

# V3:

## The color update

Document Started  
11/18/2018

Code Started  
11/18/2018

# Thoughts on color

## Elements of value within the use of alpha -

- atmospheric effects (random blues, very transparent)
- water effects (random blues, less transparent)
- lighting system (transparent amber color near light, less transparent black colors in darkness - look into minecraft lighting because I know there's some valuable stuff there.)
- drawing points - distance-based effects? (as in distance from a cell to a point, where a point is part of a point cloud model) I need to think more about this. There's more potential in this idea but it would require some pretty serious restructuring and information/research on material about sampling... perhaps we would have several states for each material, indicating varying levels of influence/presence in that cell - that gets into issues with multiple materials, because then how are they blended, and unsigned char won't be enough to hold that many states. I will need to spend some time and thought on this.

class

## Voraldo

void  
void  
(void)

load (not currently implemented)

Save (partially implemented)

draw functions (manipulate Vblock)

display (produce image)

RGB get\_RGB\_for\_State (keep or change?)

bool planetlist (utility function)

## Block \* Vblock

class

## Block

void init (x, y, z) declares new block  
with xyzxyz cells, has 1D array, random seed

RGB get\_RGB\_for\_State (duplicate)

int get (resolution)

void set data by 3D index

[Vox] get data by 3D index ]

get data by array index

int get array index by xyz

nts for xres, yres, zres, numcells

## Vox\* data

Std::map<std::string, RGB> color\_map

Struct

## RGB

unsigned char red;

unsigned char green;

unsigned char blue;

Struct

## Vox

RGB color;

unsigned char size;

bool mask;

[float  
ao/light intensity]

The old structure, at a high level

# Voraldo

## FUNCTIONS:

void not currently a priority

draw - manipulation of Vblock

display - produce map of Vblock,  
using the color & size values  
stored in each Vop object

get RGB for Stake()

- Need a more general solution  
- global color map?

planeTest (plane.pt, plane.norm, test.pt)

return true if test.pt is below the plane,  
and false if test.pt is above the plane

based upon plane equation

$$a(x-x_0) + b(y-y_0) + c(z-z_0) = 0$$

$\uparrow$

normal

$\downarrow$

forward

$\uparrow$

front

$\uparrow$

back

$\uparrow$

left

$\uparrow$

right

$\uparrow$

up

$\uparrow$

down



## VARIABLES:

Block\* Vblock

The essence of the algorithm:  
P, A, B, C

for each face  
for each line

produce normals by crossing  
two sides, two vectors  
against up plane

if  
    face is inside, no  
        flip normal  
    else  
        face is outside, flip  
        normal

    end  
end

    end  
end

(This accounts for partially seen faces correctly)

Voraldo(int) - Vblock = new Block;  
Vblock  $\rightarrow$  init(x, y, z);

Voraldo(void) - delete Vblock;

void - front  
back - done Brechtian-style - adapting to  
new 3D world

example - no buffering, but the algorithm works to draw  
faces in a 3D world (was like Segway)

spat - distance from a point relatively front

clip - like sphere, but x, y, z distance calc are  
done separately - it can be stretched out along  
x, y, z axes

Cylinder - VI algorithm not yet brought over

block - fill all cells that are in the subset of the  
sets established by x [min-max]  
y [min-max]  
z [min-max]

quadilateral backprojection

the most specific geometric form that applies  
→ cube-like shape, but allow stretching and  
the faces do not have to be square  
without will be present if any  
face exhibits this issue



FACE ABCD has an issue  
because there is a significant  
discrepancy between the  
midpoints of AC and BD

[check using this algorithm  
to draw shapes like that]

→ after 12x planarity  
we know the midpoints

# Block

## FUNCTIONS:

Block(void) - data = NULL, set up color map

(leave declaration to init())  $\rightarrow$  the B memory

Block(void) - delete [] data;

init(x, y, z) - makes a randomly-sized block of voxel data  $\rightarrow$  if data != NULL for init() being called  
more than once

→ declare array of type Vox and of size [numCells] = X.res \* Y.res \* Z.res  
for Vdata i.e. Vdata = new Vox[numCells];

get RGB

get xres/yres/zres - get integer values

Set data by 3D index data [get array index by xyz] = set

Get data by 3D index return data [get array index by xyz]

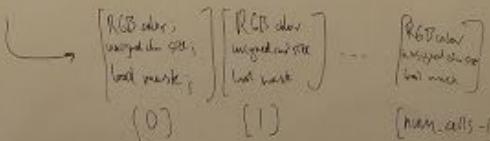
Get data by array index → not useful?

Get array index by XYZ → does the mapping of 3D array index  $\rightarrow$  1D array index

## VARIABLES:

int x, y, z, xres, yres, zres  
int numCells

Vop\* data



# Voraldo

## functions

(old)

load/save()

draw()

display()

get.array-for-state

plottest()

(new i.e. from block class)

init-block (x, y, z, box size)  
get-block xres, yres, zres

Set-data by 3D index[]  
get-data by 3D index[] rely upon  
get.array-index for 3D index[]

get-data-by-voxel-index

Voraldo(x,y,z) initialize color map  
- initialize the array (data)  
Voraldo - delete the array (data)

## Variables

(old)

\$NONE - all was done by  
block class

(new)

int n-res, y-res, z-res  
int num-cells

Vox\* data - holds colored voxels

Color-map

Vox{

RGB Color

char size  
box mask  
(not flags in the file, may be)

Std::map< int, RGB > color-map  
converting (needs figure out iterator)  
potentially better

The new structure of the Voraldo class.

# Changes

+

adding color to each voxel individually

moving all block class functions to Voraldo

>eliminate get/set confusion - reference  
Vox array directly as it will be a member  
variable - keep get\_index\_for\_xyz()

specific masking functions

>unmask\_all, invert\_all\_mask

-

removing the block class

# Space Game ideas

## Info

Sector # (x, y, z)

Status (occupied, empty,  
whatever)

Type (whatever)

Resources breakdown

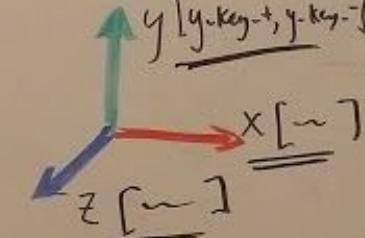
[keys to  
go there,  
send trade,  
whatever]

i.e. (x) to jump

## Map display



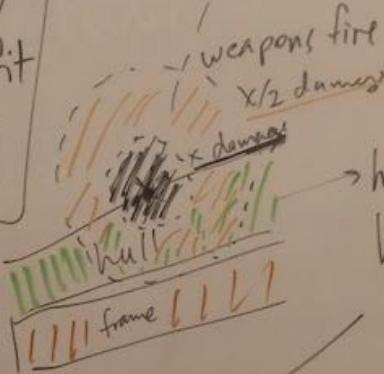
"Galaxy Map" + key hint



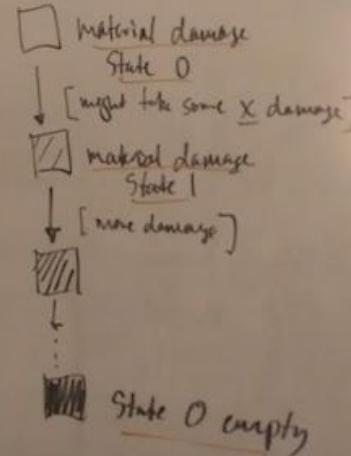
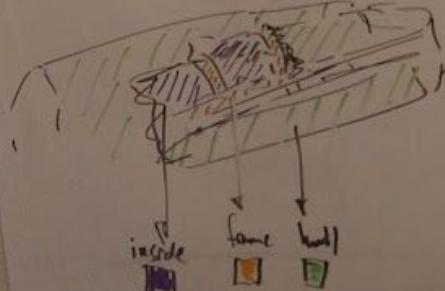
→ Axis preview  
allows user  
to tilt/rotate  
freely & maintain  
a sense of orientation.

allow user to  
rotate

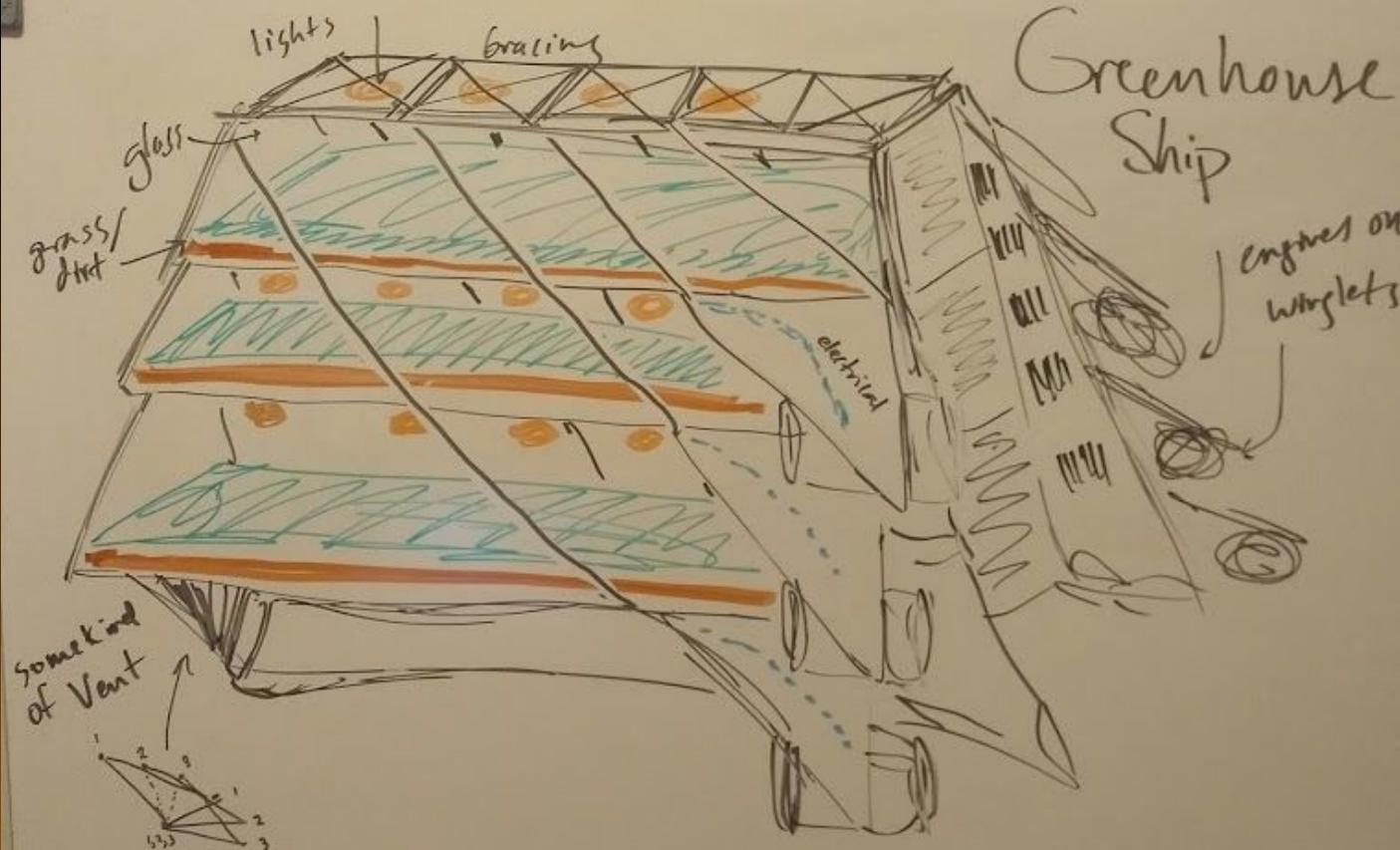
There is a lot of benefit to integer States



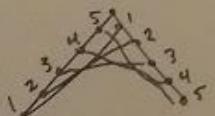
So you could see structures like



# Greenhouse Ship



a 2D version of



Power disabled

X X X

Connections

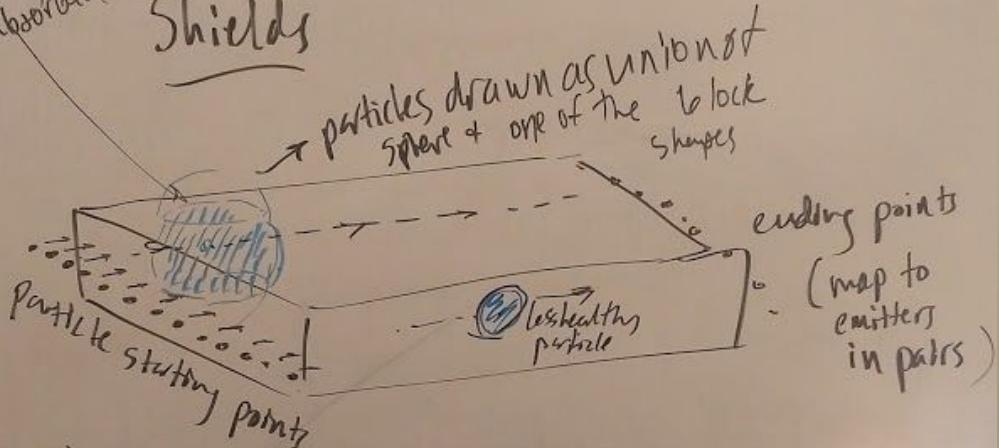
Power  
generator

damage on the  
surface might get through to  
electrical system,

disabling lights (changing color of exterior  
or other systems)  
or other systems

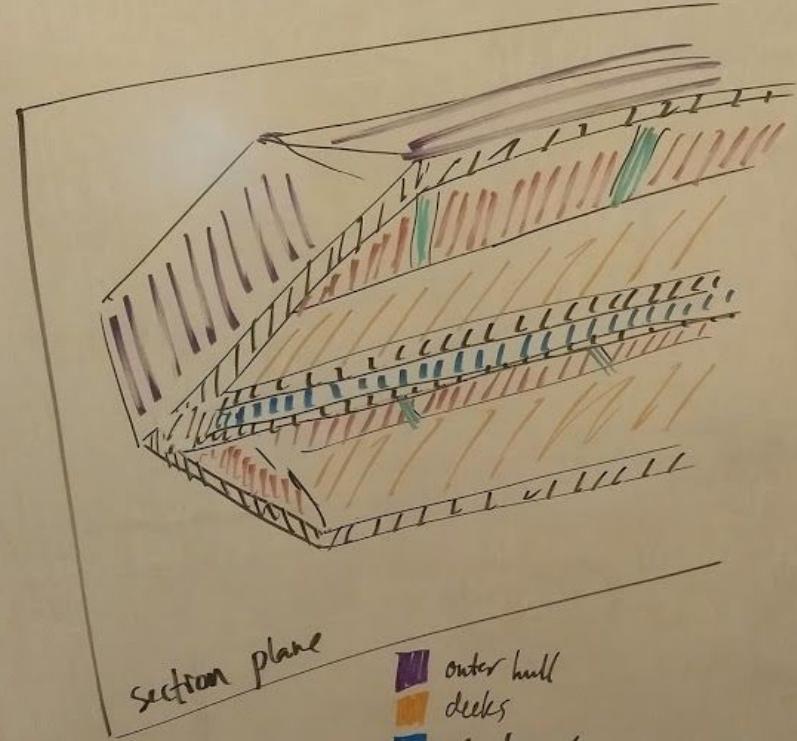
incoming  
fire absorbed

## Shields



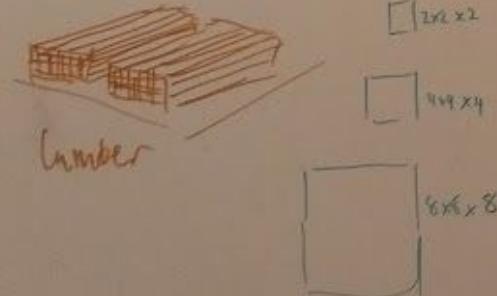
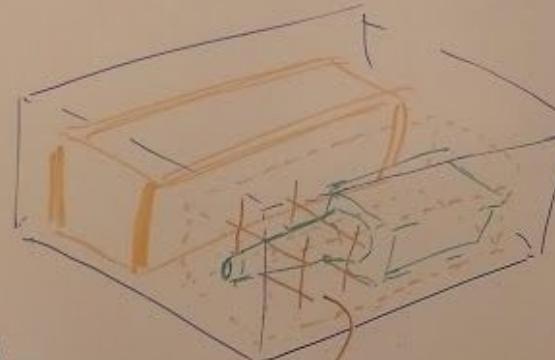
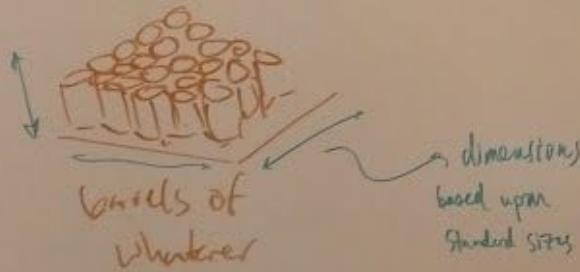
→ particle size & shape  
indicates health of the  
as it rotated further  
i.e. it looks  
weaker as it becomes  
more damaged

Plus the fact that it  
will cover less of  
the protected area



- outer hull
- decks
- electrical
- bulkhead
- frame
- body

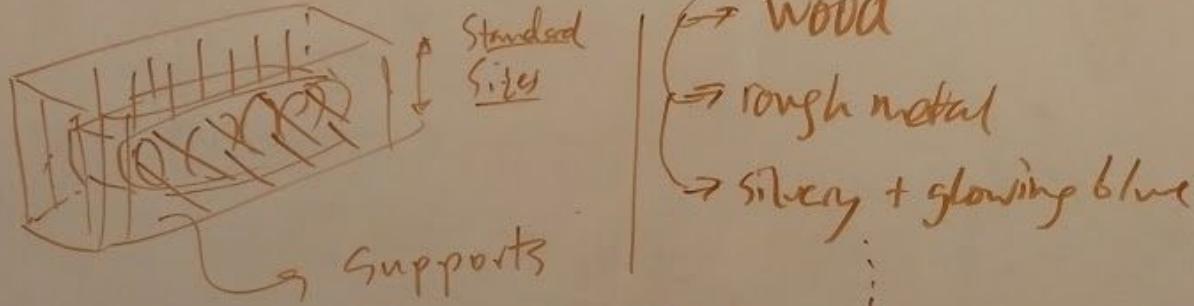
# Cargo - cargo containers/equipment



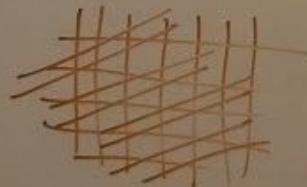
Supports  
for negative  
Space, so if the  
Container  
is damaged,  
these become visible

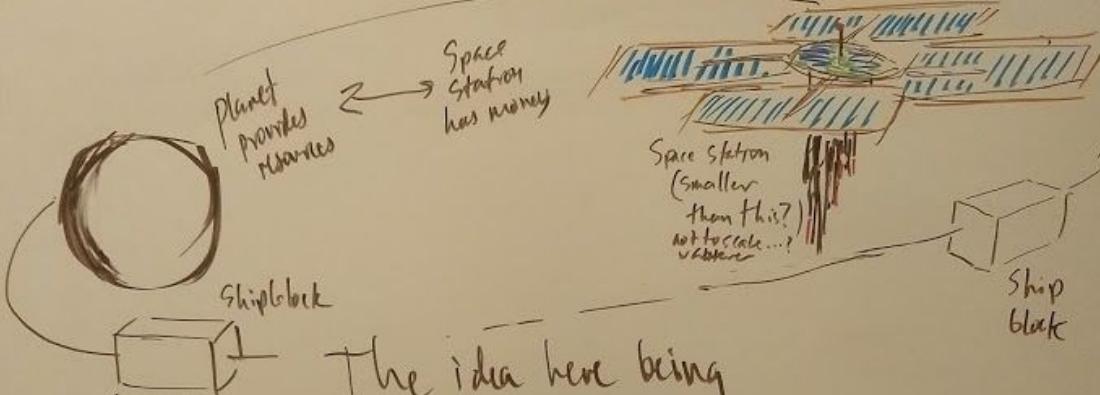
# Worldbuilding

→ Brands + themed ships/equipment - themed packaging



(mask object's voxels  
then draw lattice)





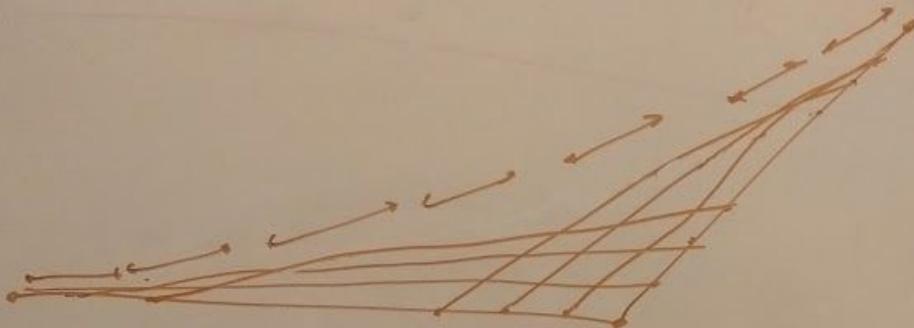
The idea here being  
that I could have ships on  
Simple paths, with some notion  
of cargo, trade/exchange



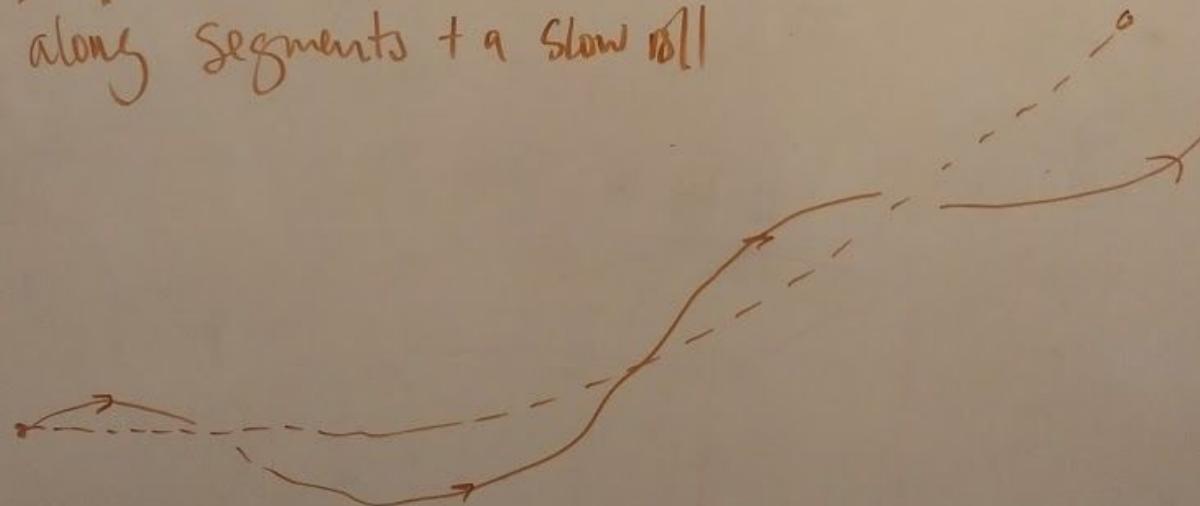
Cargo area  
occupied by  
different voxels  
based upon cargo

→ Anyways, move to the point,  
targets within this context

Something to serve as a basis for  
seeing the damage model in a context



Simple animation  
along segments + a slow roll



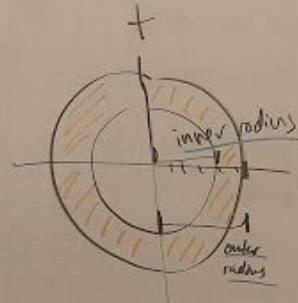
Some other shapes and thoughts on applications  
(mostly car/vehicle related)

Draw tube

input

Point 1

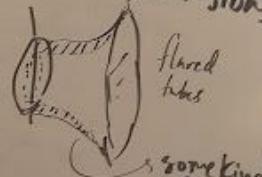
Point 2



bool mask tube

bool mask tube\_interior

further extensions



flared tubes  
some kind  
of exponential/  
curve

In essence, you are looking at  
a cylinder cut out of a cylinder

ways further

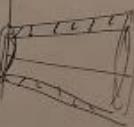
Space ship cylinder

engine exhaust

damage to any

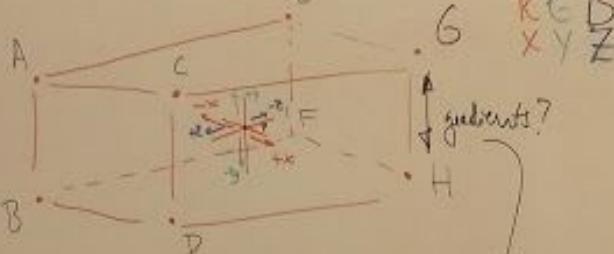
cells on the  
outside will cause  
venting & damage  
to exhaust

MORE conventional  
flares



Ship's draw list

→ draw interior, then exterior,  
so that concave vessels are overwritten by  
convex ones & visible



A	$[-x, +y, +z]$
B	$[-x, -y, +z]$
C	$[+x, +y, +z]$
D	$[+x, -y, +z]$
E	$[-x, +y, -z]$
F	$[+x, -y, -z]$
G	$[+x, +y, -z]$
H	$[+x, -y, -z]$
P	$[0, 0, 0]$ (sort of)

A center point  $P = \left[ \sum_{i=1}^n \text{points} \right] / N$   
(average of all points)

$x+y$  face

CDH    CGH

$x-y$  face

ABF    AEF

$x+z$  face

ACG    AEC

$y-z$  face

BDH    BFH

$x+z$  face

ABD    ACD

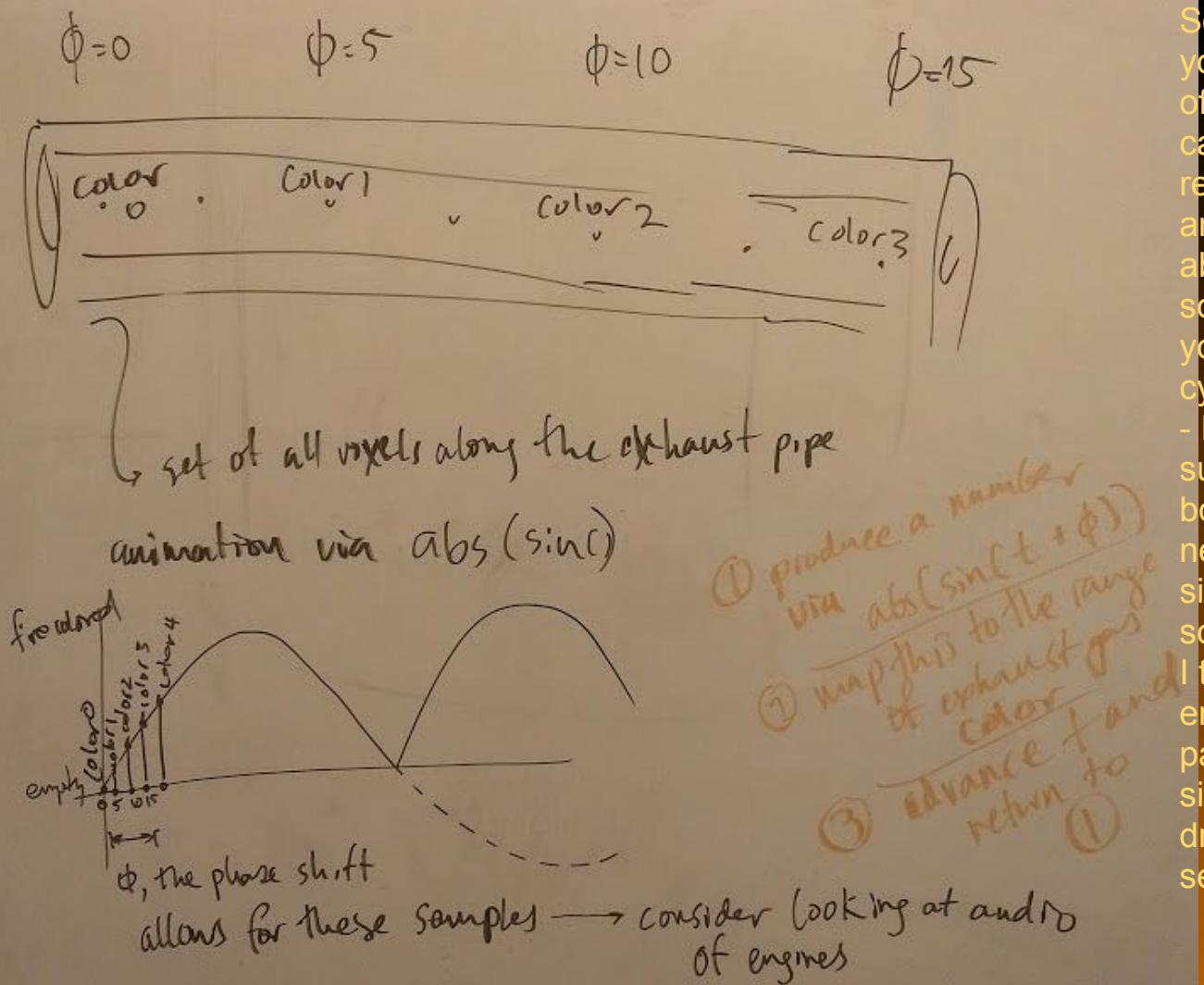
$x-z$  face

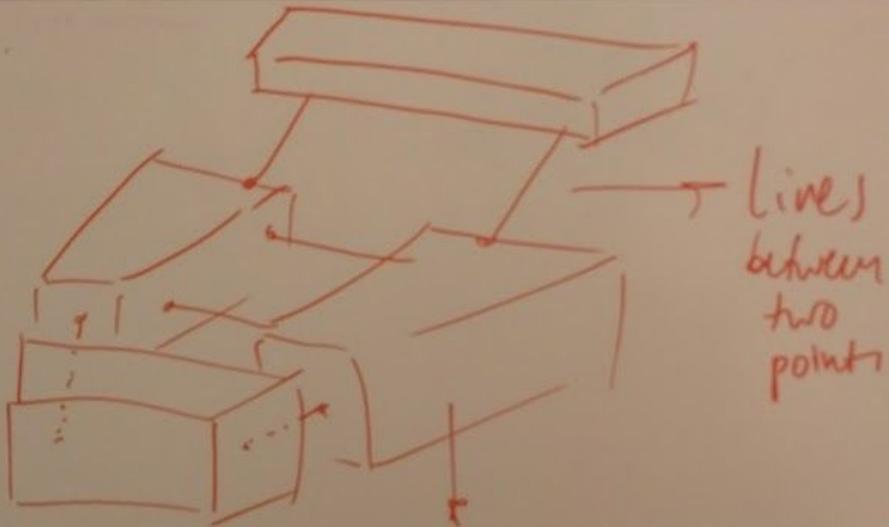
EFGH    EFGH

"quadrilateral  
hexahedron"

→ (int state, int x=-1, int y=-1, ...)

↑ gradient  
shared by all planes  
one -1

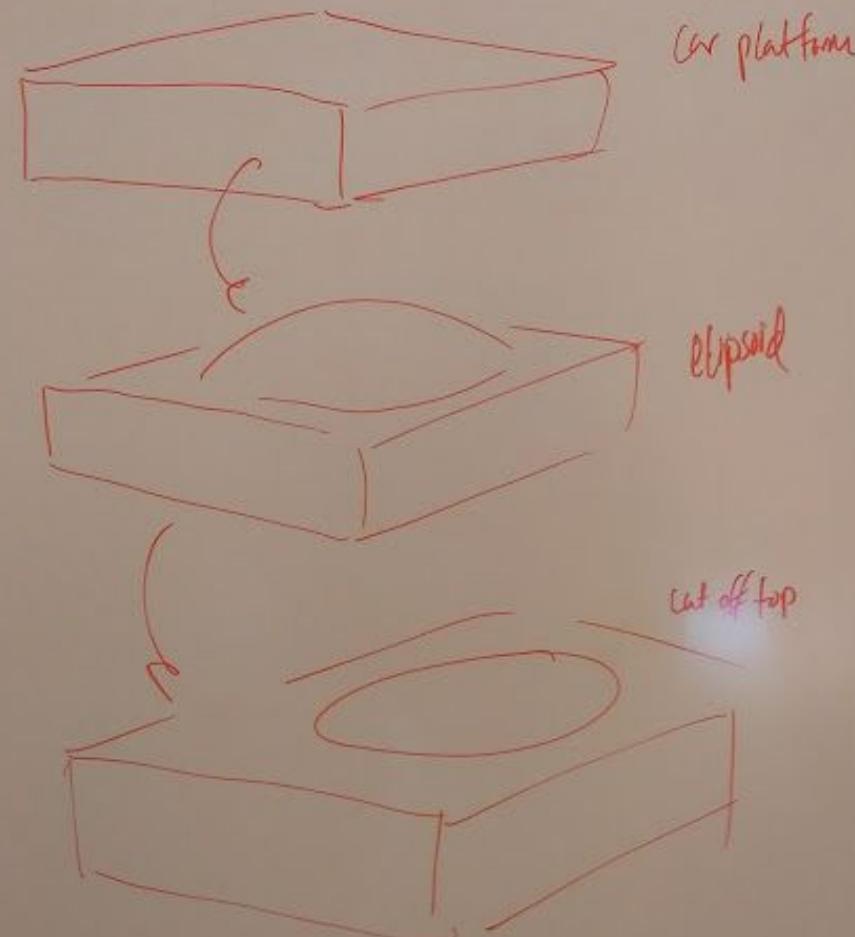


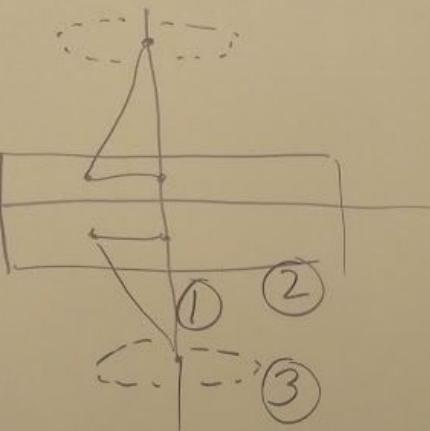


"quadrilateral  
hexahedron"

Shape to test  
the new draw  
function

Some shapes to draw





- ① - draw triangles
  - ② - draw "body" + interior
  - ③ - draw oblong "fuel tanks"
  - ④ blow away half to  
See inside

annotation

Operating  
Brain activity  
(passing through nervous)

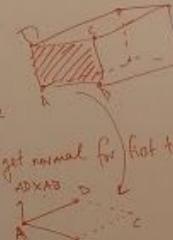
## Some other things to draw

Shape to fit  
the next down  
function

• One Is

- 10 -

- 82 -



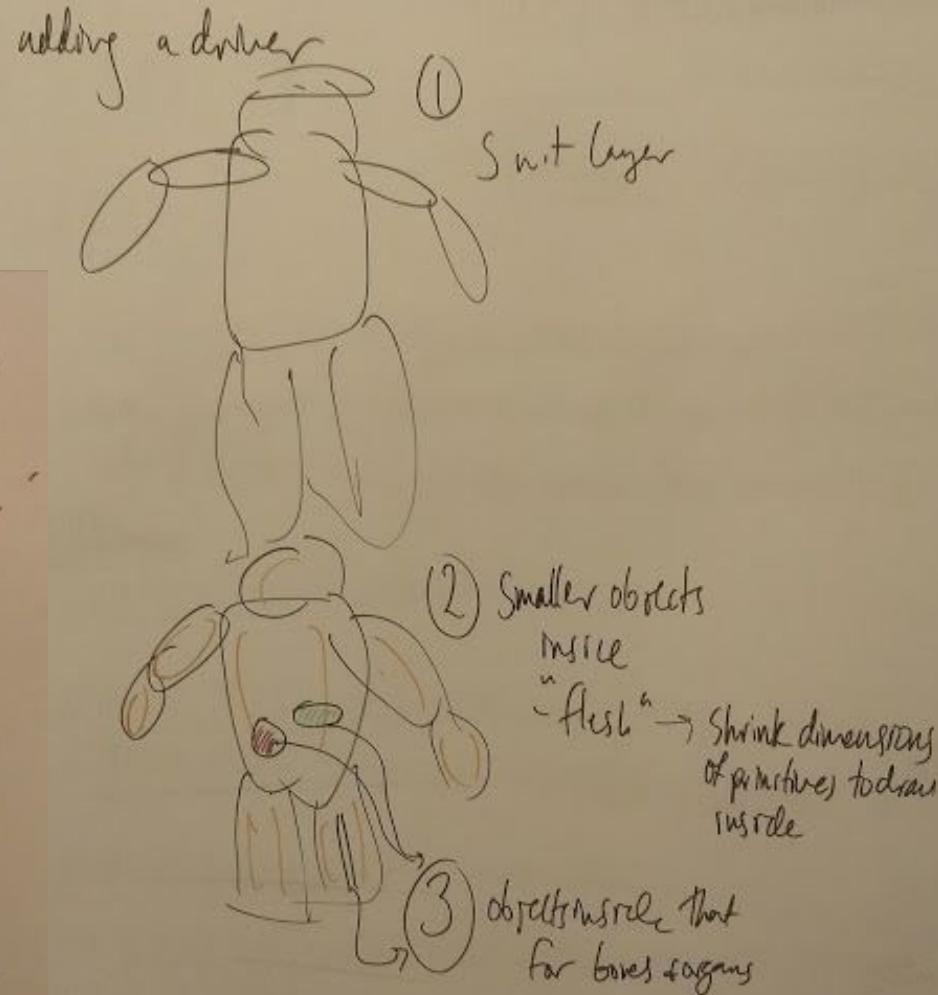
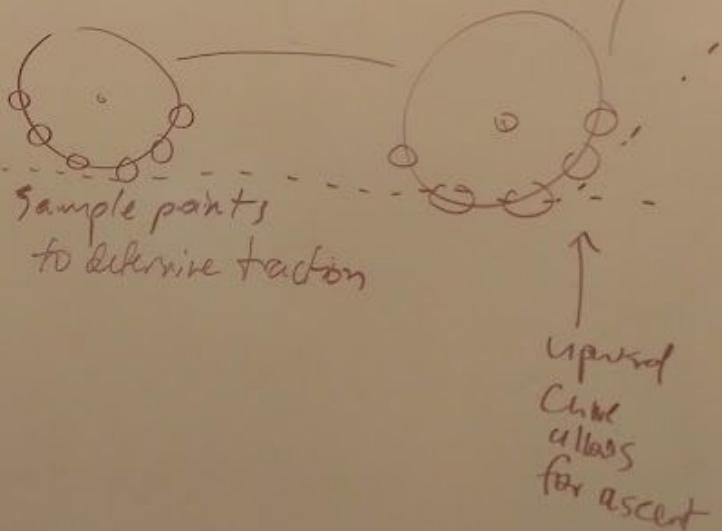
- plane is centered @ A, parallel to AD & AB

- do place test - if center is not less than the place, swap the name

- get reward for second fr.

test center against plane; ensure negative result ("negative" = no transmission)

## An idea on vehicle simulation

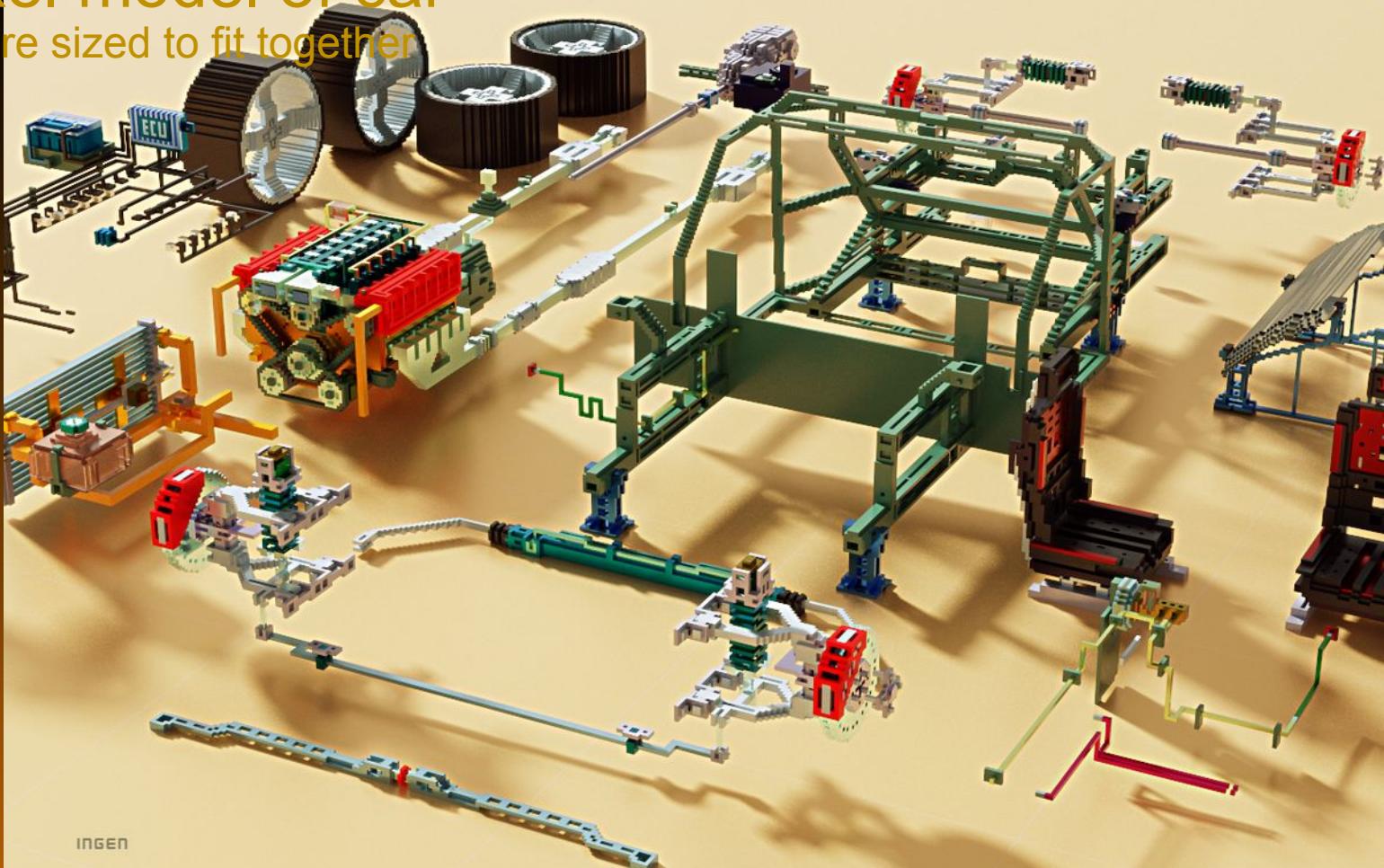


# Inspirational Materials

Mostly in the form of games and other software with graphical output

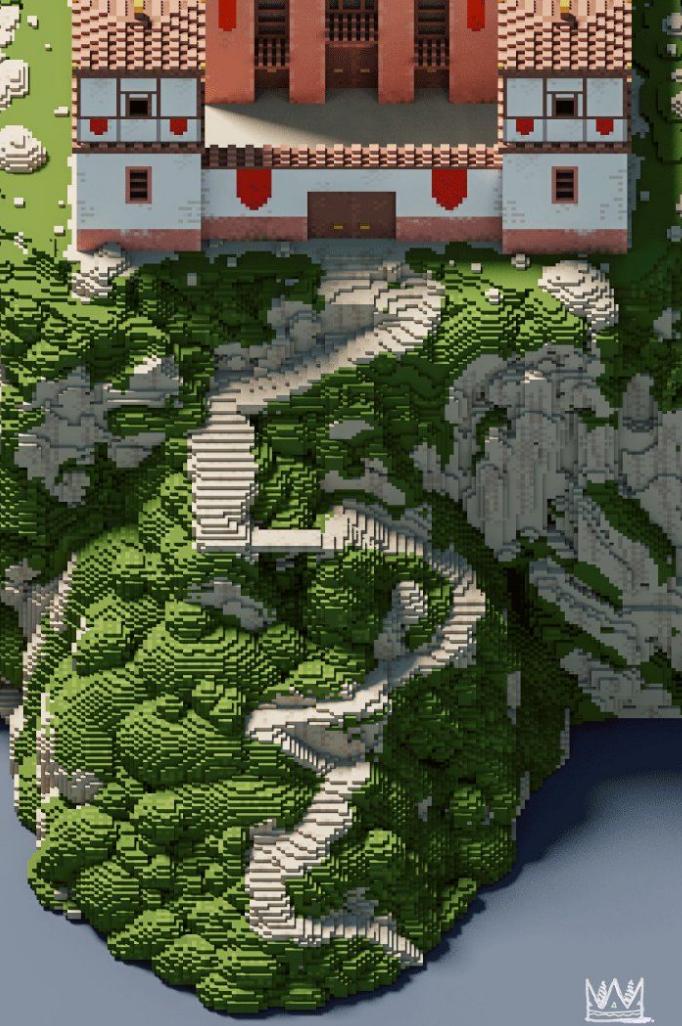
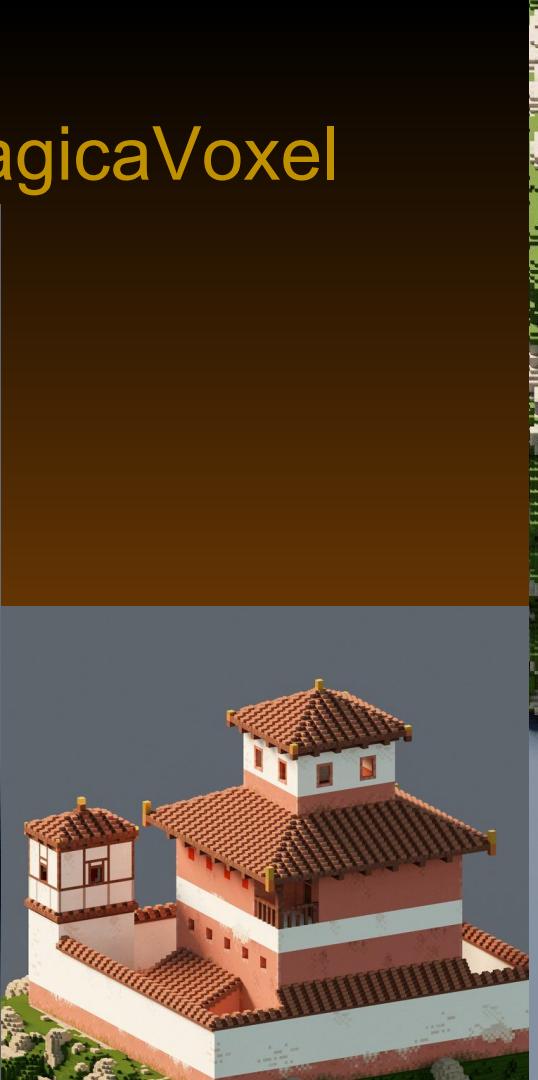
# Ingen - voxel model of car

all components are sized to fit together



INGEN

ephtracy twitter -  
developer behind MagicaVoxel







[Paul Riehle @paulriehle](#)









# Other inspirational material



Simcity 4 (2003)



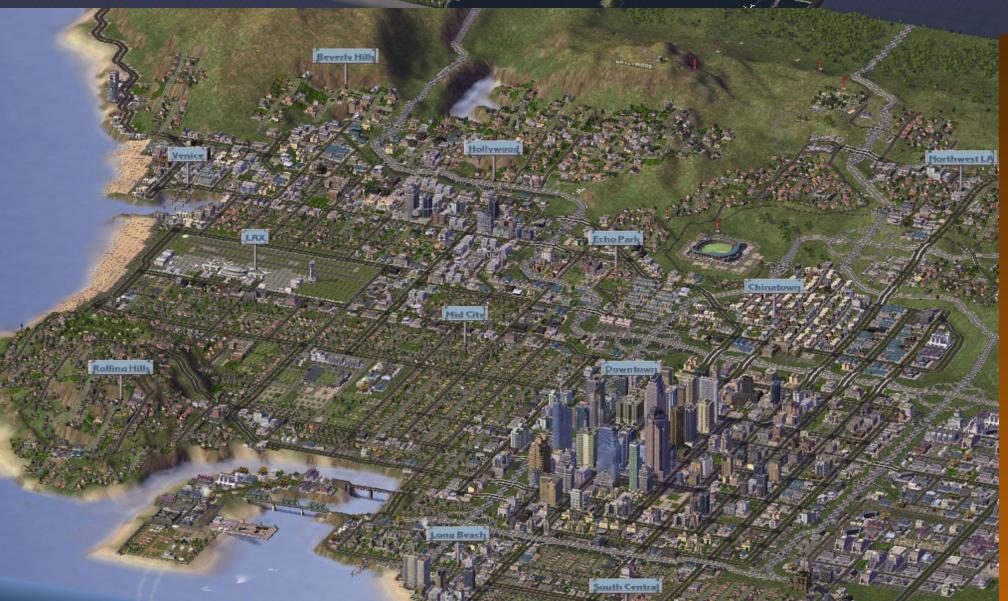


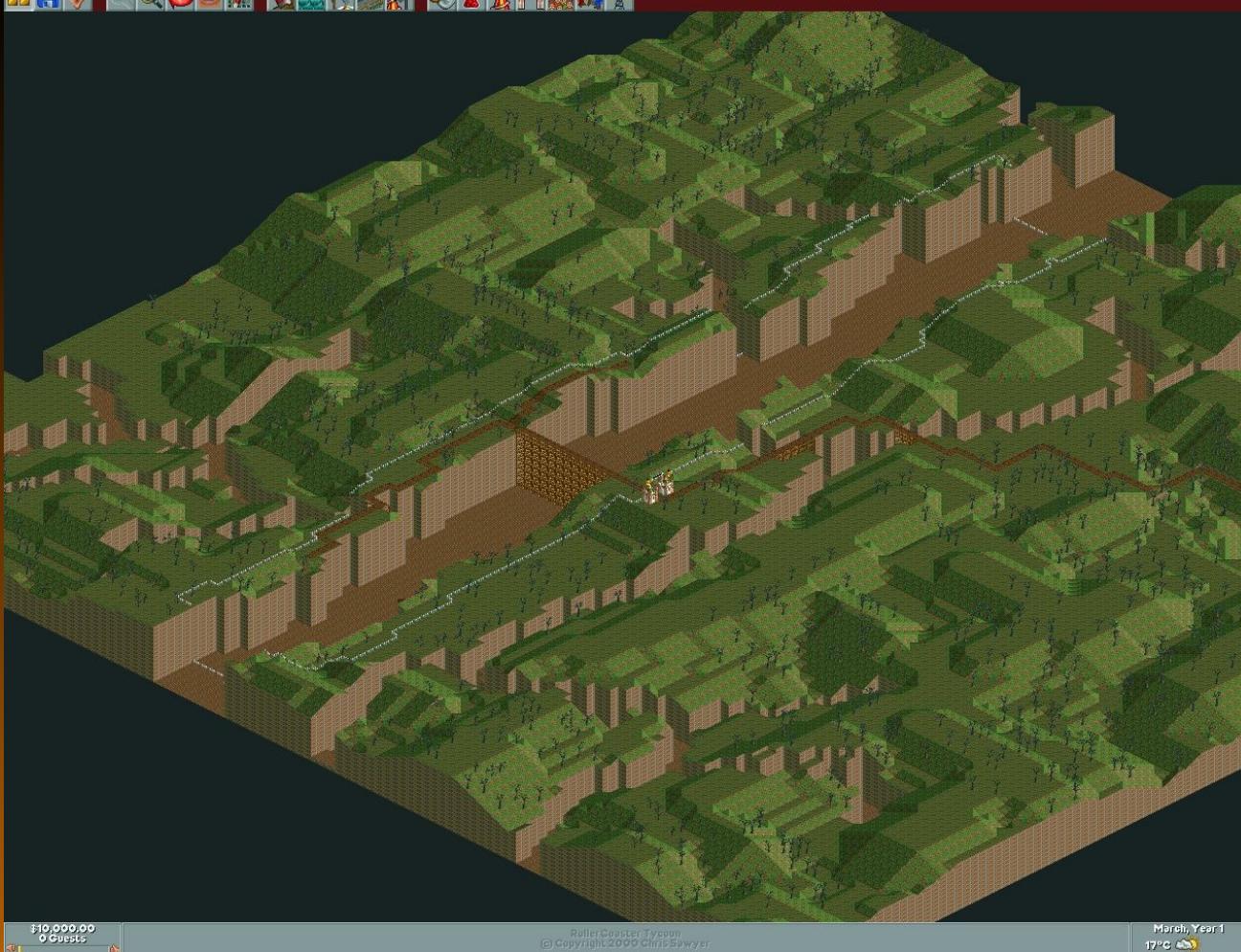
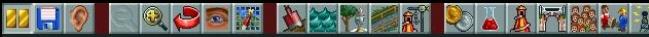
Region

2,625,322

New York







Roller Coaster Tycoon 1 and 2 - (1999) and (2002) - the pre-rendered sprites and tile-based isometric graphics will always be a major visual influence.

The ability to build underground, for tracks and paths to take on physical significance, really made for an interesting toy to interact with as a child, and even still when I played a version made for android phones again more recently. Things changed a lot with Roller Coaster Tycoon 3.









Frost Peak

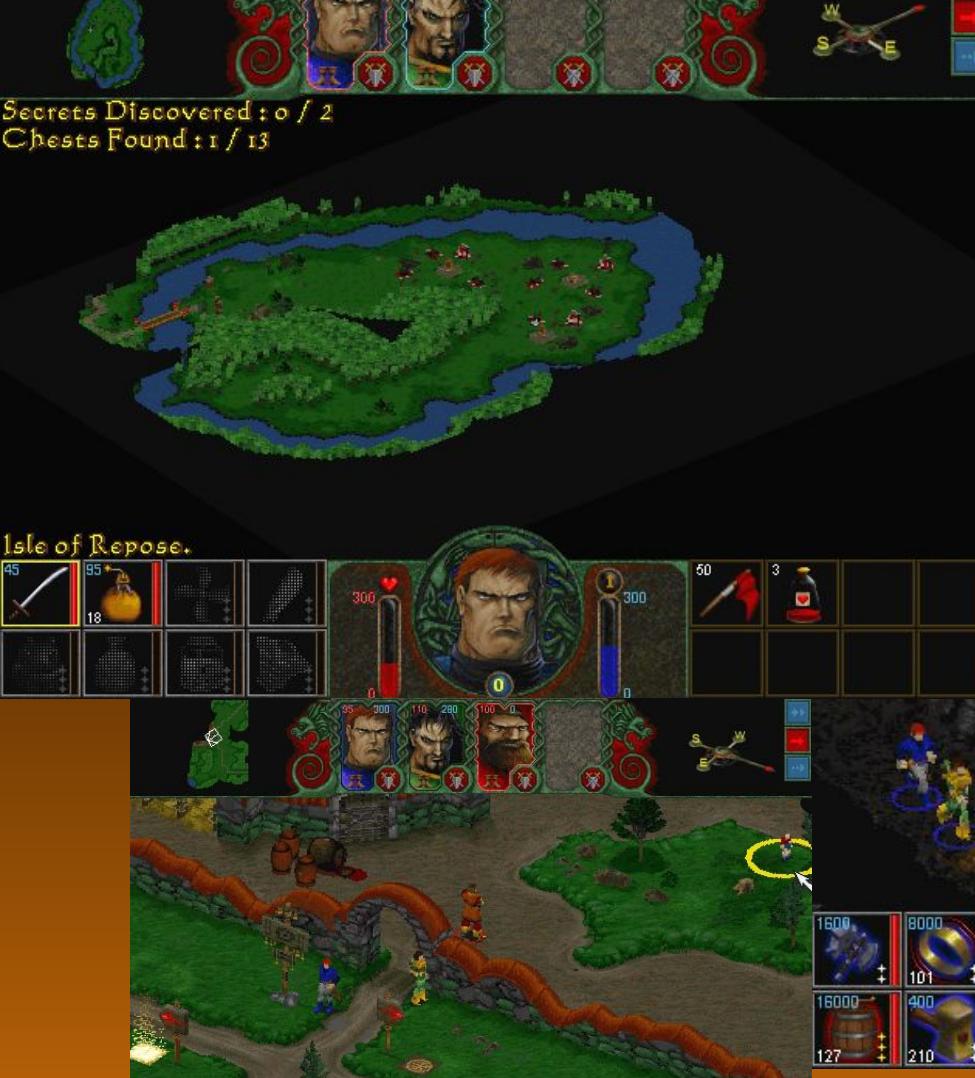




	August	September	October	March
8.00	-\$2,935.00	-\$4,640.30		
8.80	-\$4568.80	-\$4594.80		
6.00	-\$979.00	-\$1,560.00		
9.90	+\$20,759.20	+\$120,694.50	+\$72.50	
2.80	+\$1,118.90	+\$1,064.40		
9.00	+\$348.20	-\$323.10		
71.70	+\$656.90	+\$642.60		
3.40	+\$226.20	-\$217.70		
31.20	-\$3,281.20	-\$3,281.20		
0.00	-\$3,900.00			
3.20	-\$400.00	-\$33.20	-\$33.20	
14.80	+\$9,873.40	+\$11,351.20	+\$72.50	

Park Value: \$46,125.50  
Company Value: \$99,307.50



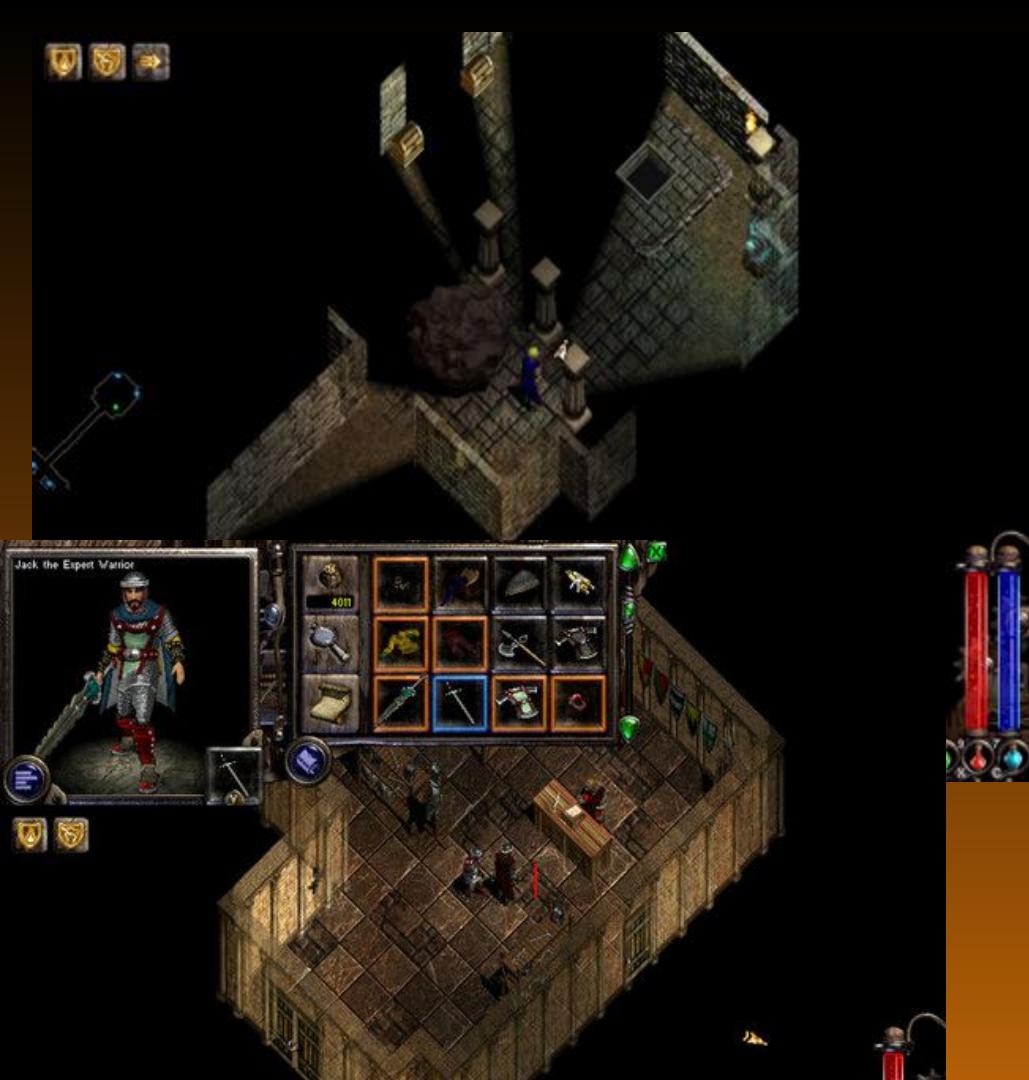


# Hexplore (1998)





small voxel sprites for characters, isometric graphics allowed for 360 degree rotation around the center position



**Nox (2000)** not voxels, but had a very unique line of sight system and updated the character sprite/3d model in the game. Simple dungeon crawler game with RPG-style stuff going on where you kill monsters and get gold and potions, level up and get more skills for any of a couple different classes

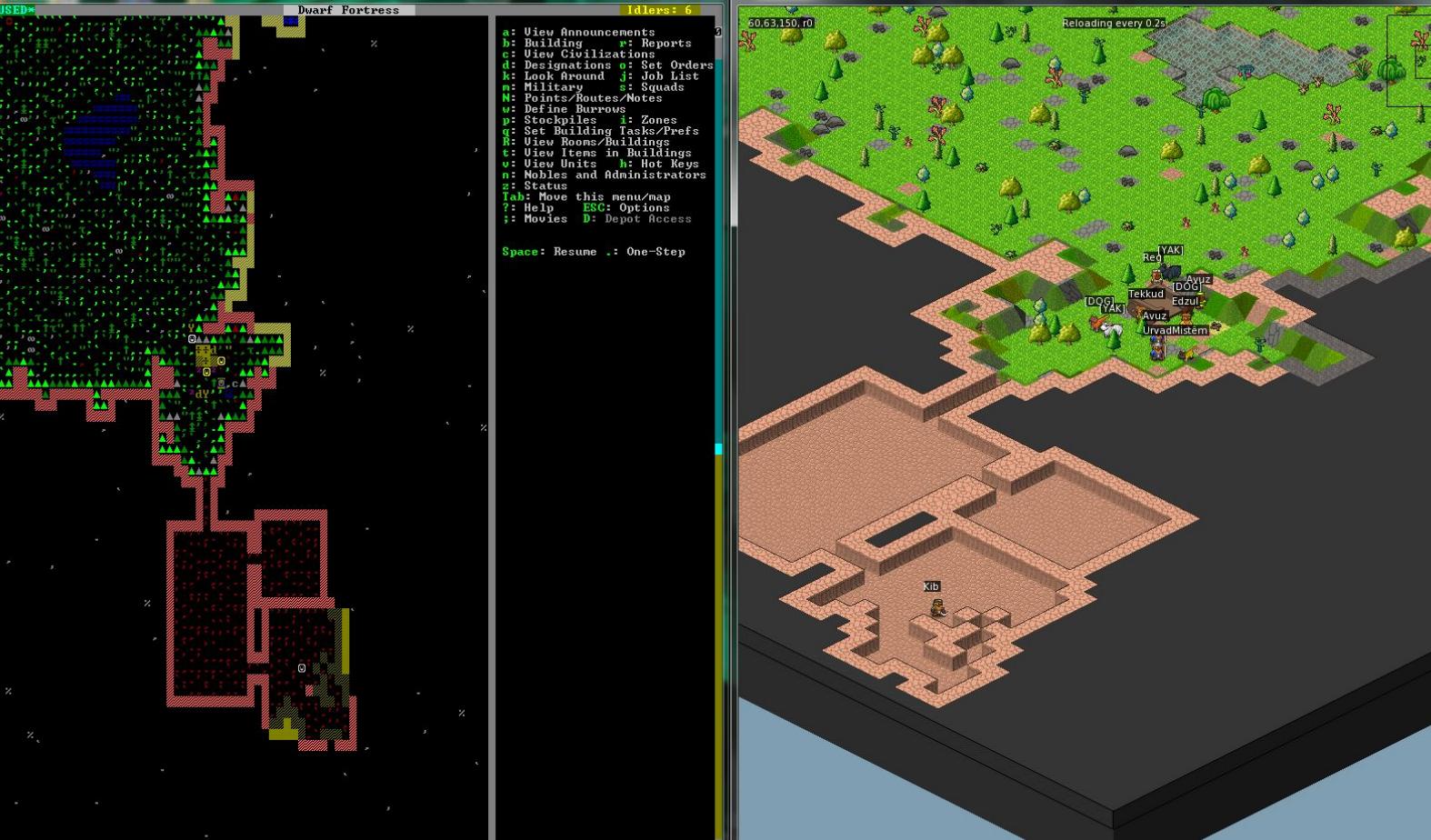


BetaBot: 65% life  
BetaBot: 92% life  
Battle 1 of 3 - Shot 5



Tank/artillery games - many clones, even 3d imaginings - many different types of ammunition possible given simple terrain model that uses pixels to store the status of the terrain and destroy things within blast radii



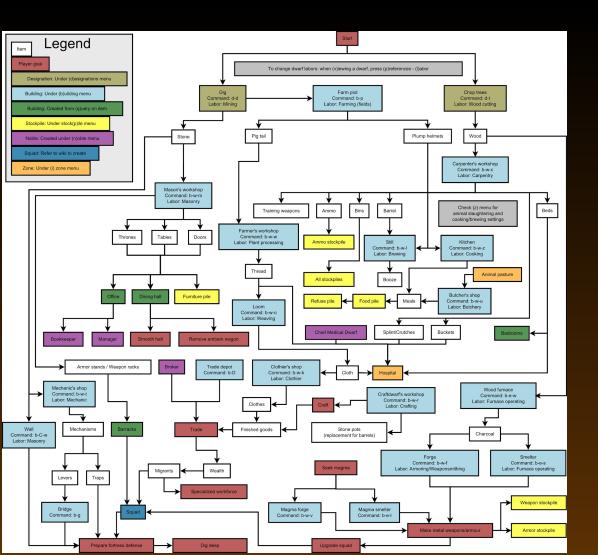
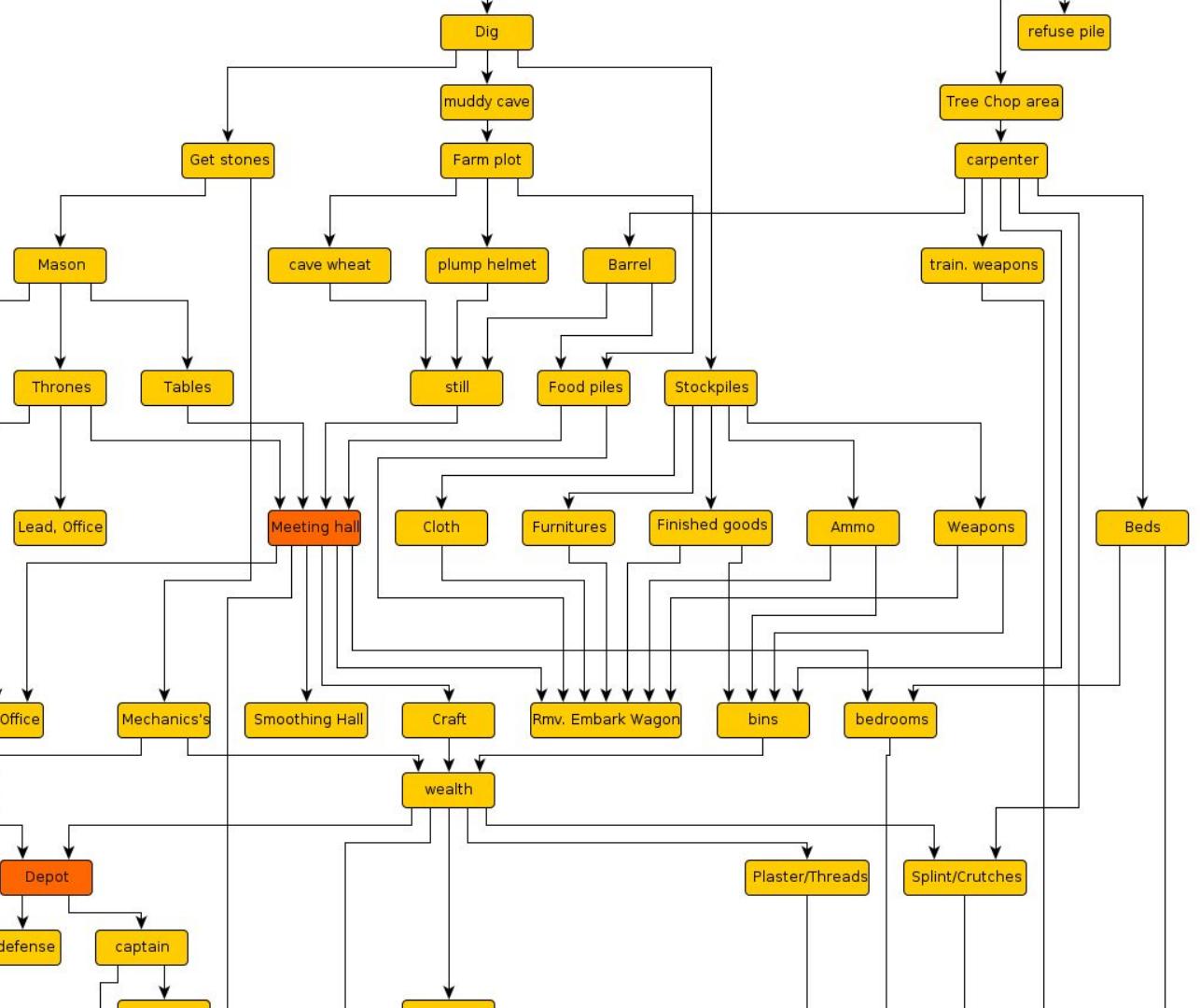


The user moves a visible slice up and down - things above the slice are not visible, and things in lower layers will be occluded if things in the visible slice are in front of them. Otherwise you can see into valleys areas further down like in the picture on the next page.

Dwarf Fortress (2006) - shown here with a graphical frontend - usually played via ascii graphics like what's on the left hand side. There is an incredibly complex world generated with a history and mythology and vast extents and varied regions. Really just a remarkable achievement in the area of simulation. It is featured in the Museum of Modern Art.



The Jungles of Anguishing  
 Temperate Conifer Forest  
 Temperate Warm  
 Tropical Subtropical  
 Other Vegetation: Thick  
 Surroundings: Wildness  
 Brook: Undrained by Ed Mogs  
 Clay  
 Very deep soil  
 Shallow metal  
 Dune sand  
 Flux stone layer



Some of the flowcharts that are required reading before playing Dwarf Fortress

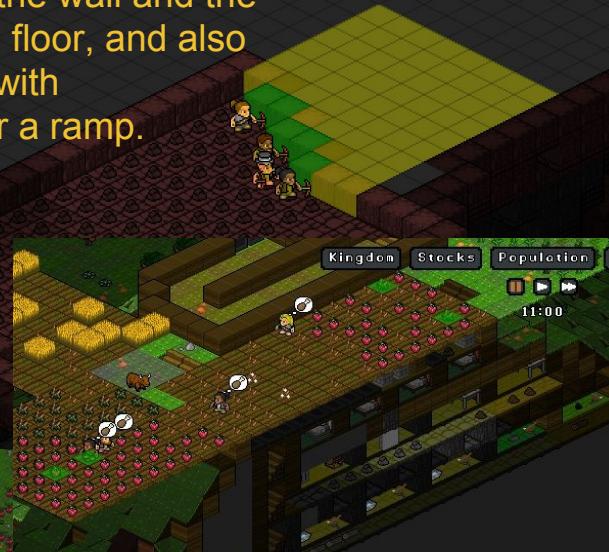
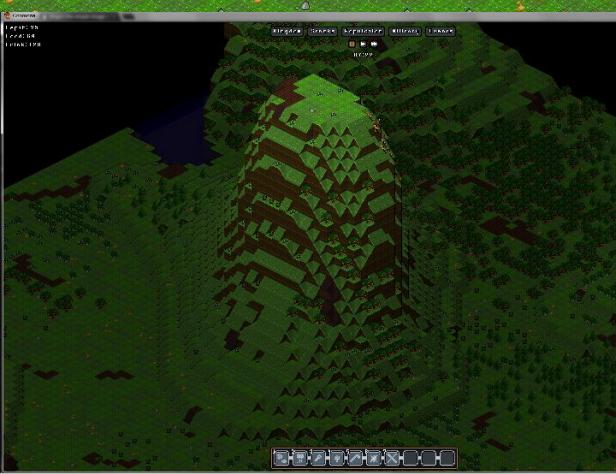
Gnomoria (2016) - a game that takes a stab at making Dwarf Fortress's ideas more accessible by adopting a heavily simplified model of Dwarf Fortress's main mechanics. I spent a lot of time playing this game and found that there are some severe limitations as you develop your world, beyond 25 gnomes really starts to come with a performance hit - effectively limiting the depth to which you can realistically explore it. Starting with simple materials and an environment with plants for food, the potential to farm and grow groves of trees as well as keep livestock, all in the name of producing enough food and drink to keep all of your 5-30 gnomes alive. A big milestone in the early game is to get a well made above some water source so there is emergency water and people stop dying of thirst. There are many resources that are farmed or collected in different ways, that might be more or less applicable to a certain set of starting circumstances.

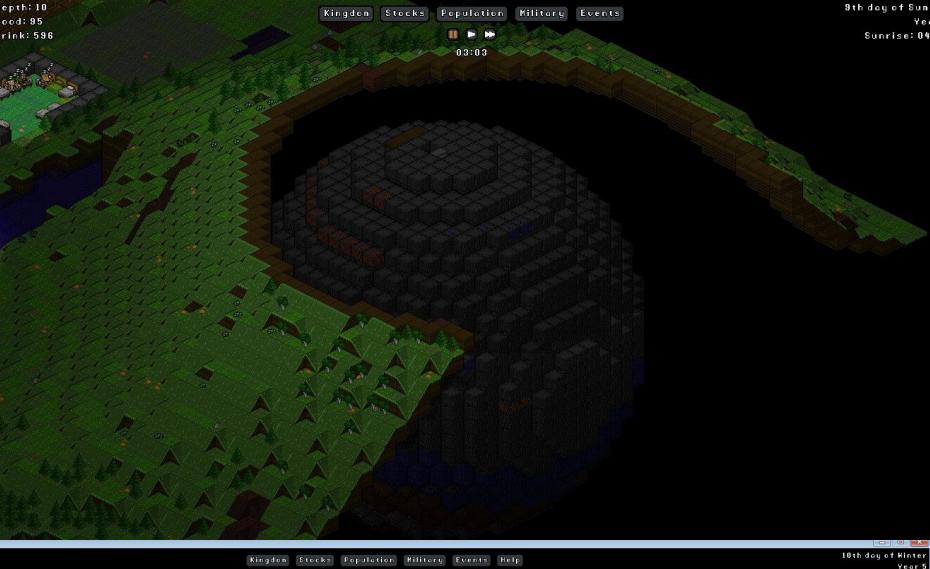


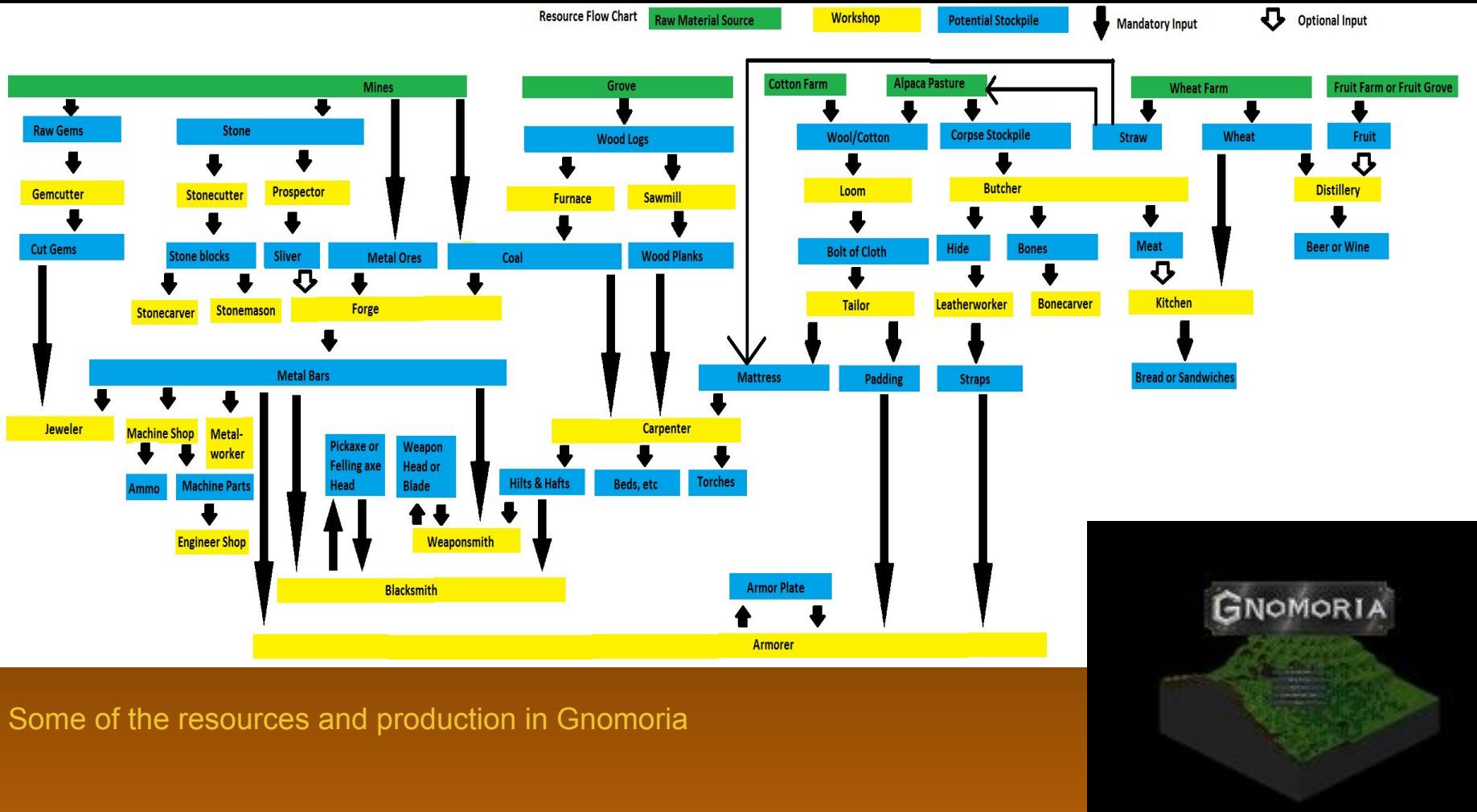
The terrain model is edited by creating a job to remove land. If you have miners assigned, they will go and mine the area you designate. There are two pieces to each block, the wall and the floor. They can dig out the walls and leave the floors, or dig down, through the floor, and also remove the wall of the corresponding cell in the floor below, or else replace it with

some stairs or a ramp.

## Workshop Order







Terraria (2011) - I sunk some time into this one - It had a similar mechanic to minecraft in that the deeper you went, the better pickaxe you got, it dug faster and went through harder stone, and some of the other pickaxes were combat rewards. They used a modified model of the artillery/tank games where a 2d grid + another 2d grid for a background represented the world. It provided a lot of different 'crafting' options, where materials had a sort of well-balanced significance. Want cool bricks, or better tools/weapons? you have to dig for shit and look at ores, bring it back up and smelt bars, then use a bunch of bars to make the shit. There's armor that works the same way, too. Different zones and biomes, and a hard limitation side to side that was represented with an ocean. The display would stop scrolling when you were at the edges.



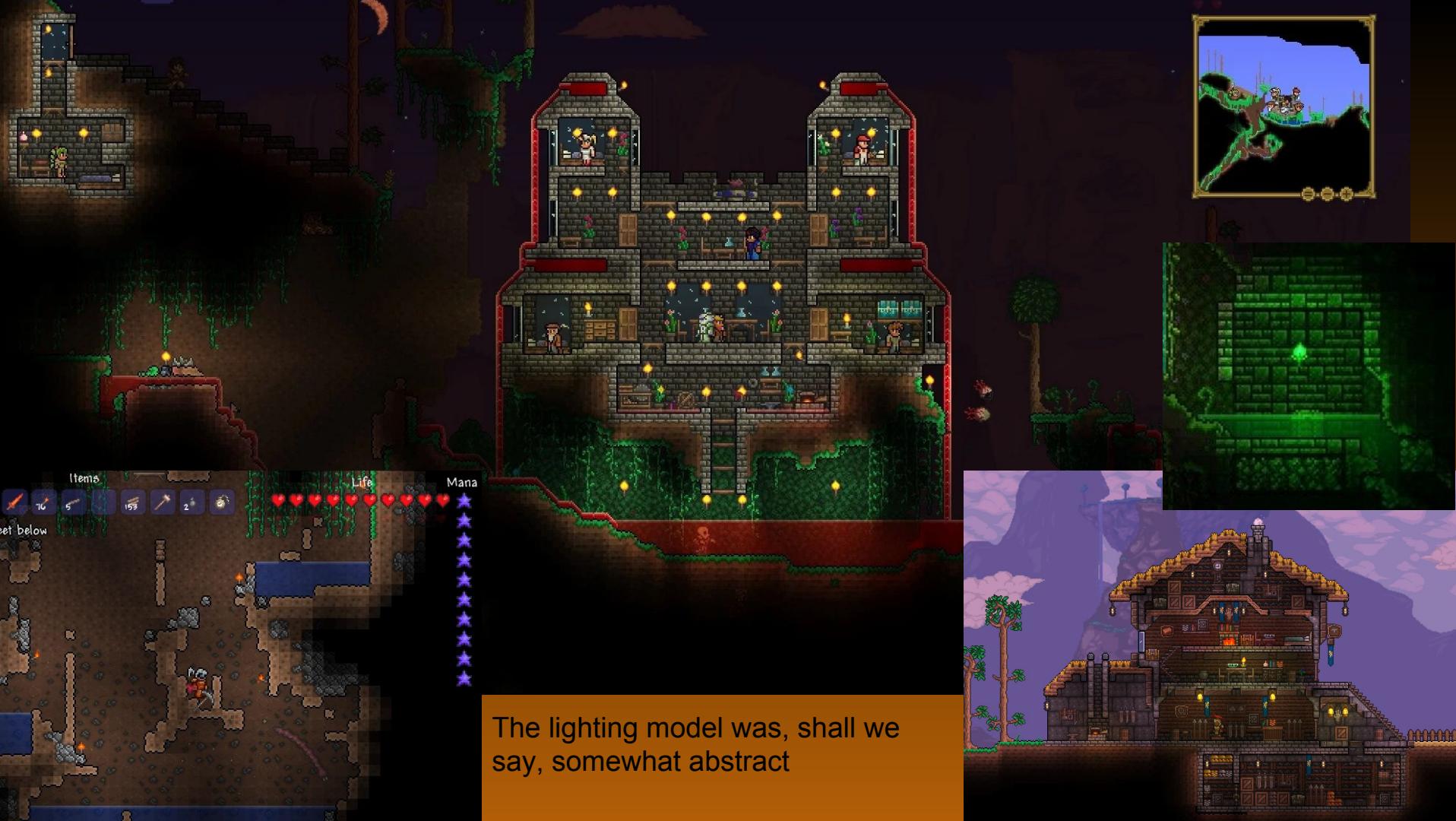




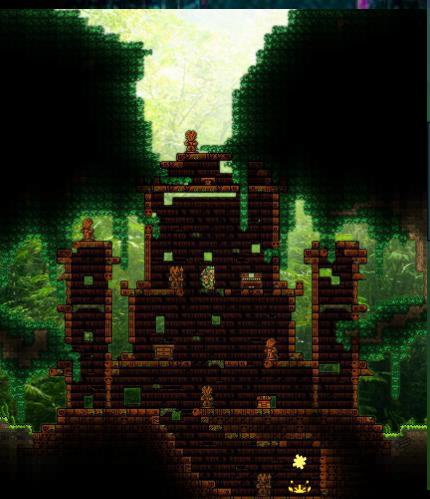
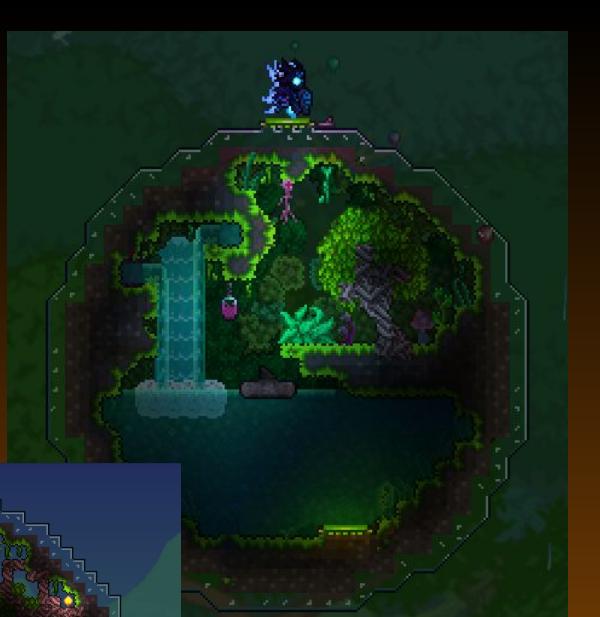
Certain biomes grew special plants and spread virally if not contained. Blocks of glass keep it from spreading in these examples, the types of systems this grid allowed for are really remarkable. Trees are simple, though, and just shoot straight up from the top of the ground, so long as nothing is above it



Vines spread to neighboring squares, so long as that square is on the bottom of something. Kind of an interesting model.

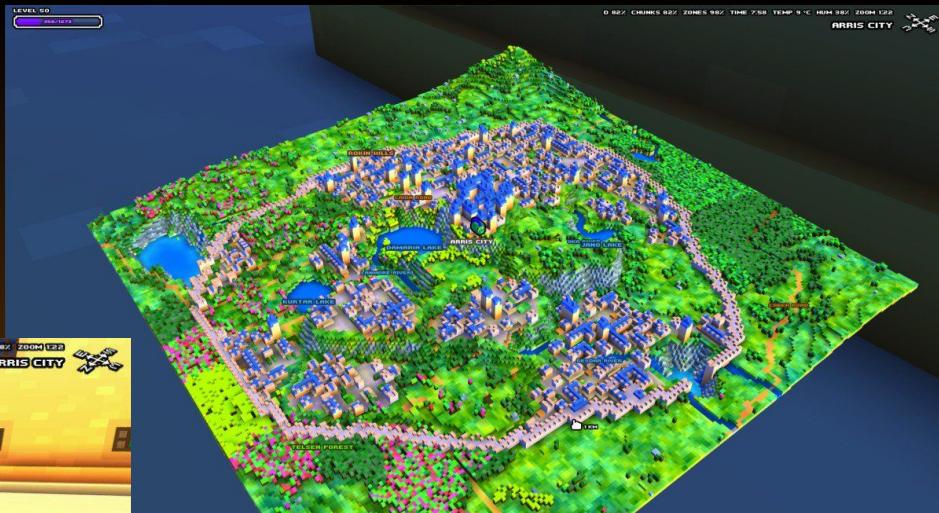


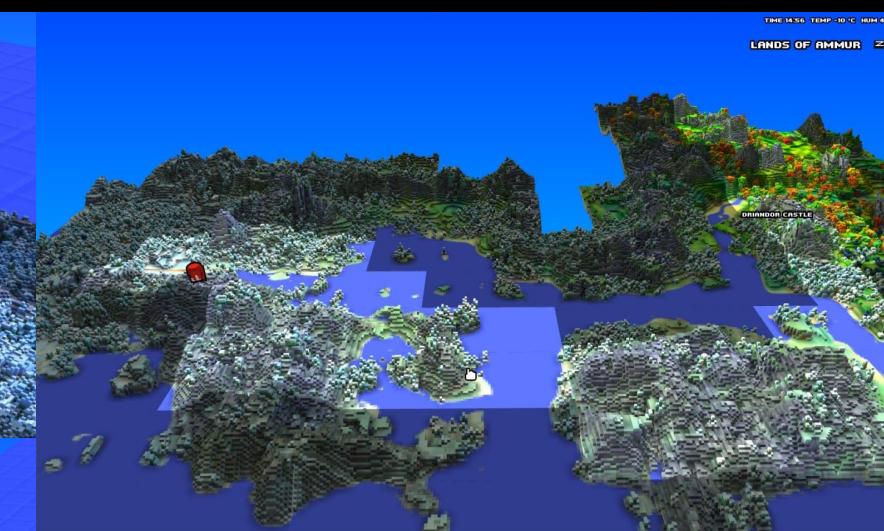
The lighting model was, shall we say, somewhat abstract



## Cube World (2013) - Notably, the map

Again, I didn't play much of this one, but I thought the graphics were pretty neat. The minute to minute gameplay was a more combat-focused version of minecraft, sort of in the spirit of Terraria.

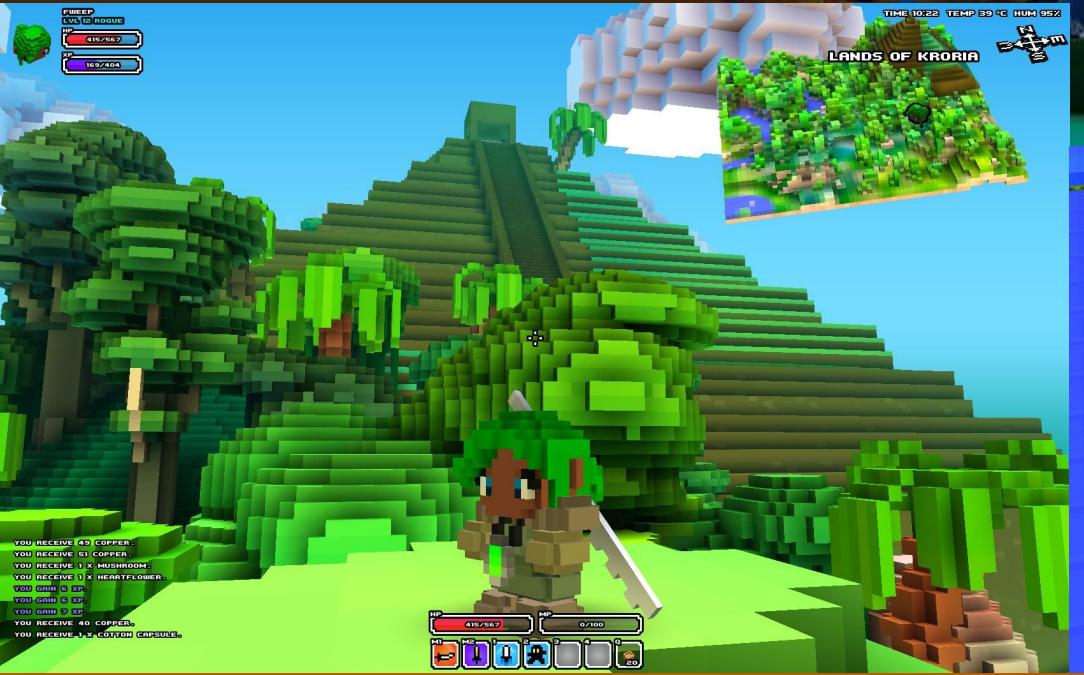


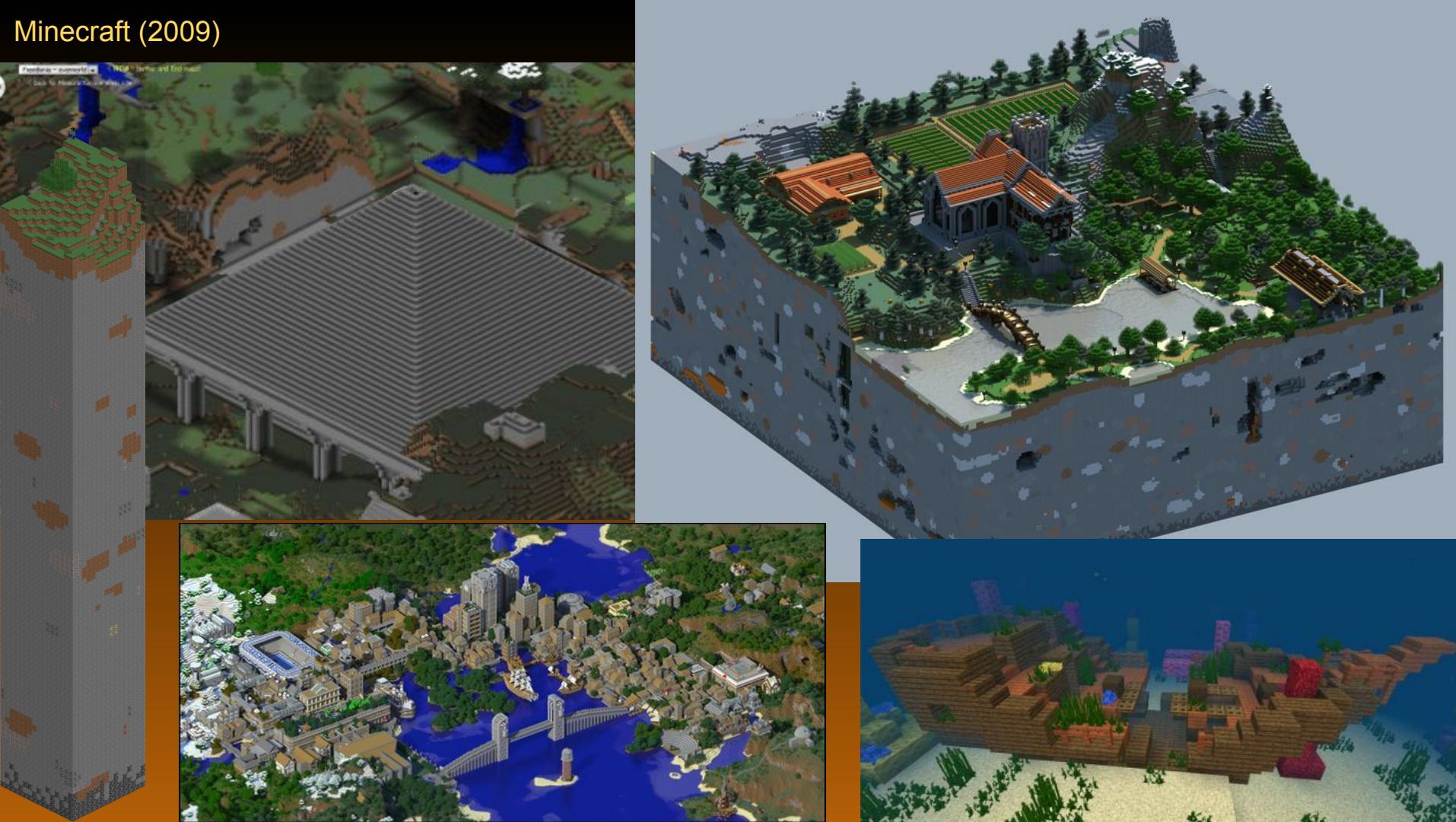


TIME 4:56 TEMP -10°C RAIN

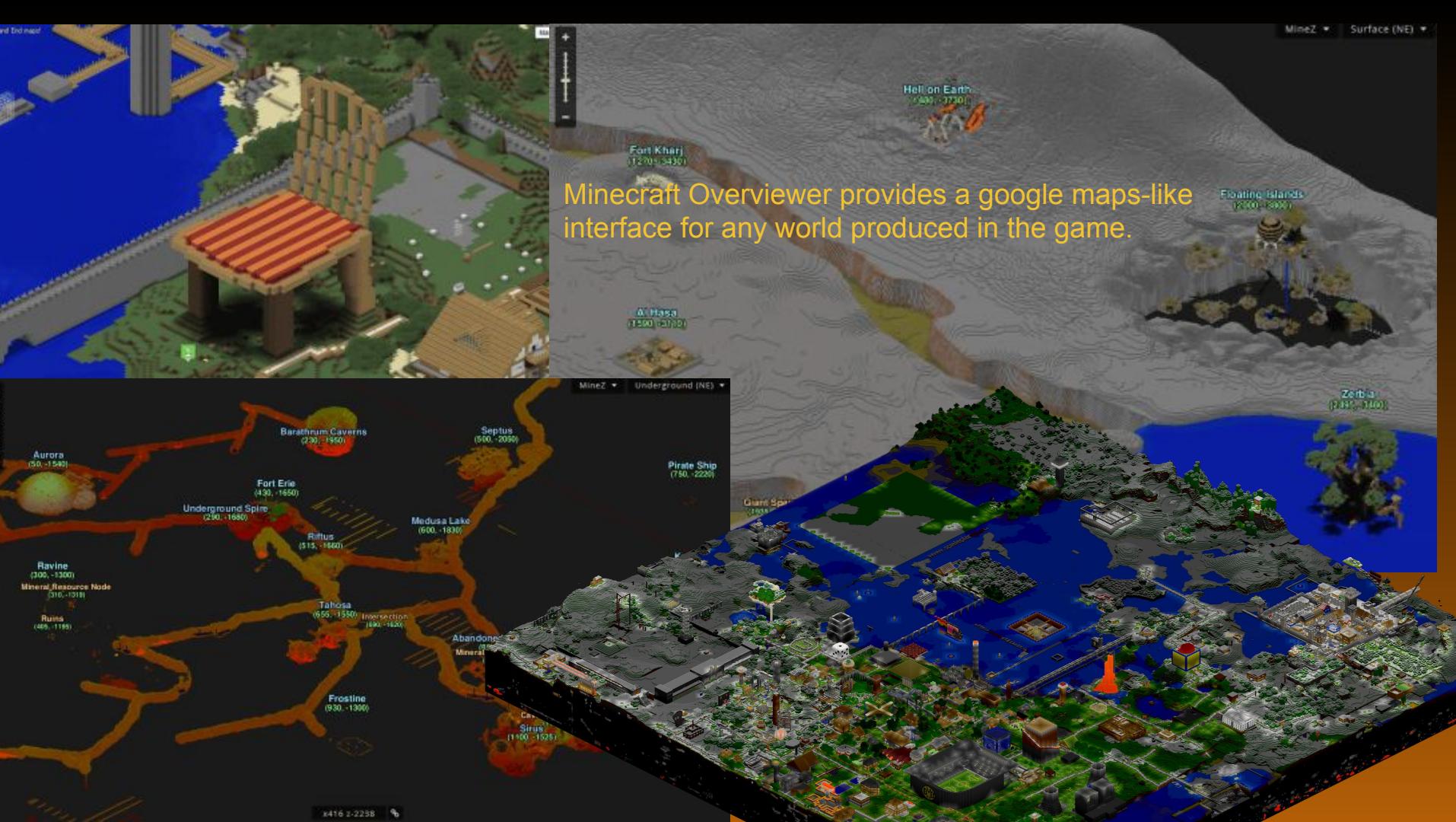
LANDS OF AMMUR Z

The general art style was not really my cup of tea, but I can see it had a lot of good ideas, and the map is really fascinating - the user has a tiny version all the time as a minimap that shows the local area

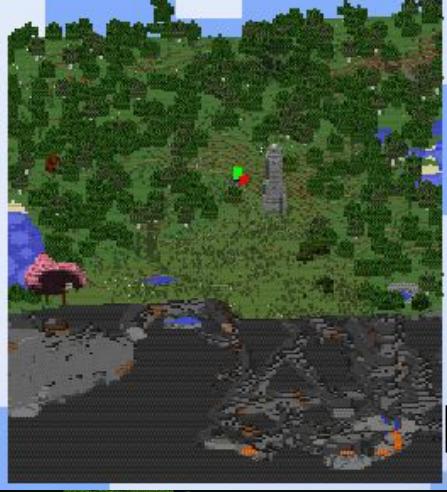








Minecraft Overviewer provides a google maps-like interface for any world produced in the game.





Oblivion (2006) - This game had a relatively quite complicated leveling system, limiting its potential for casual play. Very easily to level up the wrong way and screw yourself over by not having the right skills in later levels. The open world is all accessible from after the tutorial, and enemies scale in difficulty/type/equipment based upon your level. Amazing graphics and a huge world.





The ridiculous character creator was a big selling point



Gratuitous Space Battles (2009) - I really liked something about this game - you design ships and lay out a 2d fleet against an enemy fleet. Very hands-off in the actual battles, but I found it pretty rewarding just based upon the scale of everything. Lots of different weapons and shields/armor that are more or less effective counters for one another, really a relatively simple game.

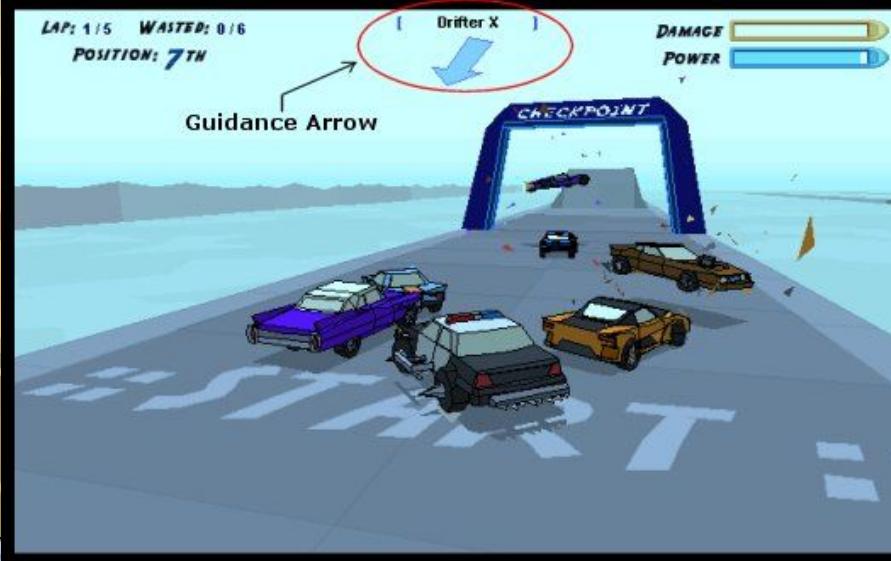




This game, I played years and years ago on miniclip, centered on the ufo that stayed a set height above the ground . your view rotated when you turned the ship, with a little banking animation. Something about the rudimentary 3d really captured me in the days of flash games. You flew around a square of suburb with blackness off the edges, picked up people and cars, dropped them off at the 'mothership'. It was called "Alien Abduction", made in 2001

Need for madness (2001) - 3d racing game done in flash









<< Scroll Nicknamek: go for it 1 on 1 Nicknamek: just start : : : : :



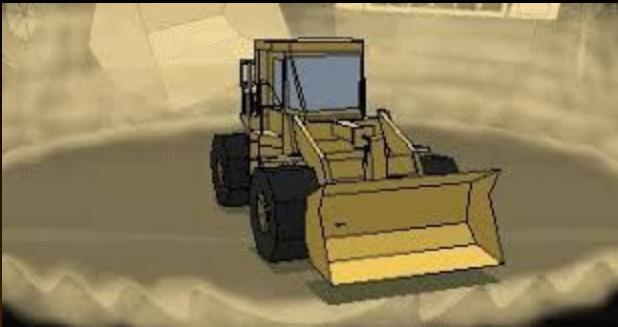
Press [ Enter ] to continue



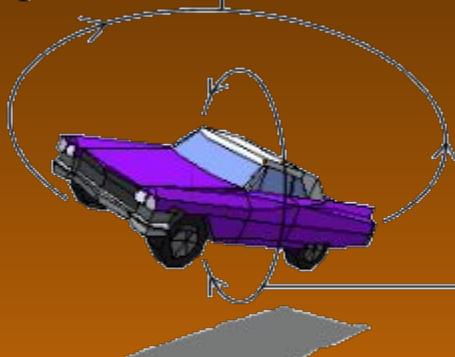
<< Scroll Magnoon: super9 wake up a bit BRH: please? Magnoon: go start Corner: that's everybody in the room, sta...



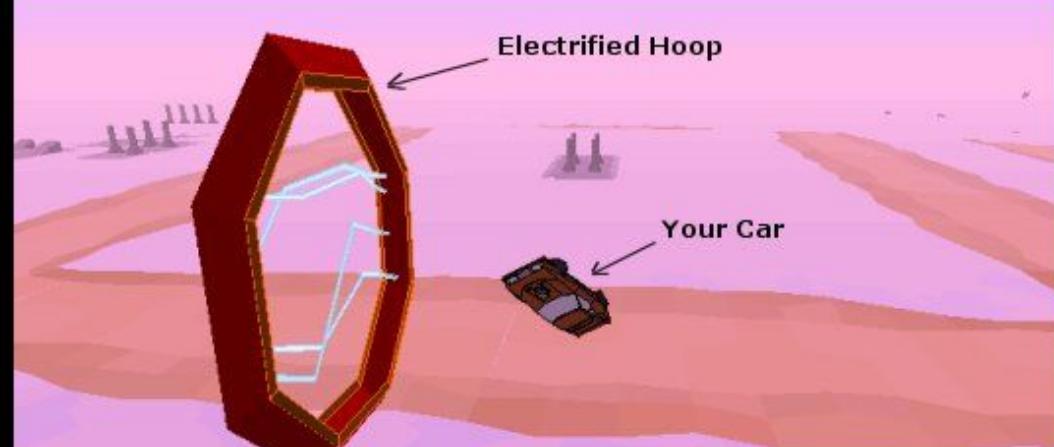
Created by Game-BeatX14 on Deviantart



Leaping



Rolling



PLAYERS ONLINE

Player	Position	Laps	Power	Damage
N.F.M.E.	1st	3/3	Max Life	Low
ELMASHER	2nd	3/3	Medium	Medium
stockcer14	3rd	3/3	Medium	Medium
nightrider	4th	3/3	Medium	Medium

Game Status: Started      Created by: 582@ignacio      Close X

PLAYERS

Player	Position	Laps	Power	Damage
Chim	1st	3/3	Max Life	Low
nightrider	2nd	3/3	Medium	Medium
Jelani	3rd	3/3	Medium	Medium
N.F.M.E.	4th	3/3	Medium	Medium

Live Info:      STATUS:      Live Total:

STAGE: N.F.M.E. - Stage 3      Laps: 3      Maximum Overfly

CHAT: ( Game Chat )

Chim: Hey game so I can own yu sukers  
stockcer14: with chim?  
madmax: nms weedi as you know  
Chim: chim is best in game  
Shut up chim  
madmax: er is that a car that was made in car edder

Type here...      Send Message

## Need for Madness 2 (2014)

the second one which gives the user an editor - plus we need to look at the drawing tutorial <http://www.needformadness.com/developer/simplecar.html> which is beautiful in it's simplicity, and really pretty amazing in its potential complexity - include examples.

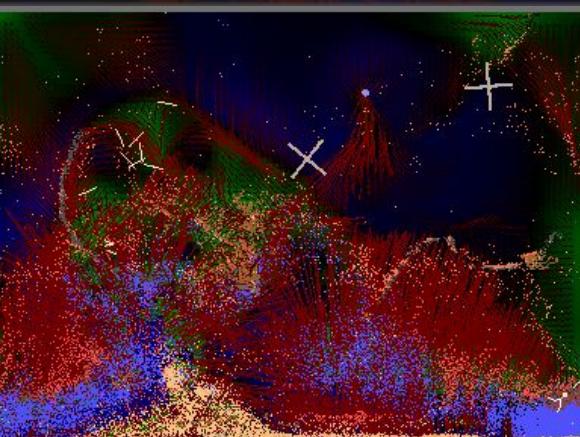
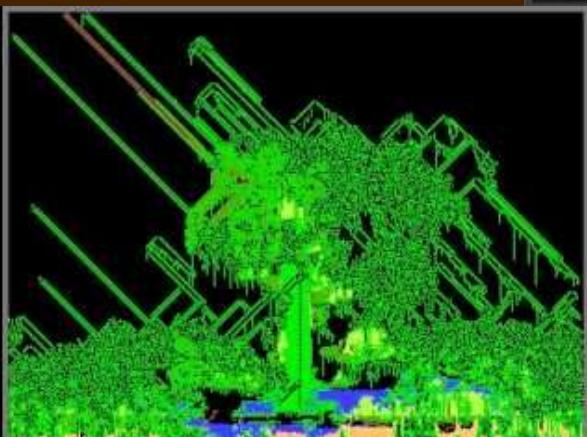
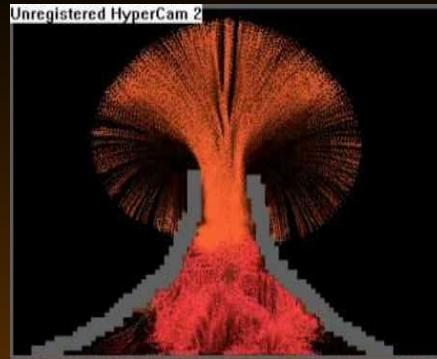
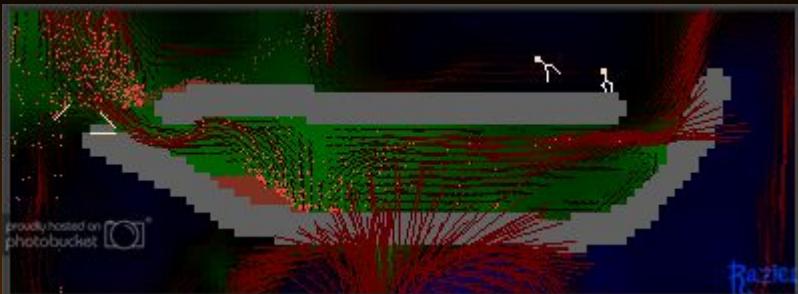
<http://multiplayer.needformadness.com/development.html>

<http://multiplayer.needformadness.com/about.html>

This makes me wonder - is a quad a more realistic primitive?



Dan Ball Dust game - pixel grid that simulates a lot of things like moving particles, air patterns, growth of plants, some cellular automata concepts. A very impressive software toy that's been in development since I was in middle school.



POWDER	OIL	THUNDER	SPARK	WIND	BLOCK	UPLOAD
WATER	C-4	SEED	VINE	AIR	ERASE	SAVE
FIRE	STONE	BOMB	CLOUD	DRAG	CLEAR	LOAD
SEED	MAGMA	LASER		BUBBLE	Copy-Paste	Minimap
G-POWDER	WATER	ACID		WHEEL	TEXT	Menu-S
FAN	NITRO	VINE		PLAYER	PEN-S 8	Side-Off
ICE	ANT	SALT		FIGHTER	PEN-S 8	
S-BALL	TORCH	BLACK		BOX	SCALEx1	BG-Line
CLONE	GAS	WHITE		BALL	SPEEDx1	Dot L
F-WORKS	SOAPY	MERCURY		CREATE	Start-Stop	RESET

POWDER	FIREWORKS	GAS	WIND	BLOCK	UPLOAD
WATER	OIL	SOAPY	AIR	ERASE	SAVE
FIRE	C-4	THUNDER	DRAG	CLEAR	LOAD
SEED	STONE	METAL	BUBBLE	Copy-Paste	Side-Off
GUNPOWDER	MAGMA	BOMB	WHEEL	GRID 0	
FAN	VIRUS	LASER	FIGHTER	PEN-S 3	
ICE	NITRO	ACID	BOX	SCALEx1	Dot S
SuperBall	ANT	PLAYER	SPEEDx1	START-STOP	RESET
CLONE	TORCH	TEXT	DOT S	RESET	

314ps dot1499 DAN-BALL.JP (C) 2007 ha5511



POWDER	ICE	STONE	WIND	BUBBLE
WATER	SuperBall	MAGMA	AIR	FIGHTER
*FIRE	CLONE	VIRUS	DRAG	BOX
SEED	FIREWORKS	NITRO	WHEEL	
GUNPOWDER	OIL	ANT		
FAN	C-4			

164ps dot1001 DAN-BALL.JP (C) 2007 ha5511

## Dungeon Keeper (1997) -

There's something I really like about the softness of the graphics, and the limited color depth. I never really played any of this game.

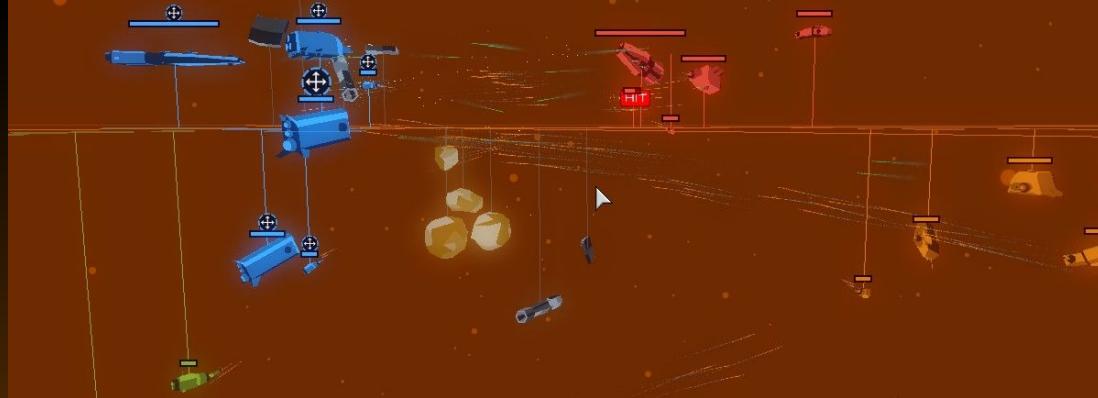


Flotilla (2010) - Unique combat system frequently paused realtime events to allow the user to change the angle and speed of the ship, fire weapons, roll or evade, and projectiles would slowly track through space or cut through an area in the case of lasers, allowing for some interesting variations in gameplay. This system allowed for two or more users to play, by simply allowing them to each take turns before combat resumed. It had a very good, simple arcade-y quality to it, with the ability to quickly make random matches, etc.



COMMAND MENU (F)

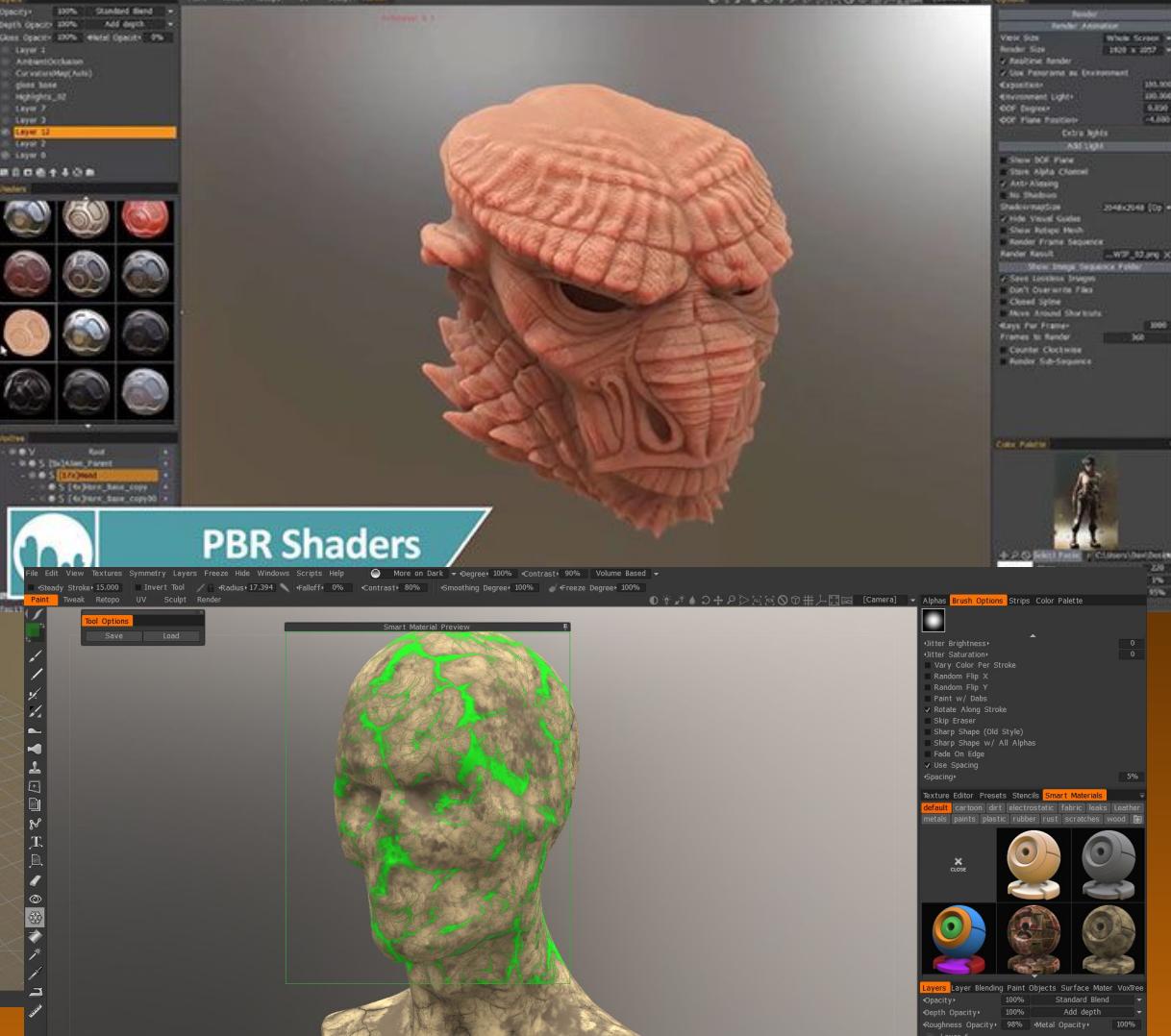
Armored sides of some ships would deflect projectiles, if facing the right way



Bottom hits are critical, and do more damage - similar to the idea of flanking - it's tricky though because they roll faster than you move



3DCoat (2007) - voxel sculpting 3d modeling software - I played with this very briefly, but the idea just always seemed really interesting.



Starfighter: Disputed Galaxy (2007) by Ben Olding  
[http://kongregate.wikia.com/wiki/Starfighter:\\_Disputed\\_Galaxy](http://kongregate.wikia.com/wiki/Starfighter:_Disputed_Galaxy)

[https://www.youtube.com/watch?v=cmYqMd\\_NZKs](https://www.youtube.com/watch?v=cmYqMd_NZKs)  
I want to document the major gameplay elements to try to clone it in 3d at some point down the road.

This was a really influential game for me in middle school. The limited sight distance provided by the rectangular viewing area is really something that 3d reckonings have largely missed. I think it could be achieved by displaying the ship inside of a volumetric sphere, upon which various information is displayed, similar to the arrows of SF:DG

Another idea is to extend the galaxy into the third dimension and add layers - use the elipsoid function to compute the regions of distance from the galaxy center - some sectors have friendly space stations, some have black holes, some have enemy space stations of a whole bunch of asteroids to mine. If the view was limited to a sphere with a grid overlaid, I think a similar sort of effect could be achieved to what was done in SF:DG

As you can see below - the sprite for the ship within the game is changed based upon what equipment is on it. Primary weapons usually go under the wings.





Showing the UI for when you dock with a space station on the left, and mining an asteroid on the right. The space station glows red for aliens, blue for humans. Sectors are numbered with an x and y coordinate, and have different contents based upon what is in the grid. The circles are smaller space stations with a single defense turret, while the triangles are larger space stations that have four of these defense turrets. Ones with small collections of grey rocks are sectors that provide a large number of asteroids for players that want to make money with a ship set up for mining. Mining requires a ship with a mining laser, with the mining laser selected, in proximity to an asteroid. By firing the laser, the ship gathers material until the capacity is full (this is a very small ship, so it probably only holds 100 or so - the large ships that are more suited to this activity have between 3 and 5 thousand).



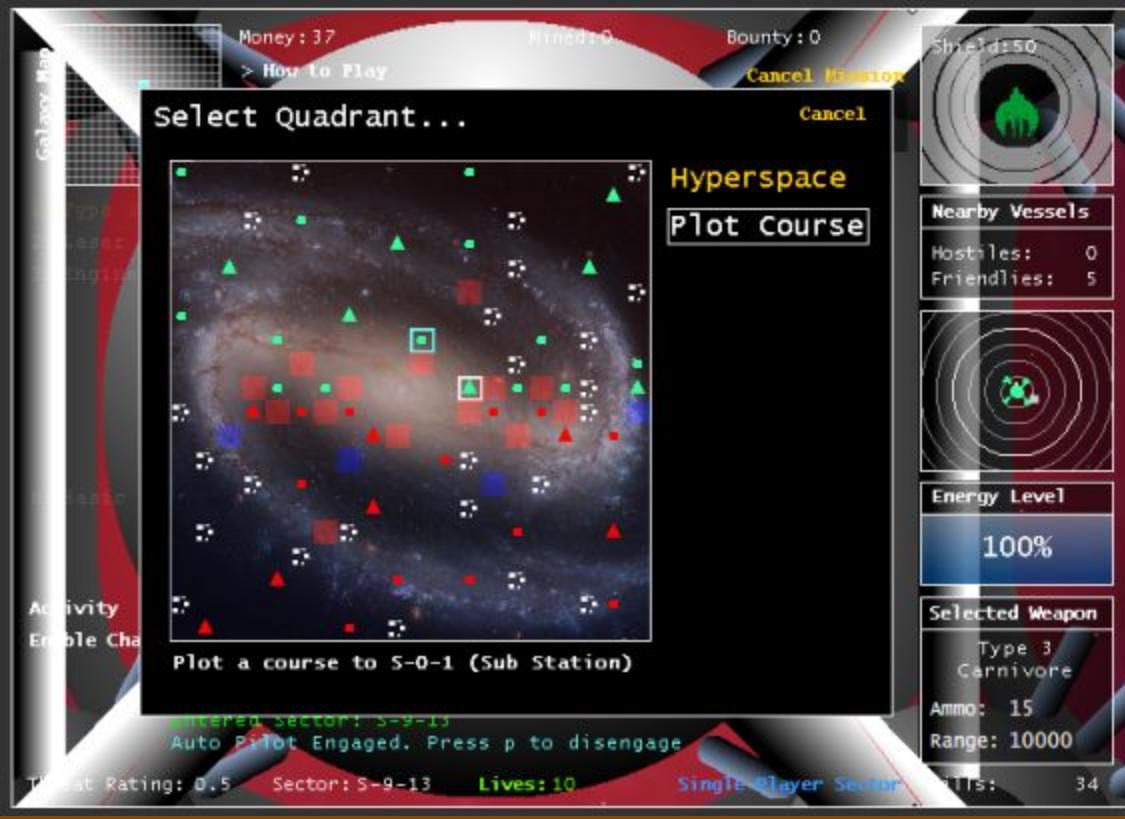
Some elements of the space station ship customization UI: on the left is a basic ship, the right is a ship you don't get for a long time into the game. The basic ship only has two regular weapon slots, one utility slot and a basic mining laser slot. The Warship has 5 regular weapon slots, 2 utility slots, a proximity slot (bubbles of damage or EMP around the ship - close range defensive) and a large slot. The large weapons are treated differently than any other weapons, as it is purchased as a single unit of ammo. Every ship has options for engines, which make the base speed higher, or add to the boost speed, or both (the boost is used by hitting shift to spend 35% energy and go to 130-200% speed until you let off the forwards arrow - your speed decreases quickly, with some notion of 'friction').

Available Missions		Sector S-15-19	
Type	Mission	Reward	
Courier	Transport some construction drones from Sector S_18_19 (3 sectors away) to Sector S_15_19 (3 sectors journey from pickup)	1147	<b>Accept</b>
Assassinate	Terminate enemy Striker in sector S-14-19 (1 sectors away) and report to station in S-15-19 (1 sectors)	2530	<b>Accept</b>
Assassinate	Terminate enemy Fighter in sector S-16-18 (2 sectors away) and report to station in S-15-19 (2 sectors)	290	<b>Accept</b>
Assassinate	Neutralise enemy Protector in sector S-17-19 (2 sectors away) and report to station in S-18-19 (1 sectors)	530	<b>Accept</b>
<a href="#">More Missions &gt;</a>			
<a href="#">Cancel</a>		Money: 2500	

To the right, we see a basic ship having just launched from one of the larger space stations, which have four defense turrets.

To the left here, the randomly generated mission selector is shown. You can only have one mission at a time - they are often multiple sectors away, and in the case of courier missions, you have quite a trip ahead of you. The most lucrative missions are multiple assassinations, which have you go to a sector, kill everything there, and come back. Once you get missions to kill multiple warships, you can see bounties north of 35k.





The hyperspace menu allows you to travel to a distant sector in a few seconds. There is an animation that plays then the target sector loads. The hyperspace charges are expensive or you can buy an engine with a hyperspace recharger that will produce a charge you can use about every minute.

Below you see a person that had an encounter with a number of hostiles and was killed - when the player kills enemies, you get a bounty based upon the type of enemy and the threat level of the sector. Threat levels are established by vertical position in the galaxy grid - they represent a sector being more or less strongly alien or human controlled. The bounty, along with your mining material is turned into money when you dock at a friendly space station.





Human ships (top) and alien ships (bottom) all shown approximately to scale



### Buy Weapon

### Sector S-10-4

Weapon	Ammo	Info	Price	Buy
Type 1 Stinger Torpedo	20	Info	250	Buy
Type 2 Stinger Torpedo	15	Info	300	Buy
Photon Bomb	Inf	Info	1000	Buy
Plasma Cannon	Inf	Info	2000	Buy
Laser Beam	Inf	Info	3000	Buy
Type 3 Stinger Torpedo	15	Info	500	Buy
Electrostatic Orb	10	Info	300	Buy
Positronic Convergence Disc	10	Info	1100	Buy
Javelin Torpedo	15	Info	100	Buy
Thunder Bolt Torpedo	1	Info	1400	Buy
EMP Torpedo	1	Info	1300	Buy
Shield Extraction Beam	Inf	Info	1500	Buy
High Density Photon Bomb	Inf	Info	1500	Buy
Type 4 (Stealth) Stinger Torpedo	15	Info	1000	Buy
Long Ranger Laser Cannon	Inf	Info	1000	Buy
AT Torpedo	20	Info	250	Buy
LR Photon Bomb	Inf	Info	2500	Buy
Reverse Laser	Inf	Info	800	Buy
<b>Cancel</b>				

Money: 5343168

### Buy Weapon

### Sector S-2-6

Weapon	Ammo	Info	Price	Buy
Photon Bomb	Inf	Info	1000	Buy
Plasma Cannon	Inf	Info	2000	Buy
Laser Beam	Inf	Info	3000	Buy
Xandelevium Heat Disc	15	Info	900	Buy
Javelin Torpedo	15	Info	100	Buy
Thunder Bolt Torpedo	1	Info	1400	Buy
EMP Torpedo	1	Info	1300	Buy
Xandelevium Blaster	15	Info	1100	Buy
Damaging Combo Beam	Inf	Info	700	Buy
Shield Extraction Beam	Inf	Info	1500	Buy
Type 1 Carnivore Torpedo	20	Info	250	Buy
Type 2 Carnivore Torpedo	15	Info	300	Buy
Type 3 Carnivore Torpedo	15	Info	500	Buy
Disruptor	Inf	Info	1000	Buy
Type 4 (Teleporting) Carnivore Torpedo	15	Info	750	Buy
Long Ranger Laser Cannon	Inf	Info	1000	Buy
Hornet Torpedo	10	Info	250	Buy
Reverse Laser	Inf	Info	800	Buy
<b>Cancel</b>				

Money: 1879073

Showing human and alien weapons - there is some variation, I have gathered up all the information available on jestertrek.com that seeks to characterize all the elements of the game and give new players a good sense of what's going on. This is a little bit outdated, as you can no longer play the game in any real way due to a number of attacks that forced the shutdown of the login server a couple years ago. The best you can do is 'play as a guest' but it won't track your progress and that's not really practical when you can sink hundreds of hours into this game.

### Buy Weapon

### Sector S-10-4

Weapon	Ammo	Price	Buy
Energy Extraction Beam	Inf	1200	<a href="#">Buy</a>
Tractor Beam	Inf	700	<a href="#">Buy</a>
Magnetic Mine	5	300	<a href="#">Buy</a>
LBSS Area Stealth	1	800	<a href="#">Buy</a>
LBSS Stealth System	1	1200	<a href="#">Buy</a>
Shield Bubble	1	1000	<a href="#">Buy</a>
Energy Cell	2	1000	<a href="#">Buy</a>
Teleport Disc	3	500	<a href="#">Buy</a>
Holographic Disguise	1	2000	<a href="#">Buy</a>
Rapid Shield Recharger	1	600	<a href="#">Buy</a>
LASS Stealth System	1	3400	<a href="#">Buy</a>
Inverse Gravity Field Generator	1	1000	<a href="#">Buy</a>
Field Hopper	Inf	900	<a href="#">Buy</a>
Reverse Power Thrust	Inf	200	<a href="#">Buy</a>
Engine Overdrive	1	2000	<a href="#">Buy</a>

[Cancel](#)

Money: 5343068

### Buy Weapon

### Sector S-2-6

Weapon	Ammo	Price	Buy
Tractor Beam	Inf	700	<a href="#">Buy</a>
Needle Torpedo	20	100	<a href="#">Buy</a>
LBSS Stealth System	1	1200	<a href="#">Buy</a>
Shield Bubble	1	1000	<a href="#">Buy</a>
Energy Cell	2	1000	<a href="#">Buy</a>
Teleport Disc	3	500	<a href="#">Buy</a>
Holographic Disguise	1	2000	<a href="#">Buy</a>
Rapid Shield Recharger	1	600	<a href="#">Buy</a>
LASS Stealth System	1	3400	<a href="#">Buy</a>
Performance Inhibitor Combo Beam	Inf	700	<a href="#">Buy</a>
Inverse Gravity Field Generator	1	1000	<a href="#">Buy</a>
Field Hopper	Inf	900	<a href="#">Buy</a>
Reverse Power Thrust	Inf	200	<a href="#">Buy</a>
Engine Overdrive	1	2000	<a href="#">Buy</a>

[Cancel](#)

Money: 1879073

Utility Equipment for humans and aliens. These were useful items like a couple levels of cloaking devices, some short range teleporter stuff, shield rechargers, tractor beams, forward and reverse thrusters.

## Buy Weapon

## Sector S-10-4

Weapon	Ammo	Price	Buy
HE Proximity Mine	8	500	Buy
Electro Mine	20	300	Buy
Thunder Bolt Mine	2	2500	Buy
Stealth Mine	5	700	Buy
XHE Time Mine	7	500	Buy
Electro Magnetic Pulse Bomb	10	500	Buy
Gravity Mine	5	1400	Buy
Micro Photon Compression Bomb	1	4000	Buy
Heat Seeking Mine	5	1500	Buy

S-10-4

Cancel

Money: 5337943

## Buy Weapon

## Sector S-2-6

Weapon	Ammo	Price	Buy
HE Proximity Mine	8	500	Buy
Thunder Bolt Mine	2	2500	Buy
Stealth Mine	5	700	Buy
Plasma Mine	Inf	600	Buy
XHE Time Mine	7	500	Buy
Electro Magnetic Pulse Bomb	10	500	Buy
Gravity Mine	5	1400	Buy
Micro Photon Compression Bomb	1	4000	Buy
Heat Seeking Mine	5	1500	Buy

S-2-6

Cancel

Money: 1873948

The selection of mines for humans and aliens - the thunderbolt/electro mines shoot a beam to nearby ships until they are exhausted, the proximity mines work as you'd expect, stealth mines are represented only with a black outline to make them harder to see. Heat seeking mines move towards nearby ships - gravity mines pull ships in - micro photon bombs are high damage timed explosives suitable for base raiding (drop one onto the defense turret and run). EMP (electromagnetic pulse) weapons disable ships for anywhere from 2-20 seconds based upon proximity or strength of the weapon. This is represented by a loss of control over your ship which just spins around while a timer counts down to you regaining control.

## Buy Weapon

## Sector S-10-4

### Weapon

Electrostatic Field Disruptor  
Thunder Bolt  
Damage Bubble  
EMP Blast  
Proximity Blaster

### Ammo

<input type="radio"/>	Inf	<a href="#">Info</a>	500	<a href="#">Buy</a>
<input type="radio"/>	1	<a href="#">Info</a>	6100	<a href="#">Buy</a>
<input checked="" type="radio"/>	1	<a href="#">Info</a>	1000	<a href="#">Buy</a>
<input type="radio"/>	Inf	<a href="#">Info</a>	2750	<a href="#">Buy</a>
<input type="radio"/>	3	<a href="#">Info</a>	1000	<a href="#">Buy</a>

Money: 5342443

[Cancel](#)

## Buy Weapon

## Sector S-2-6

### Weapon

Electrostatic Field Disruptor  
Thunder Bolt  
Damage Bubble  
EMP Blast  
Proximity Blaster

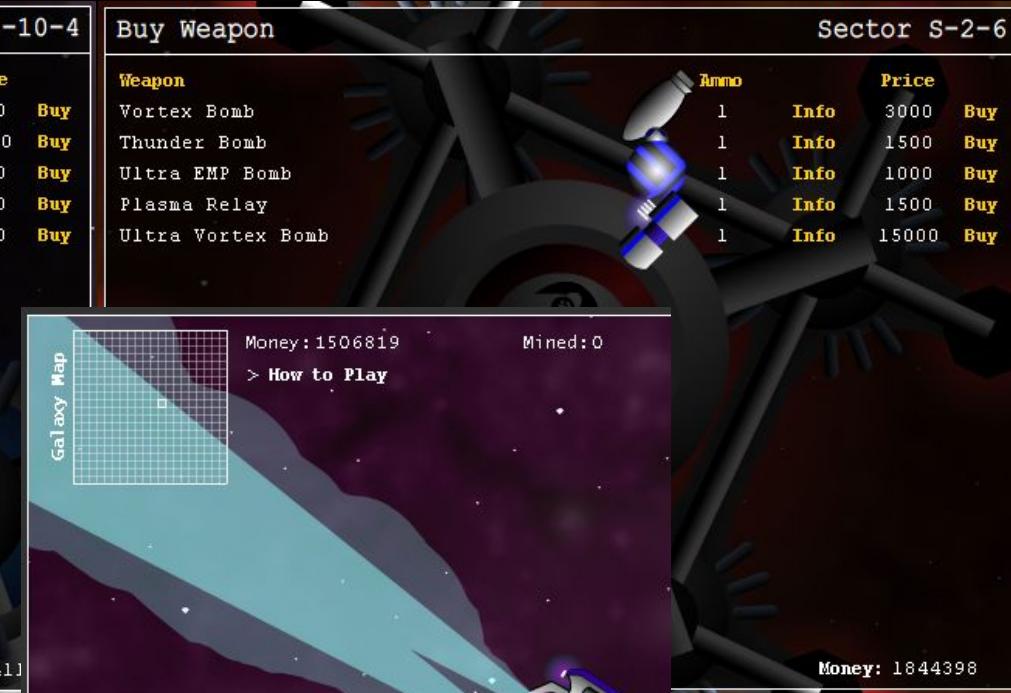
### Ammo

<input type="radio"/>	Inf	<a href="#">Info</a>	500	<a href="#">Buy</a>
<input type="radio"/>	1	<a href="#">Info</a>	6100	<a href="#">Buy</a>
<input checked="" type="radio"/>	1	<a href="#">Info</a>	1000	<a href="#">Buy</a>
<input type="radio"/>	Inf	<a href="#">Info</a>	2750	<a href="#">Buy</a>
<input type="radio"/>	3	<a href="#">Info</a>	1000	<a href="#">Buy</a>

Money: 1873323

[Cancel](#)

Proximity weapons are the same between the two races, and produce a bubble around the ship that either has and EMP effect, lightning bolts to nearby ships, straight damage, etc. Cargo-oriented ships usually have the most of these slots.



The large weapon dialog - these are purchased as single units of ammo and have to be bought again for each use. Oftentimes, they will be sector-wide effects that hit everyone playing in a multiplayer sector or all NPCs in a single player sector. As an example, the inset image is an alien enforcer using a plasma relay.

Aquanox 2 (2003) - never played this, but I'm very fond of how the minimap is shown, as part of the heads up display on the player's submarine. Basically a limited space sim.





Ship interiors were represented as images of what you would see in each room, with sections of the image clickable to talk to a particular character or move to another section of the ship. This part of the game showed some point-and-click adventure game influence, it was pretty cool. Hard to represent with still images.

