



Level Design in a Day: “Level Design Histories and Futures”

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PARSONS
THE NEW SCHOOL
FOR DESIGN



NYU

POLYTECHNIC SCHOOL
OF ENGINEERING



NYU GAME CENTER

GAME DEVELOPERS CONFERENCE®

MOSCONE CENTER · SAN FRANCISCO, CA

MARCH 2-6, 2015 · EXPO: MARCH 4-6, 2015



About this talk

- Concepts and language to help you be critical about “level design”
- **Not** about “how to do level design”
- Heavy bias toward 3D character-based games (like everyone else)

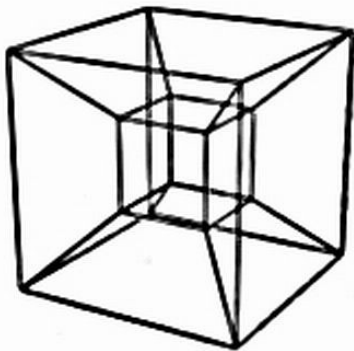
**(The PERFECT
level designer?)**

**(one can
dream...)**





Four (4) possible dimensions of contemporary level design



- as a material, as **data**
- as industrial **process**
- as architectural **space**
- as community **politics**



1: Level design as **MATERIALS,** **CONSTRUCTION,** and **DATA**



“LEVEL” = a bunch of data
(asset) that references a bunch of
other data (other assets)

“LEVEL EDITOR” = software
that enables human visualization
and modification of this data



LEVEL EDITOR HISTORY: text editor as level editor

```

183 solid
184 {
185     "id" "10"
186     side
187     {
188         "id" "24"
189         "plane" "(-544 544 544) (-544 -544 544) (-544 -544 -544)"
190         "material" "BRICK/BRICKFLOOR001A"
191         "uaxis" "[0 1 0 0] 0.25"
192         "vaxis" "[0 0 -1 0] 0.25"
193         "rotation" "0"
194         "lightmapscale" "16"
195         "smoothing_groups" "0"
196     }
197     side

```

Microsoft Excel - levelEditor.xls

File Edit View Insert Format Tools Data Window Help

100% Arial 10 B I U

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22	KEY:																											
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24	Basic Buildings							Production Buildings							Obstacles													
25	c	Chieftens Hut						s	Sawmill						w	Wood Pile					p	create_platform		x	collectable			
26	h	House						t	Toolshed						r	Rock Pile					l	create_ladder		cu	collectable			
27								q	Quarry												b	building_platder		ba	building_bt			
28																					c	building_chieftut		bh	building_bt			
29																					h	building_house		f	building_bt			



LEVEL EDITOR HISTORY: studying tool interfaces / workflow



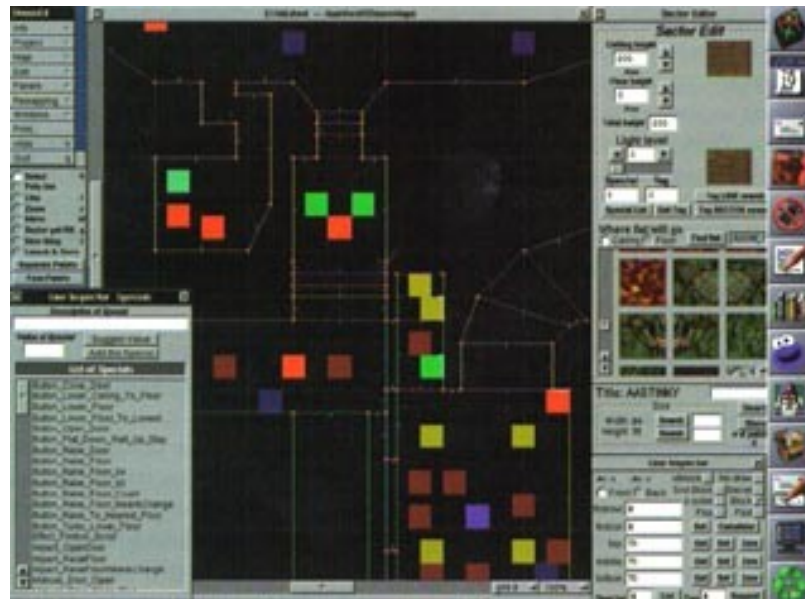


LEVEL EDITOR HISTORY: one 2D floorplan pane

AutoCAD (1982)



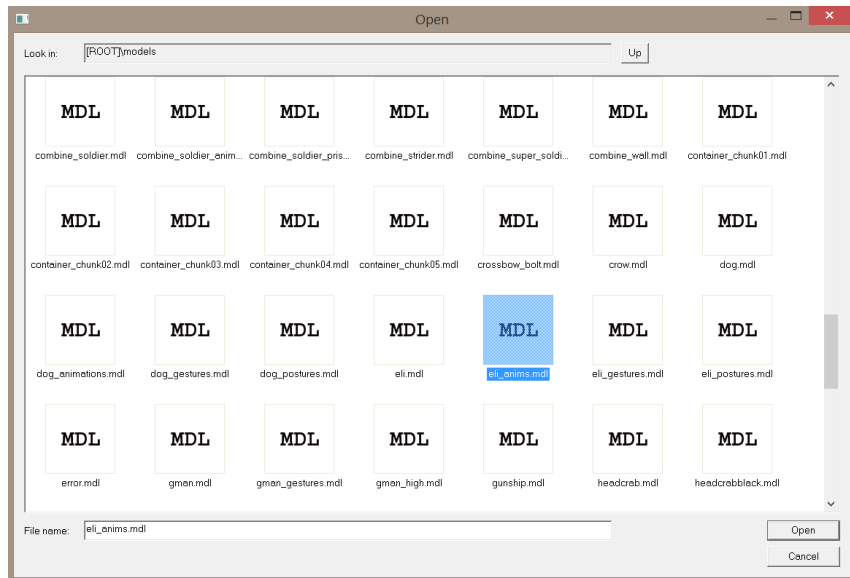
DoomEd (~1992?)



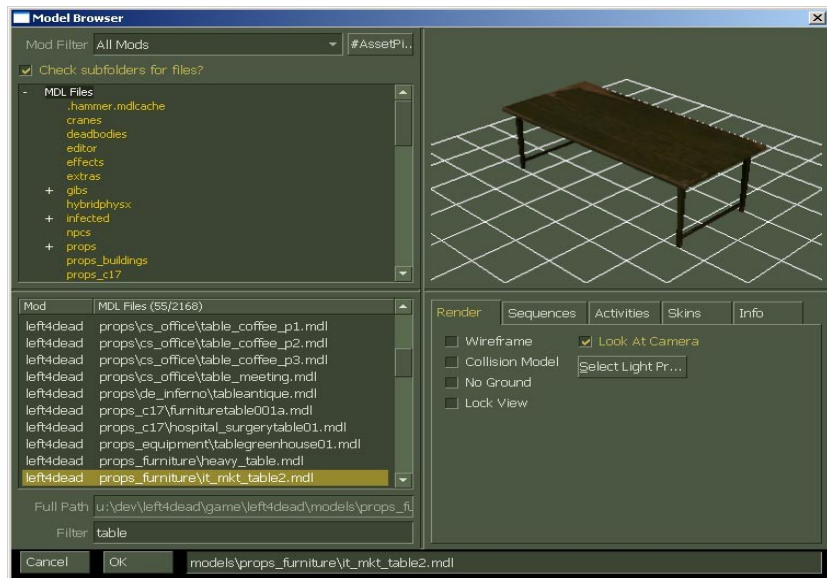


LEVEL EDITOR HISTORY: the asset browser

Hammer (2004)



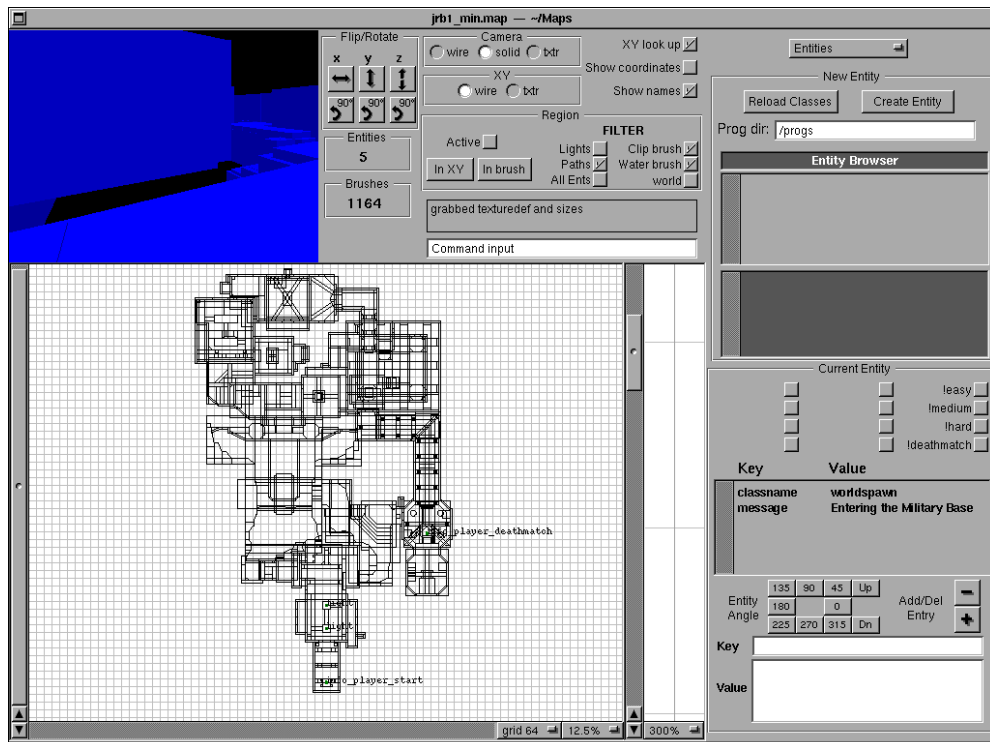
Hammer (2006?)





LEVEL EDITOR HISTORY:

3 pane, 3D preview + floorplan + elevation

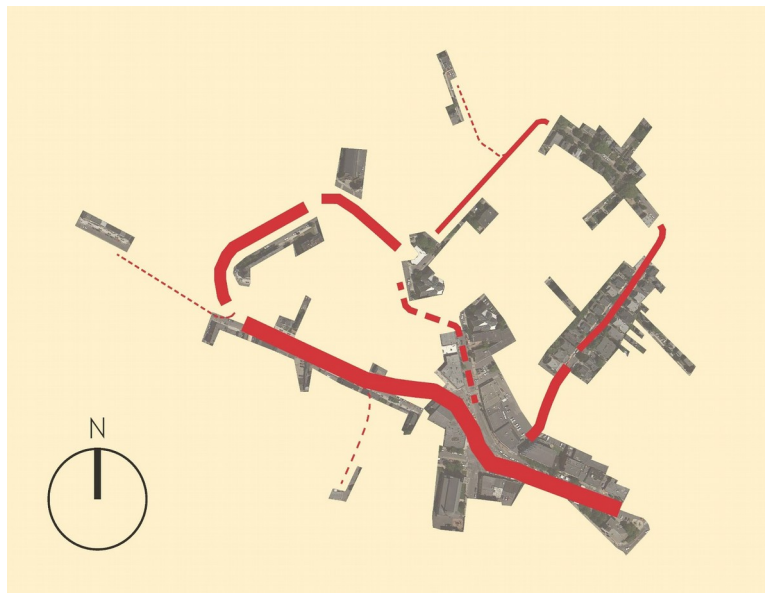
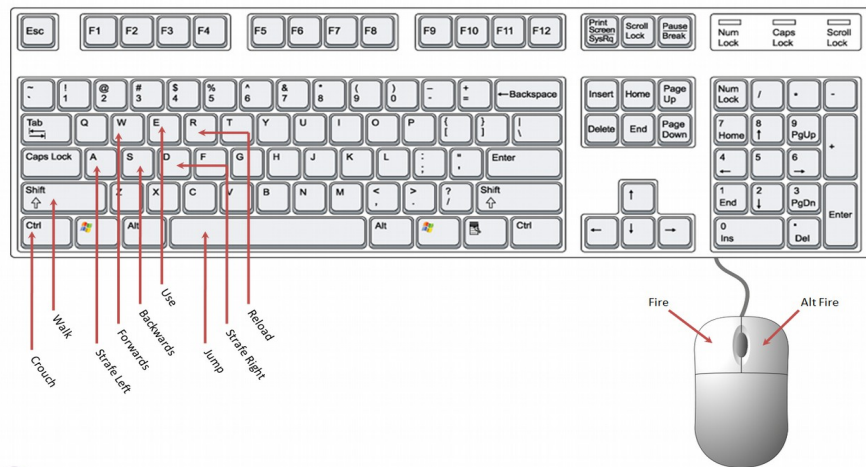


QuakeEd (1996)
(great ancestor of
"Radiant" level editors)



LEVEL EDITOR HISTORY: mouse-look / WASD

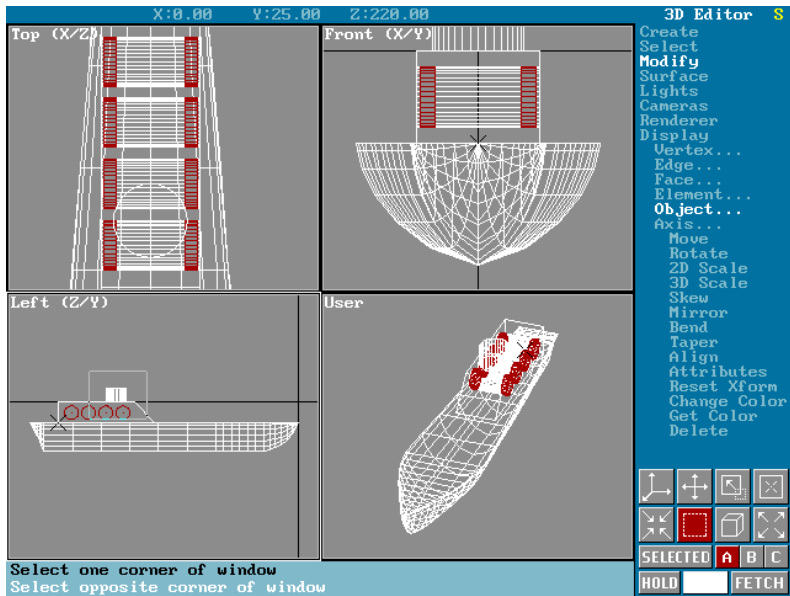
more emphasis on 3D camera view, more emphasis on “wandering” as workflow



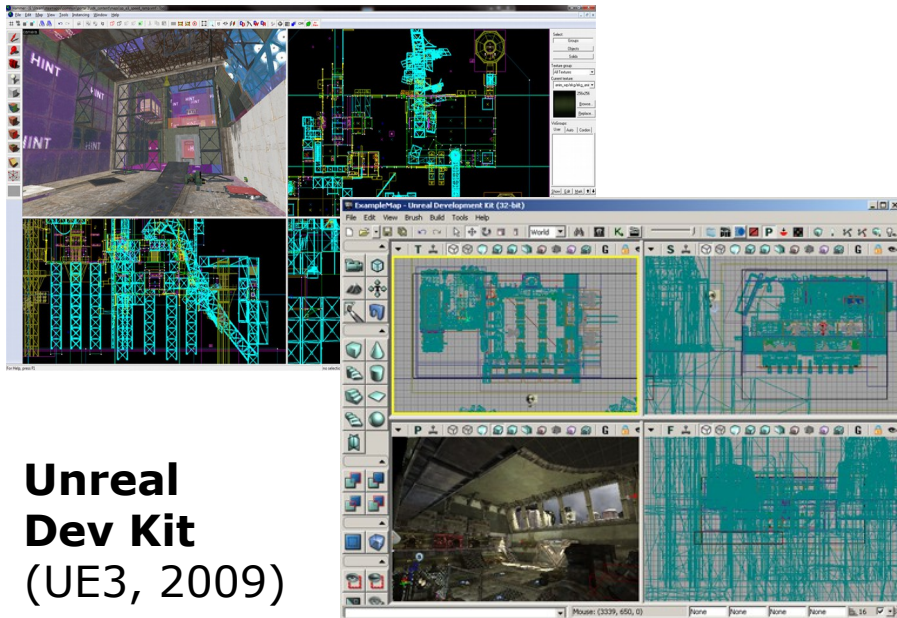


LEVEL EDITOR HISTORY: 4 pane, 3D preview + 2D ortho views

3D Studio (1990)



Worldcraft (Hammer) (1996-2012?)



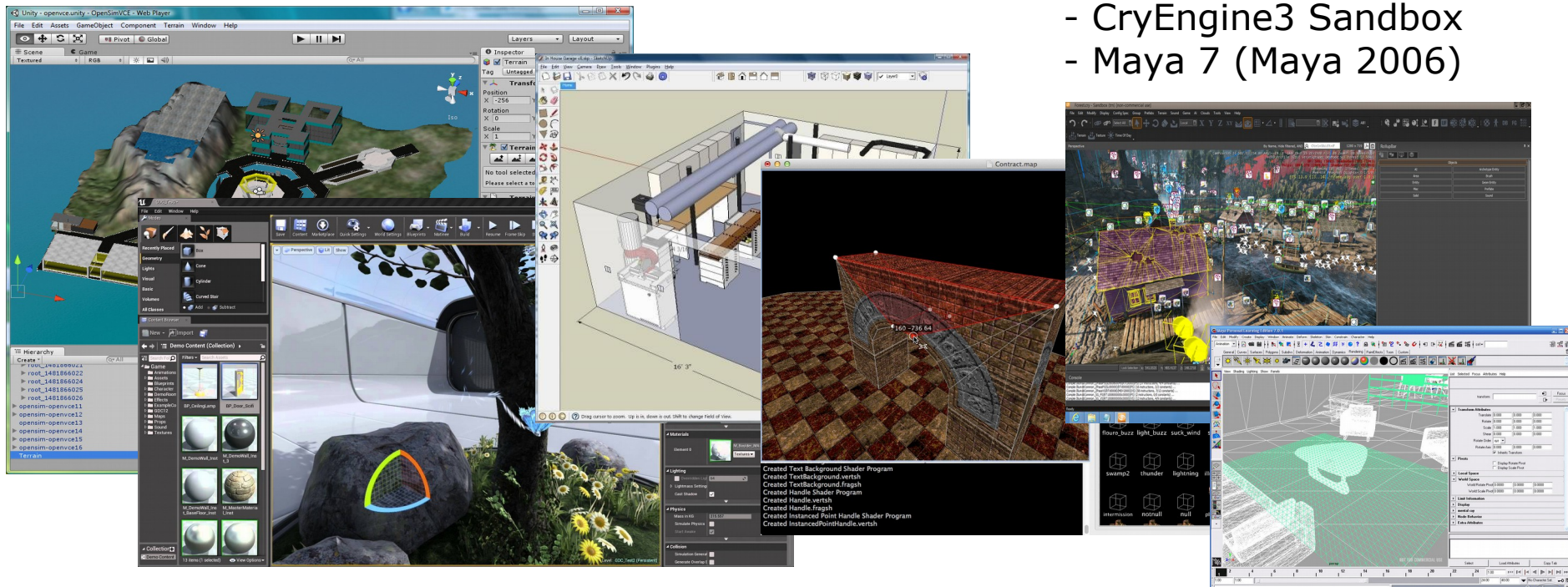
Unreal Dev Kit (UE3, 2009)



LEVEL EDITOR HISTORY: one big interactive 3D view *to rule them all and in the darkness bind them*

(from left to right:)

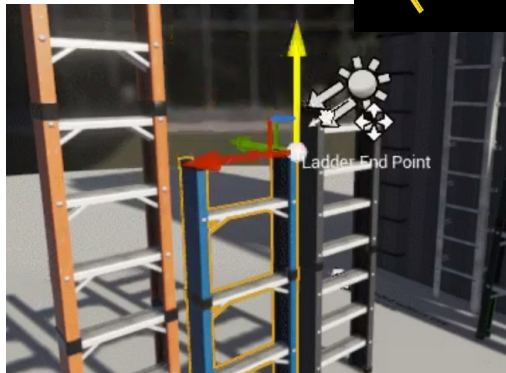
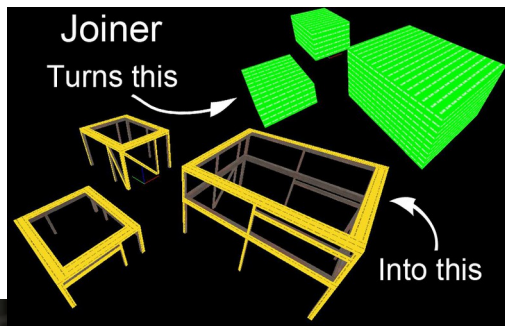
- Unity
- Unreal 4
- SketchUp
- Trenchbroom (Quake 1)
- CryEngine3 Sandbox
- Maya 7 (Maya 2006)





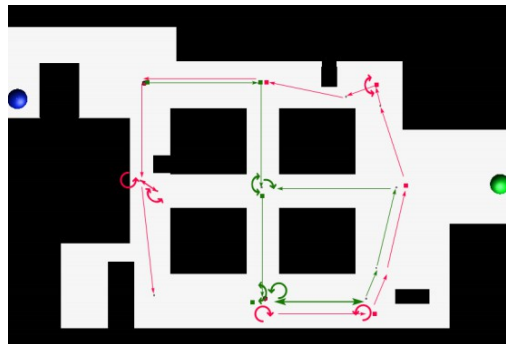
LEVEL EDITOR FUTURES: automation of “construction” and “design” terrain tools, lightmapping... what else?

Joiner by
Tim Johnson
for TF2



Impromptu
Procedural
Ladders for
Unreal 4

*“Generative
Methods for Guard
and Camera
Placement in
Stealth Games”
AIIDE 2014*



Start of story

Alice gets
assignment

Alice reacts to assignment

Alice
flummoxes
Dave

Plot Visualizer
for Versu, by
Graham Nelson



2: Level design as **PROFESSION / INDUSTRIAL PROCESS**



“LEVEL DESIGNER” =

**role / identity defined mainly
by the needs of mass industrial
(AAA) game production**



Disclaimer:

INCOMING HISTORICAL ANALYSIS OF JOB POSTINGS

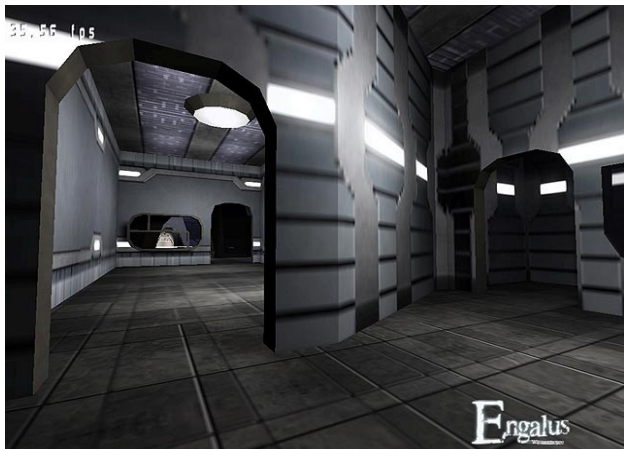
- yes, job postings don't tell the full story about what devs do
- but still a useful primary source



Crytek ad for “level designer” (2001)



- Responsibilities:
 - Designing and modeling 3D architectural, gameplay-rich environments.
 - Collaborating with Lead Designer to define and refine gameplay mechanics
 - Working closely with project artists to create visually stunning environments
 - Requirements:
 - Creative vision and passion for console and PC games
 - Over 2 years of industry level design experience using world-building tools (MAP-Editors) and/or 3D Studio Max
 - Intimate knowledge of the development process from concept to final product release
 - Ability to produce articulate detailed design documentation.
 - Willing to accept and provide direction, work well under pressure, and handle multiple tasks
 - Excellent communication, interpersonal, and organizational skills
 - Pluses:
 - Art skills
 - Scripting experience
 - Degree in architecture
 - Significant contribution to Level Design in one published game
- <https://web.archive.org/web/20010404230927/http://www.crytek.de/hp/jobs.htm#level>**

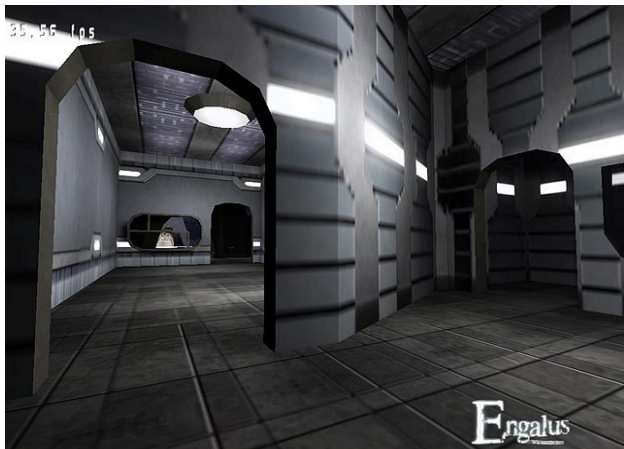




Crytek ad for “level designer” (2001)



- Designing and modeling 3D architectural...
- ...(MAP-Editors) and/or 3D Studio Max
- Collaborating with Lead Designer...
- Working closely with project artists...
- PLUS: Art skills
- PLUS: Scripting experience
- PLUS: Degree in architecture





Crytek ad for “level designer” (2008)



- Requirements:
 - Experienced and working knowledge of design tools and techniques, systemic designs.
 - Expert in systemic, sensory based AI Systems in Action Games.
 - Expert in advanced challenge designs including advanced physics, sound and graphics technologies.
 - Expert in emergent gameplay design, sandbox designs and simulation designs.
 - Excellent organizational, communication and interpersonal skills are must.
 - He must be a passionate, a motivator, an inspirer.
 - Works well under pressure and is capable of multi-task tracking.
 - Pluses:
 - Experience in games industry.
 - Knowledge of CryEngine Sandbox level editor.
 - Responsibilities:
 - Work with lead designer on level design and game play ideas
 - Work on game concepts, gameplay mechanics, entity mechanics, and enemy design
 - Use the CryEngine Sandbox level editor to implement designs, layout levels, entity creation, gameplay lightning, script events and manipulate AI behaviors
 - Assist in design documentation and in-game dialogue writing
 - Coordinate with other studio groups including art and production to achieve project objectives.
 - Assist in design documentation and in-game dialogue writing
 - Provides guidance and assistance where required, and is willing to accept guidance and assistance when required.
 - Shows a strong passion for making the highest quality state of the art games
 - Contributes innovative and original ideas towards all aspects of game production and development
 - Actively participate in team working on project by making recommendations on how to improve product quality as well as group productivity.
 - Provide input to department project status meetings.
 - Ability to communicate in English. Established interpersonal and organizational skills. Must work well in a team oriented environment.
 - Willing to relocate to Frankfurt am Main, Germany
 - Takes initiative and is willing to expand own horizon
 - Willing to accept and provide direction, work well under pressure, and handle multiple tasks.
 - Complete all tasks in a timely manner and to a consistent high quality standard.
 - Remains focused, motivated and effective on all tasks through completion.
 - Good communication and writing skills and create documentation where required.
 - Demonstrates a desire to learn and grow professionally.
- Report to: Lead Level Designer
- <https://web.archive.org/web/20080725092336/http://www.crytek.com/jobs/frankfurt/level-designer/>**



Crytek ad for “level designer” (2008)



- Expert in systemic, sensory based AI Systems in Action Games.
- He must be...
- Use the CryEngine Sandbox level editor to implement designs, layout levels, entity creation, gameplay lightning [sic], script events and manipulate AI behaviors
- Assist in [...] in-game dialogue writing
- Report to: Lead Level Designer



Crytek ad for “tech level designer” (2012!)



- As a technical level designer you'd be expected to act as a bridge between the level design, and other departments that are more technical in nature as well as solving problems within the level design group. This primarily includes performance related profiling, technical feature implementation, AI system design and maintenance and enforcing good technical working practices within the team.
- Responsibilities:
 - Technical profiling of game missions and assets for all platforms
 - Communicating performance reports within the team
 - Develop an excellent working knowledge of the CryEngine
 - Work with designers and programmers to determine performance budgets
 - Maintain documentation establishing best technical practices
 - Work closely with the AI team and game design in delivering excellent enemy AI
- Requirements:
 - Minimum 2 years professional experience
 - 1 or more shipped AAA titles on PC and Xbox or PS3
 - Strong technical background
 - Good written and spoken English
 - Excited, passionate and motivated
 - Willing to relocate to Frankfurt
- Preferences:
 - Programming background is a plus
 - Prior level design experience
 - Working knowledge of CryEngine Sandbox toolset
 - Working knowledge of profiling tools such as PIX and GPAD is a plus
- Ability to work with and communicate well across disciplines

<https://web.archive.org/web/20120725093804/http://crytek.com/career/offers/overview/frankfurt/design-content/technical-level-designer>



Crytek ad for “tech level designer” (2012!)



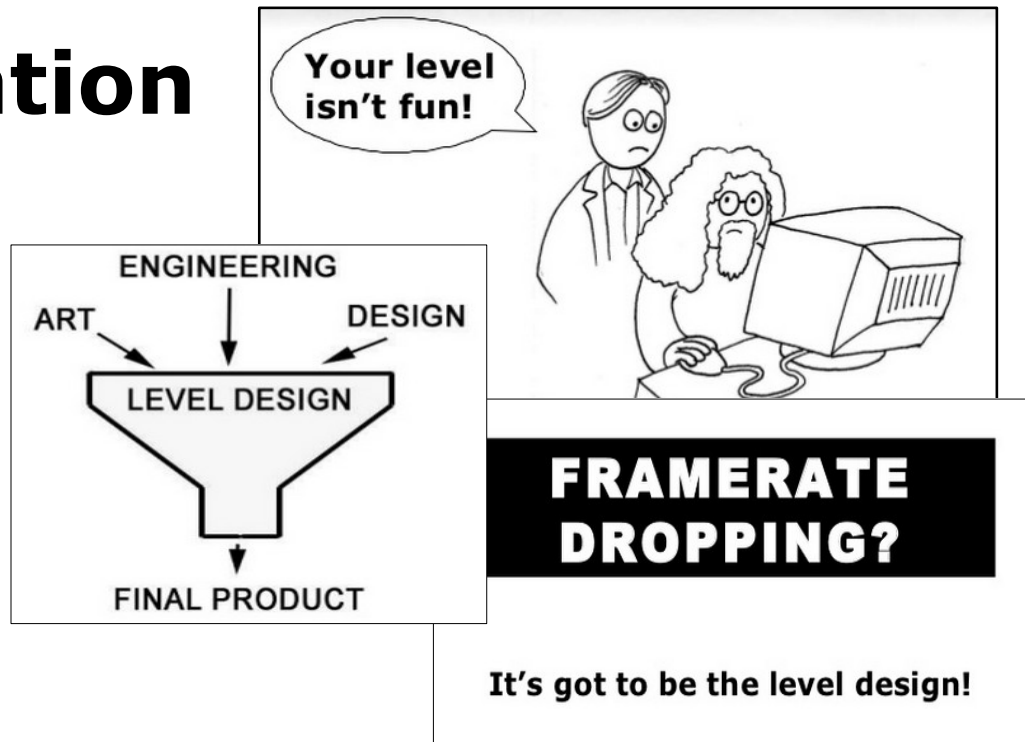
- ... bridge between level design and other departments that are more technical...
- Work closely with the AI team...
- Programming background is a plus
- **Prior level design experience [is a plus]**
- Working knowledge of profiling tools such as PIX and GPAD is a plus



HISTORY OF "LEVEL DESIGNER" AAA ROLE:

hyper-specialization
... is what you
wanted???

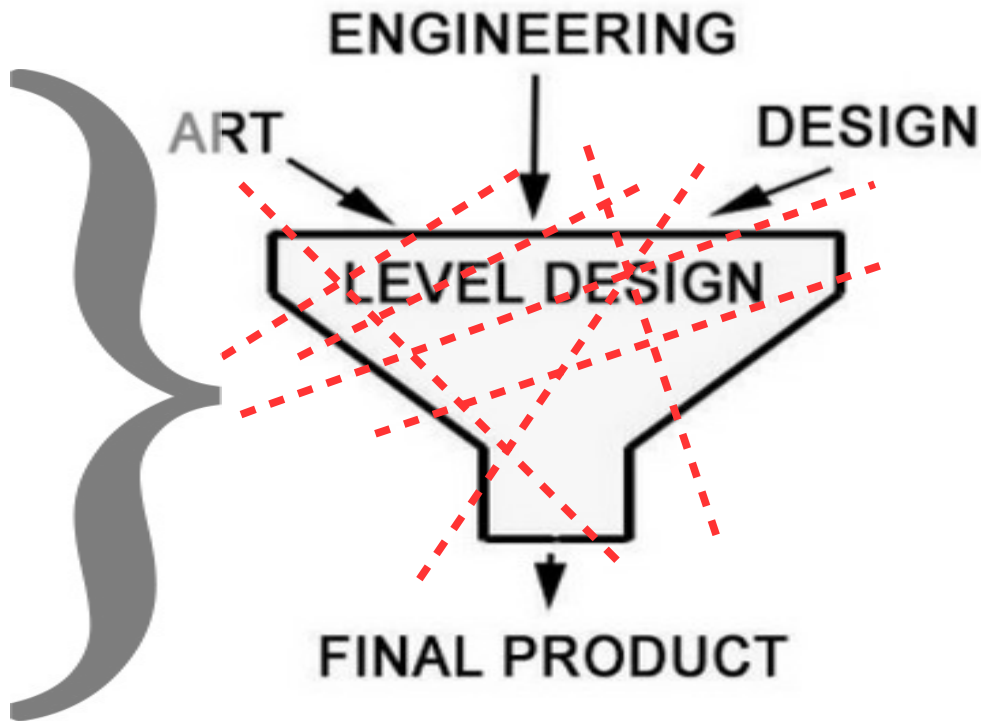
(Ed Byrne, "Unscaping
the Goat", from
LDiAD @ GDC 2011)





HISTORY OF “LEVEL DESIGNER” AAA ROLE:

tech level designer
level scripter
level builder
level architect
lighting designer
combat designer
encounter designer
quest designer
content designer



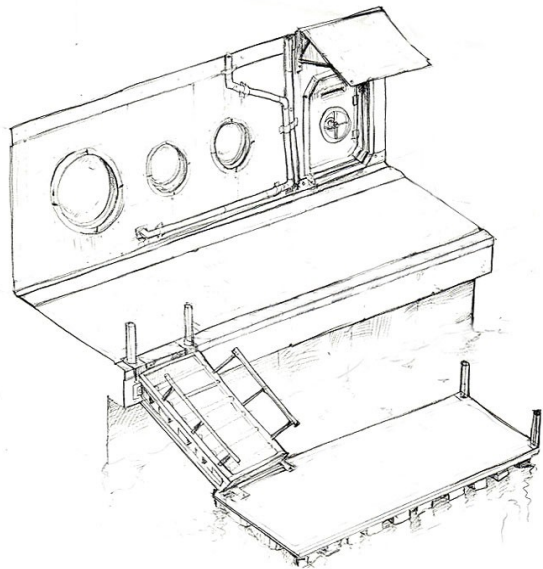


3: Level design as FORMALIST THEORY OF VIRTUAL ARCHITECTURE



THE "WRONG WAY" TO LEVEL DESIGN

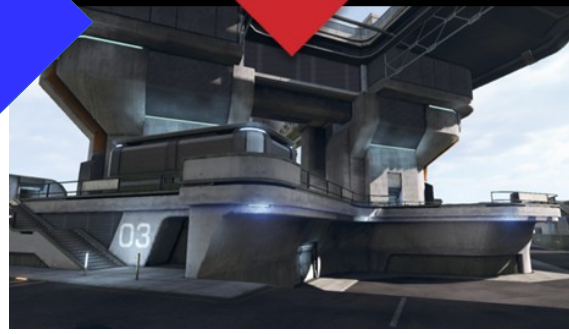
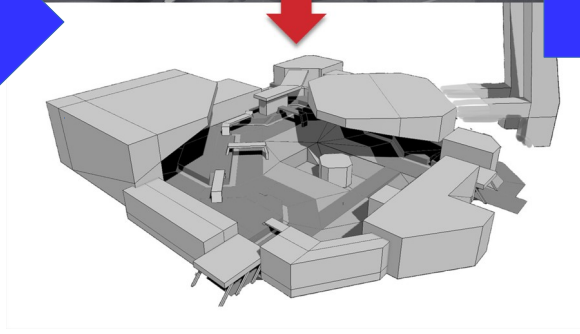
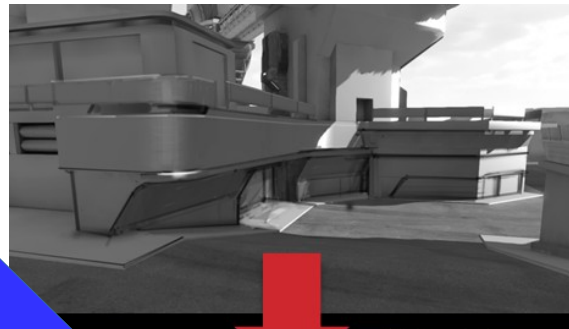
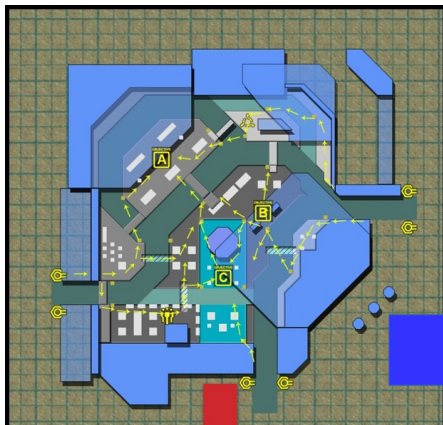
room-by-room, art-test, diorama, "environment art"





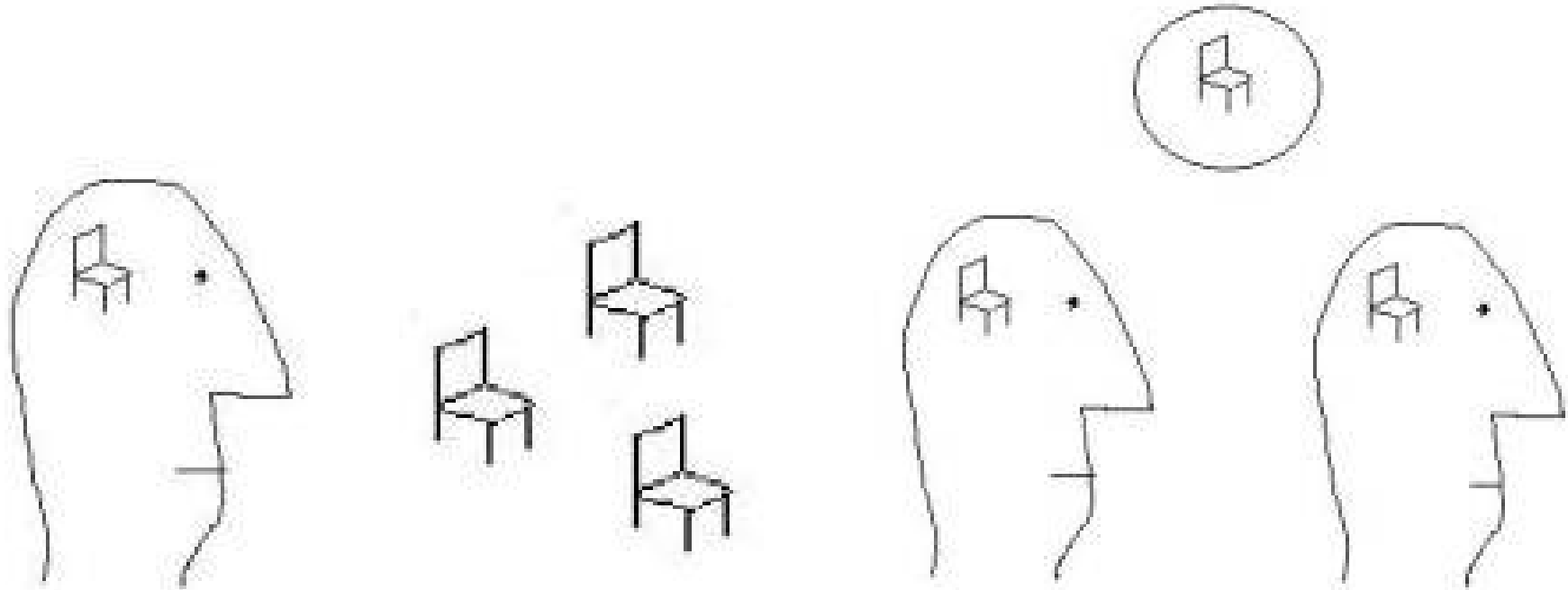
THE "RIGHT WAY" TO LEVEL DESIGN

sketch, block-out, graybox, rough-out... iterate
(*"Gallente Research Facility" from Dust 514, CCP Games*)





Platonic Forms and Formalism

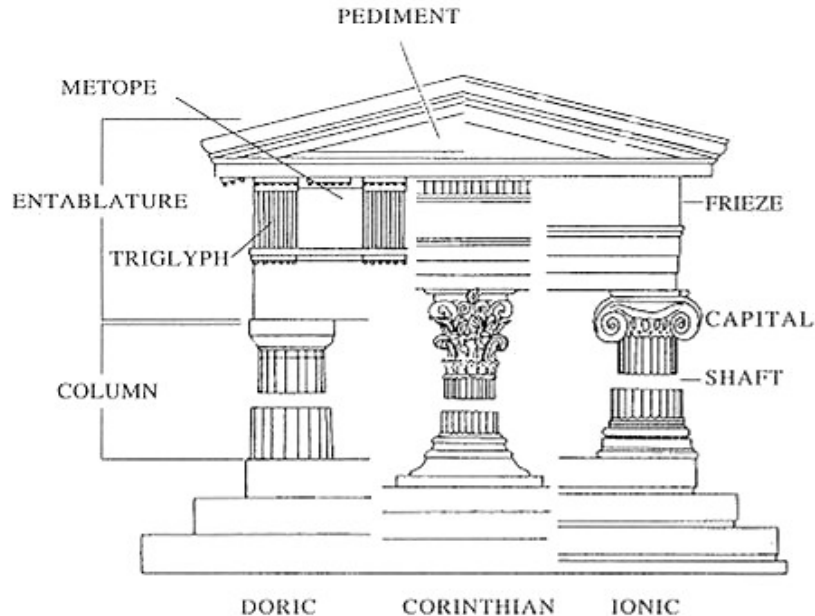




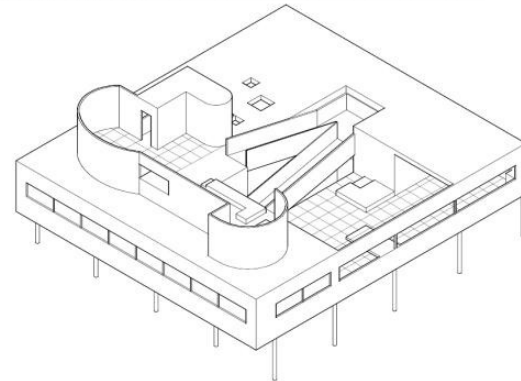
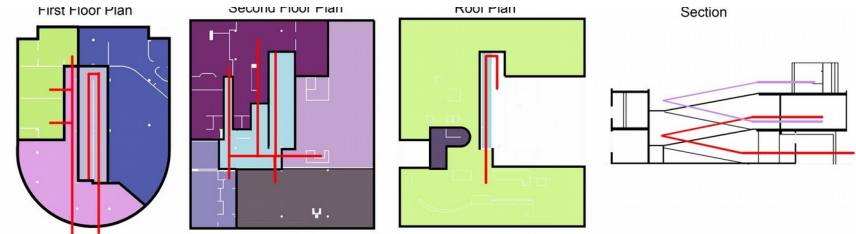
Formalism in architecture

“Essence of buildings”, proportions

Pre-Modern



Modern





Formalism in architecture

“Ornament is crime” / “truth to materials”

Pre-Modern

Modern

ACANTHUS LEAF

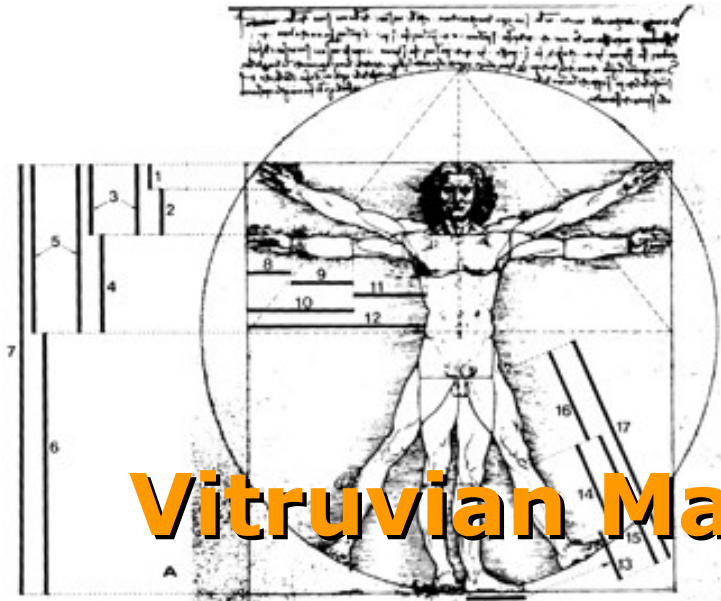




Formalism in architecture

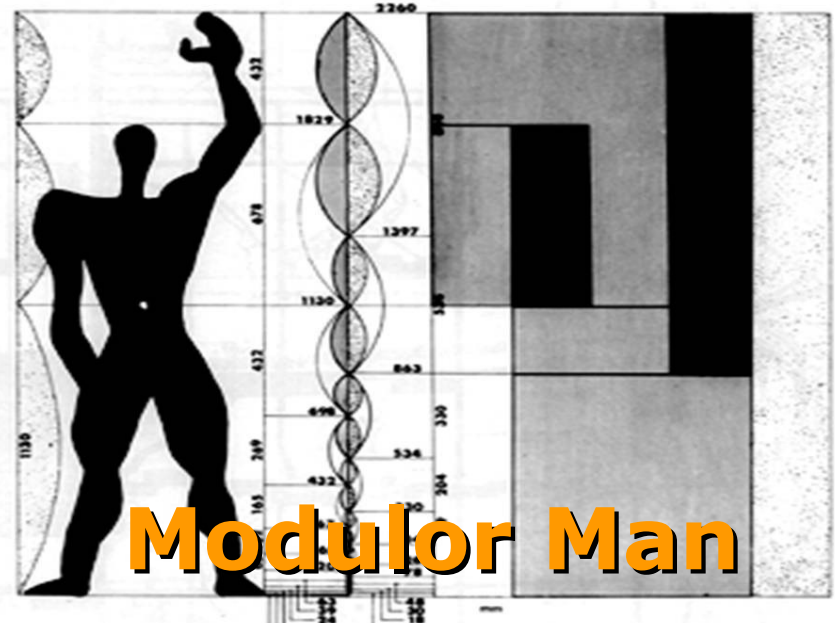
“Work at a human scale”

Pre-Modern



Vitruvian Man

Modern



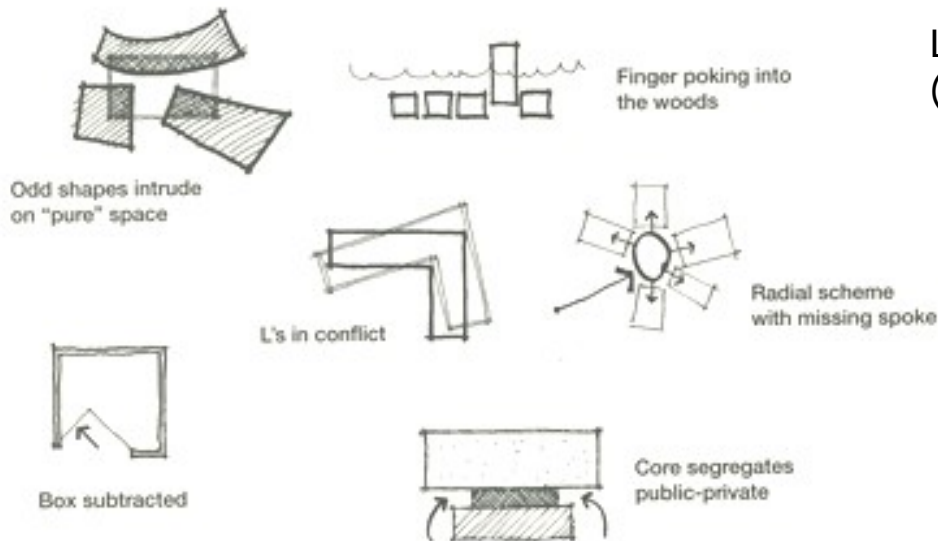
Modulor Man



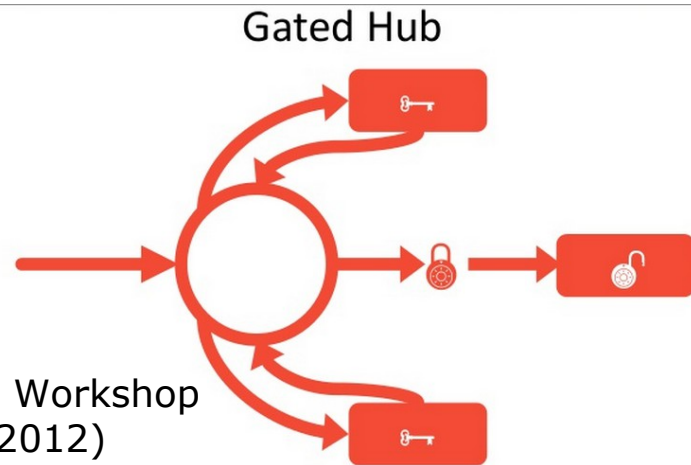
Formalism in architecture

The “parti”

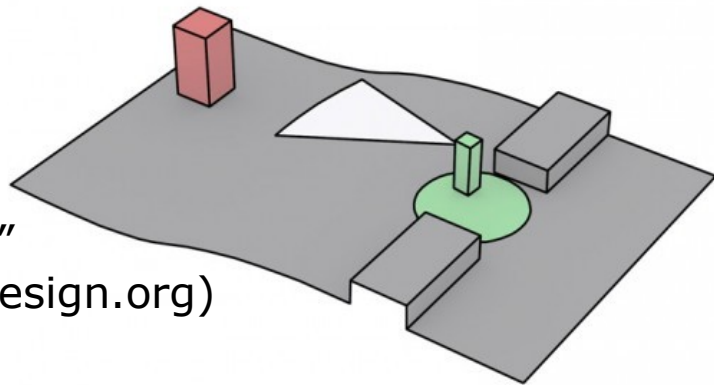
Parti diagrams from
“101 Things I Learned In Architecture School”



Level Design Workshop
(GDC China 2012)



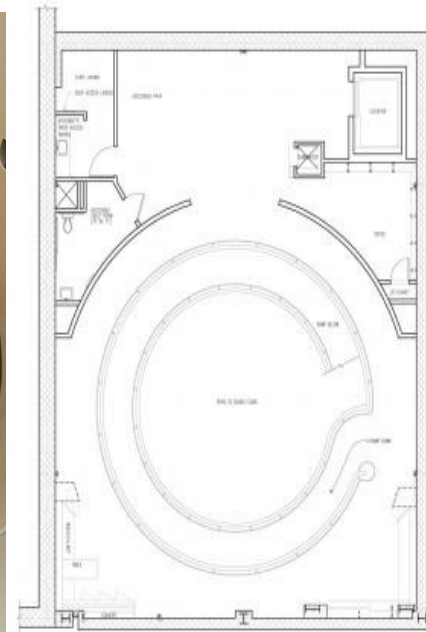
“Funnel”
(level-design.org)





VC Morris Gift Shop (Frank Lloyd Wright)

exterior: “blank” brick facade; interior: spiral ramp



How to think in parti



1) observation on significant form of structure

"The VC Morris Gift Shop exterior is dominated by a featureless brick wall..."

2) why? what experience? how it functions!

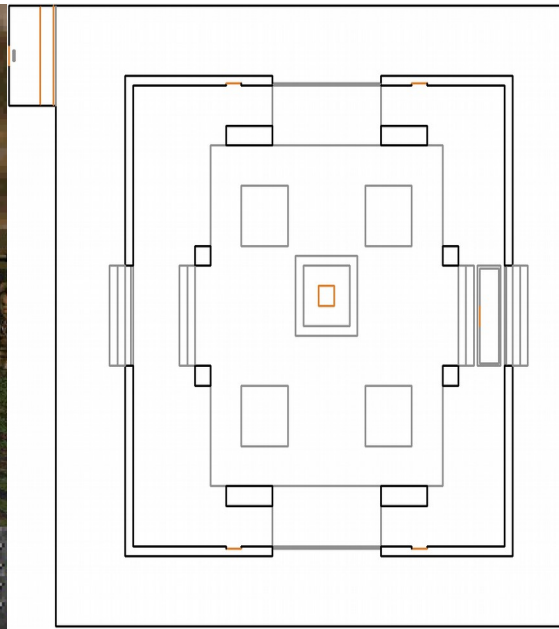
"... which contrasts with the surrounding windows and storefronts, inviting mystery..."



Dead Simple (MAP07), Doom 2

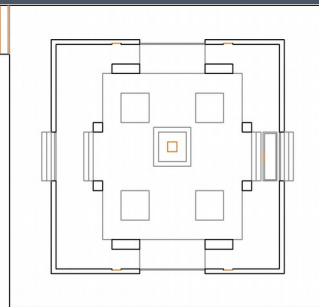
American McGee and Sandy Petersen (iD Software)

- first fight vs. Mancubus and spider brain monsters
- large courtyard / "cloister", exit in the middle





Dead Simple, Doom 2



1) observation on significant form of structure

"Dead Simple is mostly one courtyard with two new never-seen-before enemy types..."

2) why? what experience? how it functions!

"... this contrast between a simple floorplan vs. fighting two new enemies at same time is a joke. The level isn't actually so simple!"

The background of the slide features a photograph of several terracotta figurines, possibly from an ancient civilization, arranged in a line. The figures are reddish-brown and have a stylized, somewhat abstract form. The lighting is warm, creating a sense of depth and texture. The text is overlaid on the left side of the image.

4: Level design as POLITICS and COMMUNITY DIALOG



WHY MODERNISM IN ARCHITECTURE DIED

What's a "chair"
really, anyway?



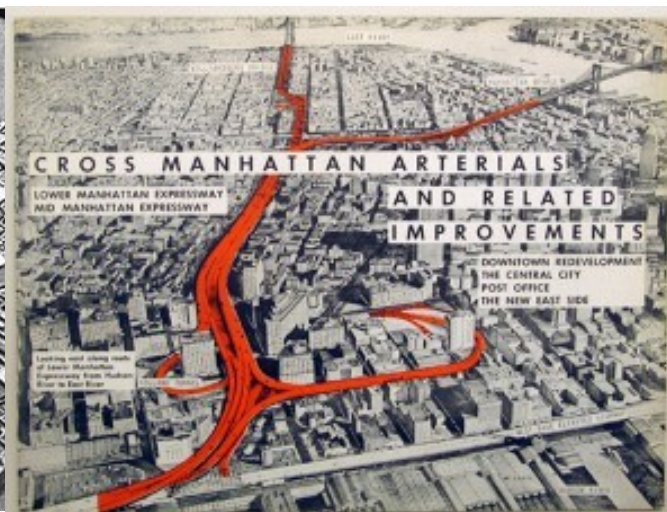
Postmodernism

Plato



WHY MODERNISM IN ARCHITECTURE DIED

Who gets to have Architecture, and who suffers Architecture inflicted upon them? “International Style” does not exist; architects should not govern?

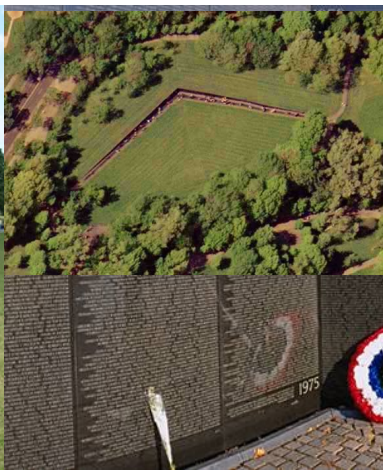




WHY MODERNISM IN ARCHITECTURE DIED

Vietnam War Veterans Memorial (Maya Lin)

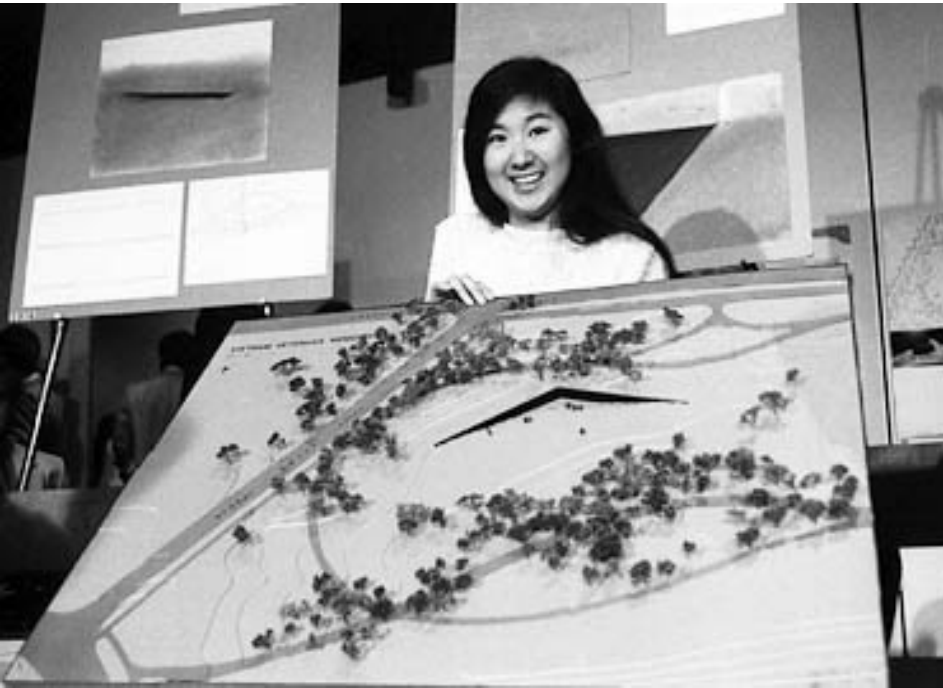
- beloved memorial; unpopular, tragic, misguided war
- endlessly copied and emulated around the world





WHY MODERNISM IN ARCHITECTURE DIED

Maya Lin and the old white men who vandalized her design once they knew she was a young Asian woman





POSTMODERN LEVEL DESIGN

~~Form follows function?~~

Form follows worldview

Architecture is political

Build for the public

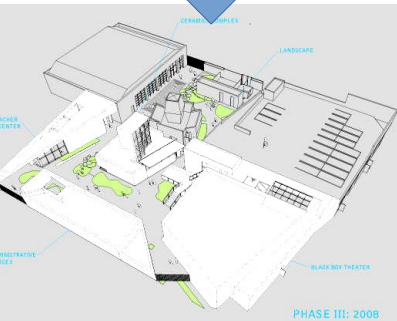
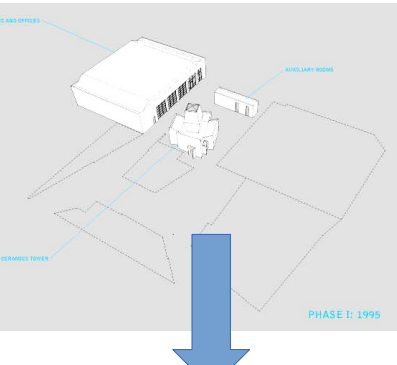
Build sustainably

Listen and include communities!



POSTMODERN LEVEL DESIGN

Inner-City Arts, USA (early access architecture)





POSTMODERN LEVEL DESIGN

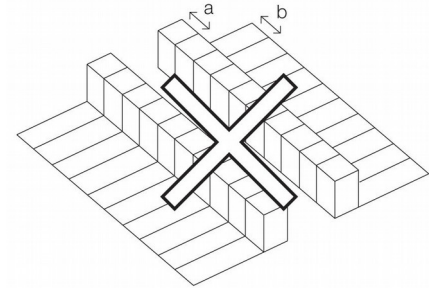
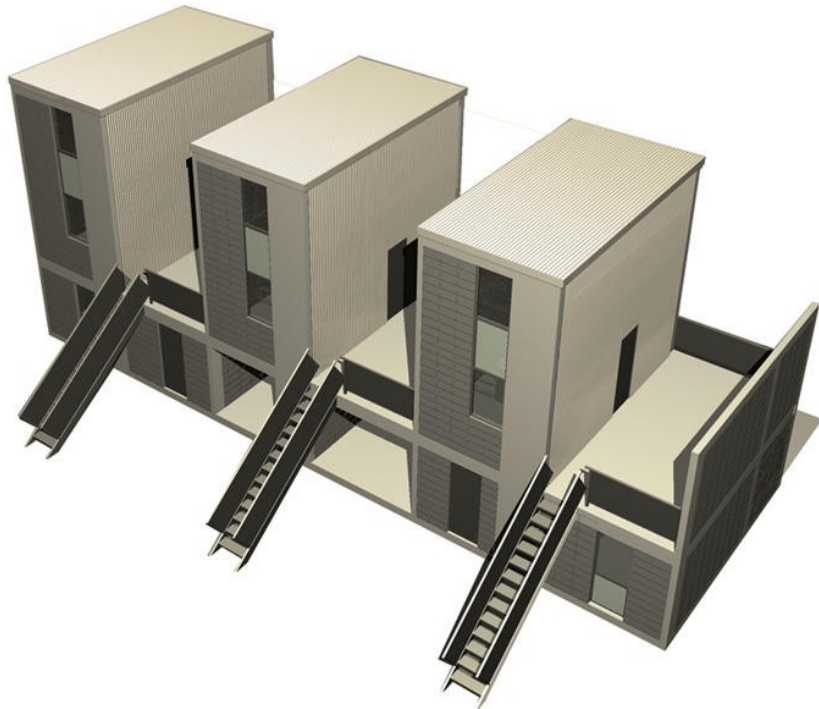
El Guadual Childrens Center, Colombia (modding!)





POSTMODERN LEVEL DESIGN

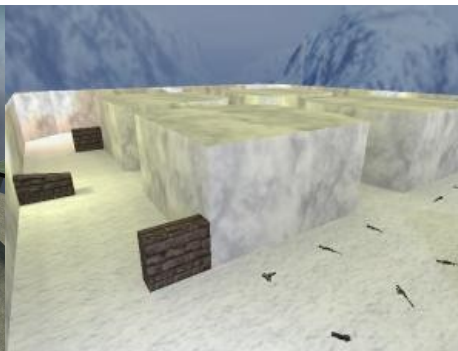
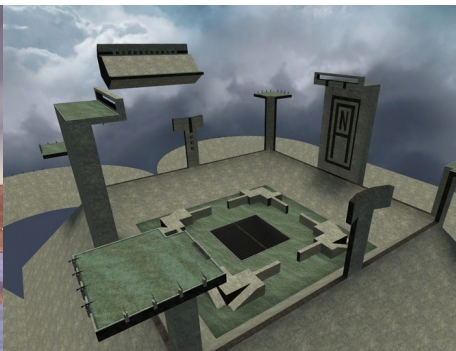
Quinta Monroy, Chile (open dev architecture!)





POSTMODERN LEVEL DESIGN

Achievement traps; surf maps; clan maps; wedding proposals; community murals; history lessons



(from left to right:)

achievement_all_v4

surf_thunderboom

fy_iceworld



(from left to right:)

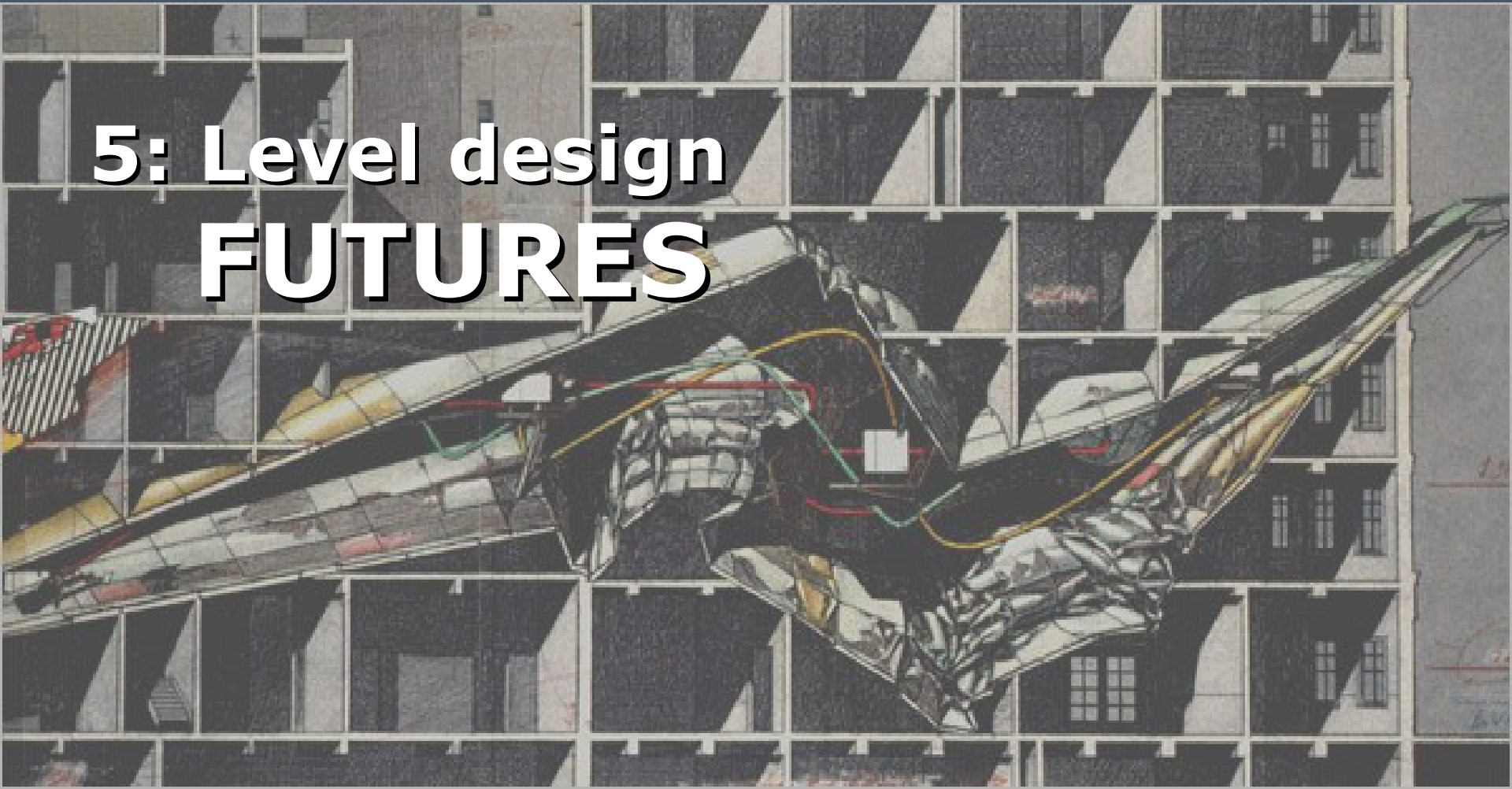
Gary Hudson Project

Love Punks

Large greek temple
by pageje67



5: Level design FUTURES





3 possible level design futures*

- **“Industrial”** hypermodern mainstream, fixed grammar to drive human labor
- **“Cyborg”** machine-collaboration tool assisted human-procedural hybrid
- **“Local”** postmodern process-oriented social practice, heavily conceptual

FUTURE A: INDUSTRIAL LEVEL DESIGN



- **Monolithic design formalism / grammar**
(Valve's "vistas", Ubisoft's "Rational Game Design")
- **Growing hyperspecialization of labor**
(“Content Designer”, “Junior Rock Rotator”)
- **Production-oriented level design**
(“how do I create value for my studio / player?”)
- **CRITIQUE:** pretends postmodernism never happened

FUTURE B: CYBORG LEVEL DESIGN



- **Many formalisms / grammars / tools**
("this framework worked for this problem...")
- **Expand politics of human-machine authorship**
("use the NPC placement algorithm 3 times and...")
- **Tech-oriented level design**
("how can my computer understand level design?")
- **CRITIQUE:** fetishizes tech, is not "ready"

FUTURE C: LOCAL LEVEL DESIGN



- **Rejection of top-down formalism**
(player community determines design grammar)
- **Post-launch sustainability and ecology**
("how can I help it co-exist? how do I give this space?")
- **Process-oriented level design**
(did you consult everyone? is this level racist or sexist?)
- **CRITIQUE:** slow, labor-intensive, unpredictable



LEVEL DESIGN FUTURES:

Level design is no longer a monolithic practice. “Level design” is dead.

Intersectional level design: draw on as many design traditions as possible?

THANKS FOR LISTENING

@radiatoryang

www.debacle.us

