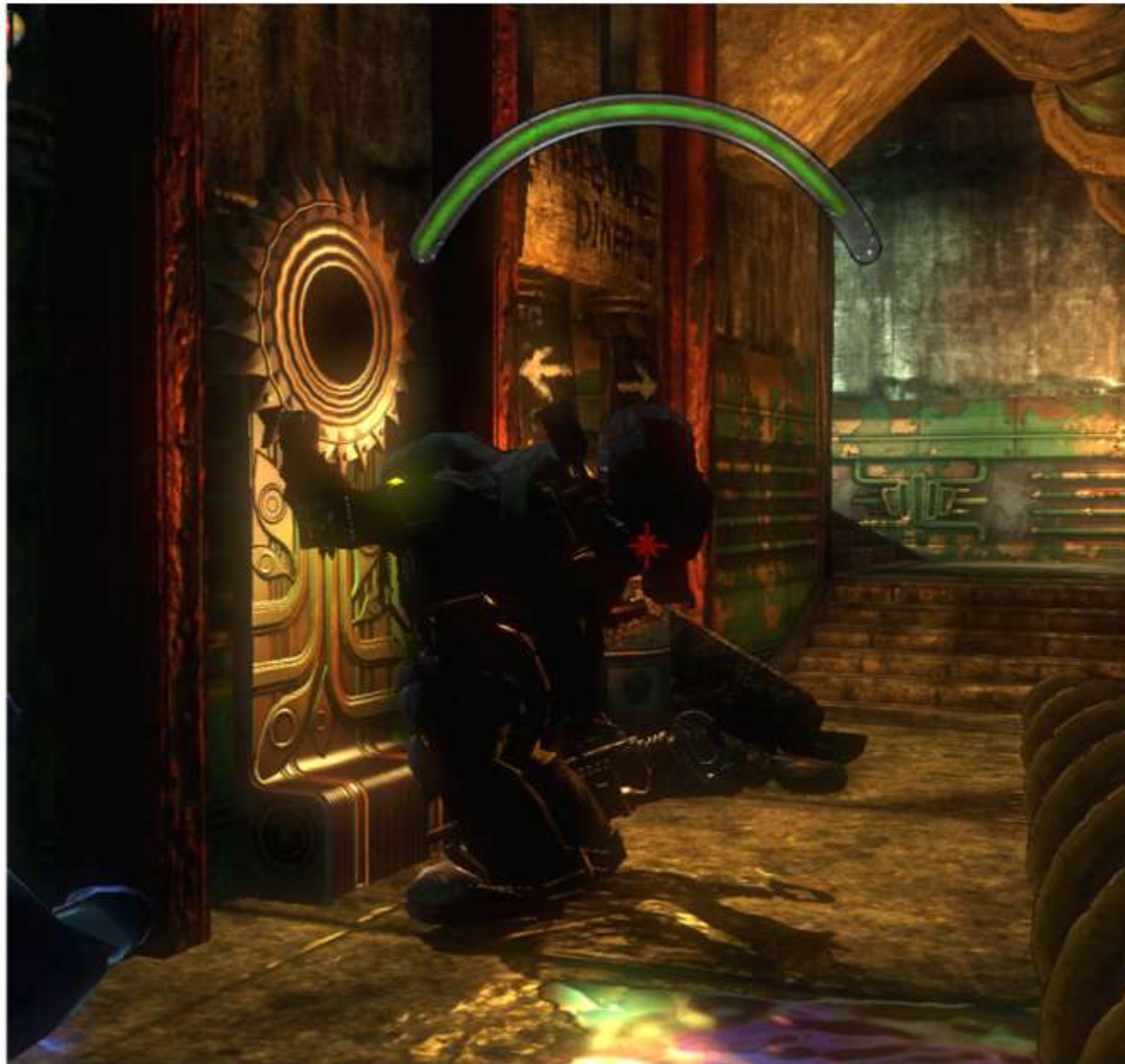


# Little Sister Vignette

## LEGEND

A-FLOOR LAMP  
B-CHAIR  
C-CHAIR  
D-END TABLE  
E-SOFA  
F-COFFEE TABLE  
G-BOOK SHELVES  
H-TABLE  
I-BED  
J-CHAIR  
K-CHEST OF DRAWERS

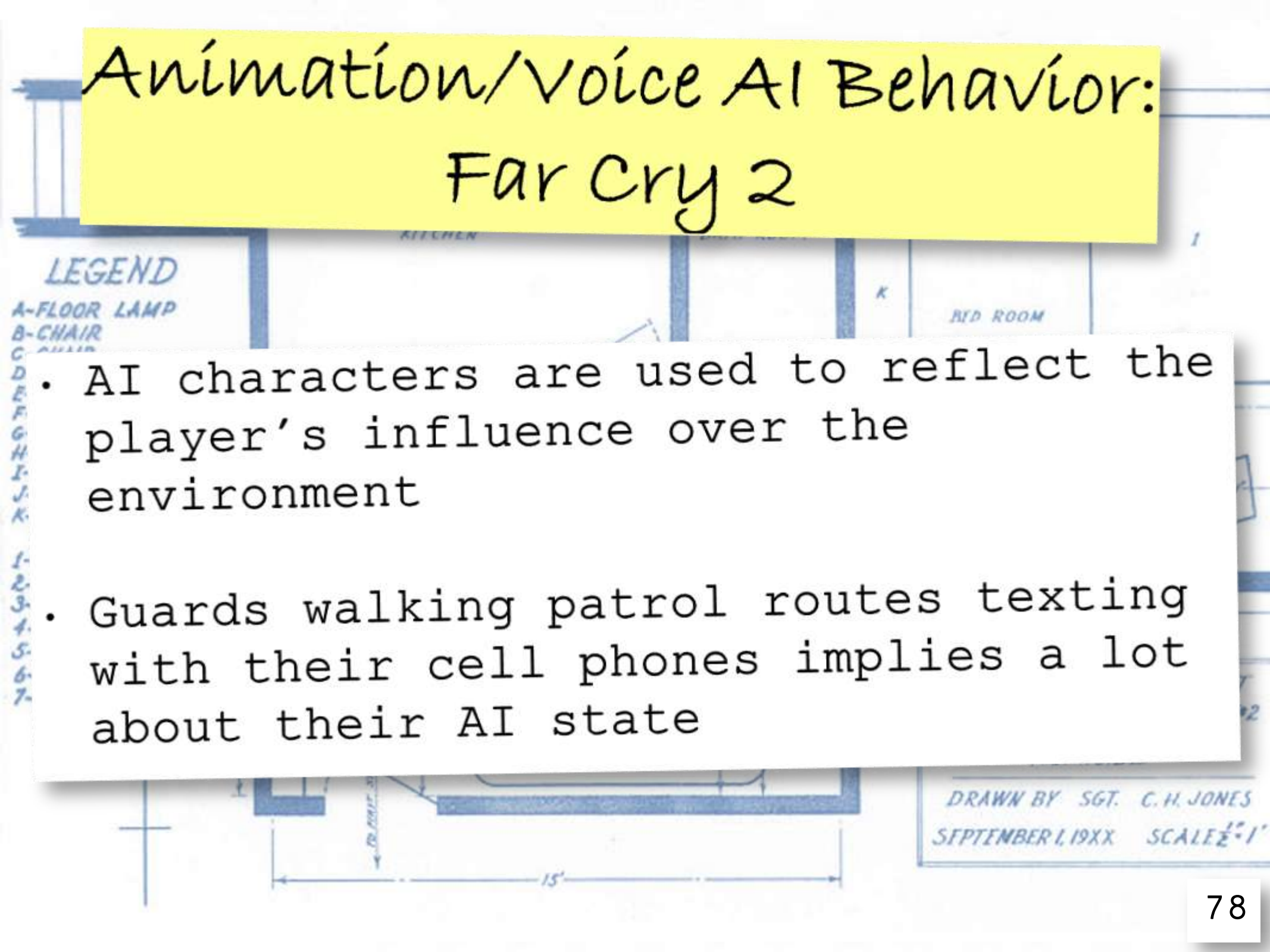
1-BODY (FACE DOWN)  
2-BLOODSTAINS  
3-GUN  
4-CARTRIDGE CASE  
5-ADDRESS BOOK  
6-TORN CLOTH  
7-CARTRIDGE CASE



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# Animation/Voice AI Behavior: Far Cry 2

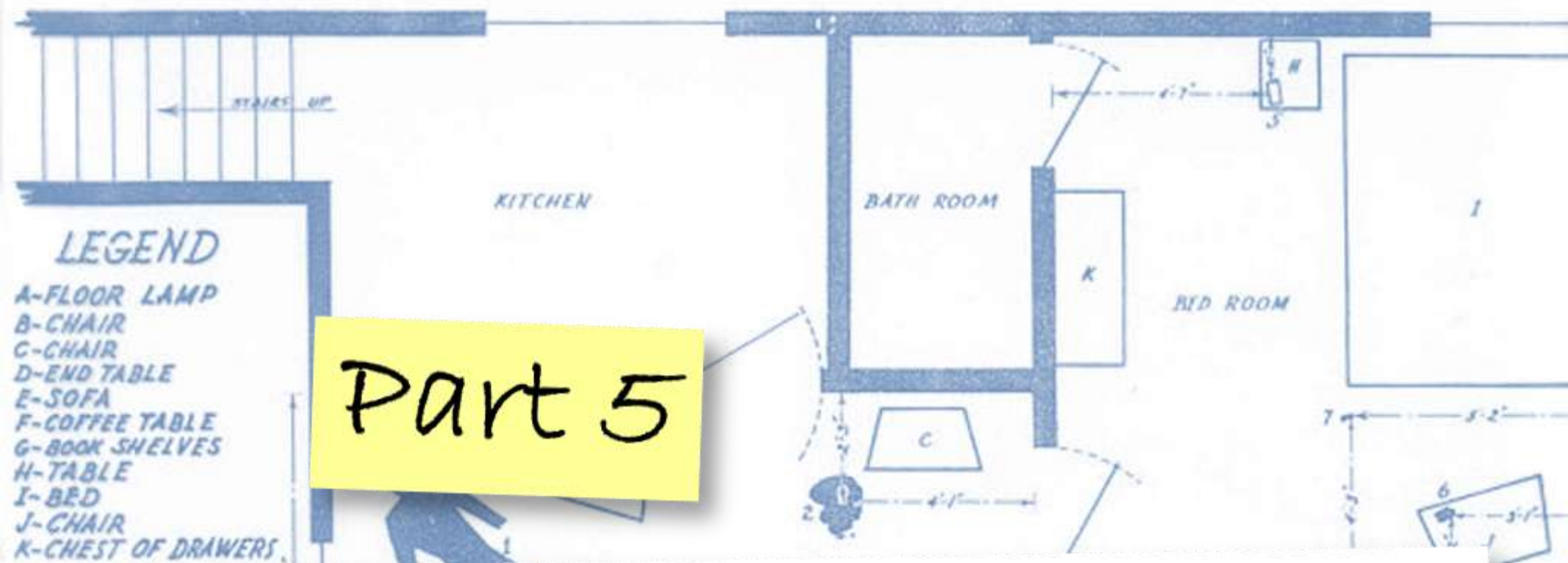
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- AI characters are used to reflect the player's influence over the environment
  - Guards walking patrol routes texting with their cell phones implies a lot about their AI state



# Part 4 Summary

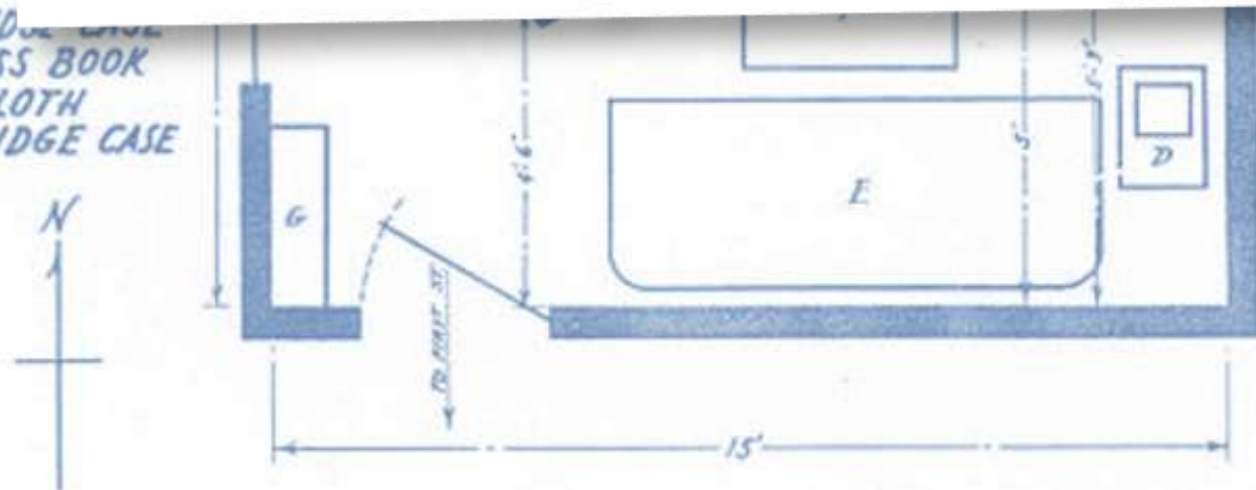
- Devise systems that allow players to see their impact on the environment
- Gameflow structures that allow for revisiting spaces
- "Caching out shell casings" is a *design decision*
- Keep visual history cues consistent between the player and the designer-authored bits
- Aim for player-centric thinking

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- 1-BODY (A)
- 2-BLOODS
- 3-GUN
- 4-CARTRIDGE CASE
- 5-ADDRESS BOOK
- 6-TORN CLOTH
- 7-CARTRIDGE CASE

## Takeaway and Conclusions

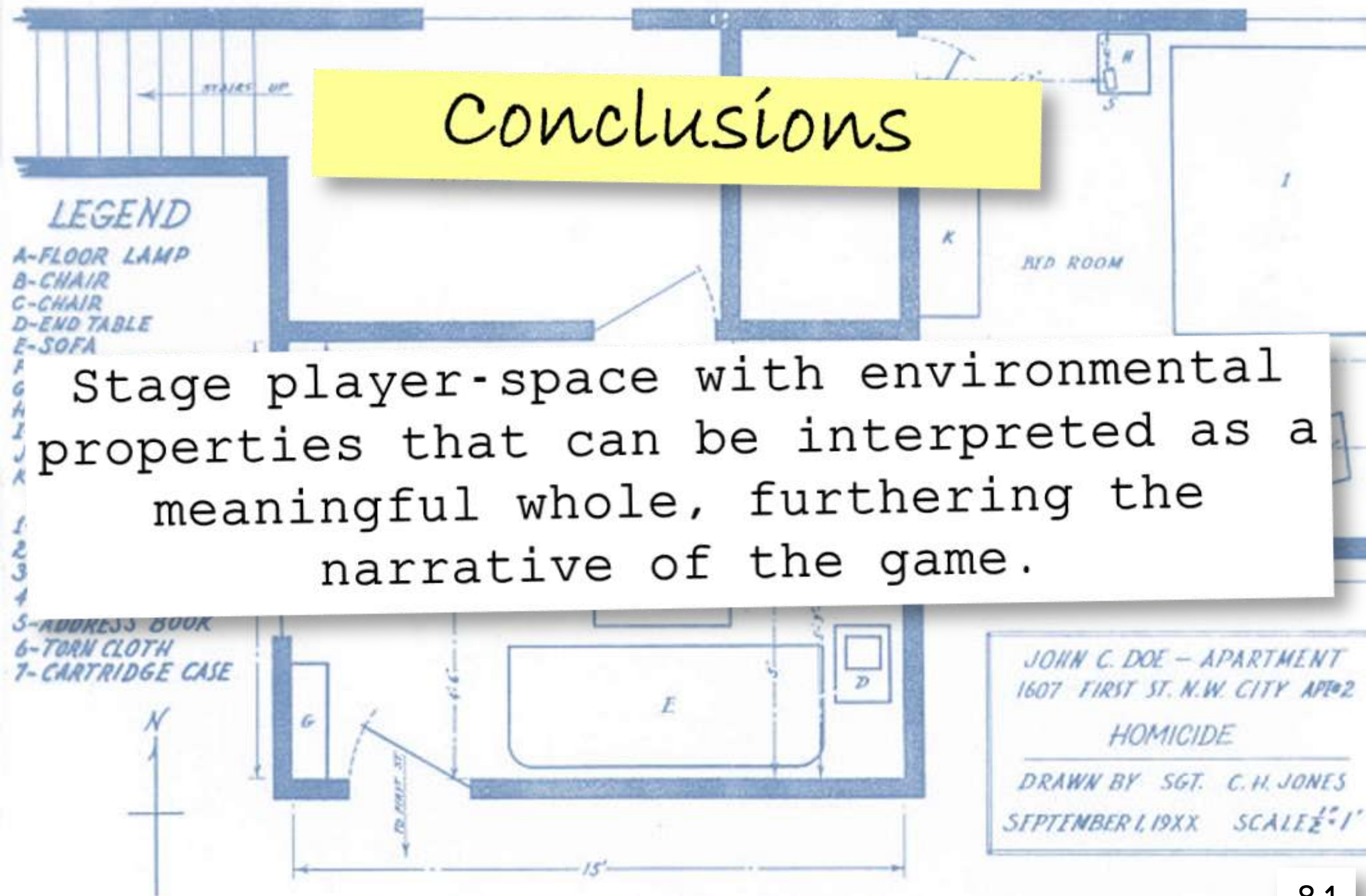


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HOMICIDE  
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# Conclusions

Stage player-space with environmental properties that can be interpreted as a meaningful whole, furthering the narrative of the game.



Thanks!



Harvey Smith  
Arkane Studios  
[harvey@arkane-studios.com](mailto:harvey@arkane-studios.com)



Matthias Worch  
Visceral Games  
[matthias@worch.com](mailto:matthias@worch.com)

Thanks to...  
Jordan Thomas,  
Robert Wisniewski,  
Wright Bagwell



# Resources

## The Interesting Thing About Bishops

[http://clicknothing.typepad.com/Design/hockingc\\_GDC04\\_Bishops.zip](http://clicknothing.typepad.com/Design/hockingc_GDC04_Bishops.zip)

## Making Your Players Feel Smart:

## Puzzles As User Interfaces

[http://www.tigerstylegames.com/Public/RSmith\\_GDC09\\_PuzzlesAsUI\\_ForWeb.ppt](http://www.tigerstylegames.com/Public/RSmith_GDC09_PuzzlesAsUI_ForWeb.ppt)

## The Imago Effect

<http://www.witchboy.net/articles/the-imago-effect/>

## Jordan Thomas "White Space"

Speech given at Teeside University, UK

## Pearls Before Breakfast

<http://www.washingtonpost.com/wp-dyn/content/article/2007/04/04/AR2007040401721.html>

## Understanding Comics

Scott McCloud

