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I've had an interest in architecture longer than CS, and I built paper cities as a child.

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**Dante Tam, UC Berkeley**  
**dantetam.github.io**  
**dante.tam1@gmail.com**

# BIO

Software architect, designer, and college student for fun. My imagination spans through grand strategy games, universe-wide interstellar space empires, and beautiful hand-made and computer generated worlds. I strive to be a well-balanced polymath experienced in subjects ranging from design to computer science to scientific literature, and my intense desire to create and build shines through my extensive software portfolio (<http://dantetam.github.io>).

I design intricate game systems and immersive worlds from scratch. All fields of computer science from artificial intelligence to computer graphics, I use to advance video games as an educational, communicative art form. I seek to understand and perfect the systems that give rise to the beautiful intricacies and curiosities of the worlds we live in — the physical as well as the virtual.

To see the worlds I've imagined, visit <http://dantetam.github.io> or continue reading this design book.

# Dante Tam

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datam@berkeley.edu

dantetam.github.io

## EDUCATION

### University of California, Berkeley

- BA in Computer Science

Aug 2015 – Planned May 2018

## RESEARCH

### UC Berkeley, Computer Science

- Graphics Researcher

- Project: Study of Efficient Embedded OpenGL Multitextured Rendering
- Research areas: Computer graphics, 3D modeling, computational geometry

Jun 2016 – Present

## PROJECTS

### Opstrykon, San Francisco, California

- Produce real-time HD graphics on embedded devices (phones) with OpenGL ES
- Interface between OpenGL API and game representation
- Render hundreds of textured, shaded shapes through efficient interleaved vertex buffers, multitexturing, and GLSL shaders
- Implement game features such as hex tiles, diplomacy between players, AI players, etc.

Jun 2016 – Present

### Civilization, San Francisco, California

- Immersive 4X turn-based strategy game in 3D graphics
- Designed extensive game engine architecture in Java and OpenGL (25K lines/sloc)
- Randomized worlds, technology tree, AI competitors, turn-based play
- Created and generated 3D models rendered with GLSL shaders/OpenGL (LWJGL)

Sep 2014 – Jun 2016

## WORK

## EXPERIENCE

### IndyBo, San Francisco, California

- Game Designer

- Helped create an intuitive visual programming language for use in modular robots as well as a virtual game written in Unity with C#
- Design fun, educational games that leverage the visual programming environment
- Introduce kids early to CS concepts and programming

May 2015 – Aug 2015

### East Mission Initiatives, San Francisco, California

- Lab Assistant

- Managed the Hacker Lab, for students to hack on their own projects, supported by MissionBit classes in Ruby/JS/HTML5
- Provide technical expertise and help in projects in Java, JavaScript, Ruby
- Encourage K-12 students to pursue computer science education as well as outside projects

Jan 2015 – May 2015

### Roblox, San Mateo, California

- Studio Intern

- Supported the platform, a 3D sandbox and programming environment aimed towards teenagers
- Worked on ROBLOX Studio, a game development tool, and pushed 3D models to the website
- Developed my own projects in the platform and learned the essentials of massive, intricate software development

Jun 2013 – Aug 2013

## COURSES

- CS61B (Data Structures), CS61C (Machine Structures)

- CS184 (Computer Graphics), CS188 (Artificial Intelligence)

- Math 53 (Multivariable Calculus), Math 54 (Linear Algebra), CS 70 (Discrete Math)

## TECHNOLOGY SUMMARY

- Java (LWJGL, Android), Lua (ROBLOX platform),

- C++ (OpenGL), C# (Unity), Ruby (Ruby on Rails and Sinatra), Python, Git

# Stella

A sweet, language-aware AI.  
[dantetam.github.io/stella.html](http://dantetam.github.io/stella.html)

Stella is a JS client that parses natural language and connects to algorithms and APIs to achieve her tasks. She builds a network of words and their meanings and usages to determine the correct action. Her skills range from data mining to summarization to scheduling to research.

Stella is built with d3.js, Bootstrap, jQuery, and HTML5. She parses the WordNet dictionary and a few auxiliary dictionaries. She relies on Google APIs, the MediaWiki Wikipedia API, FB APIs, and much more.

Dante Tam, UC Berkeley  
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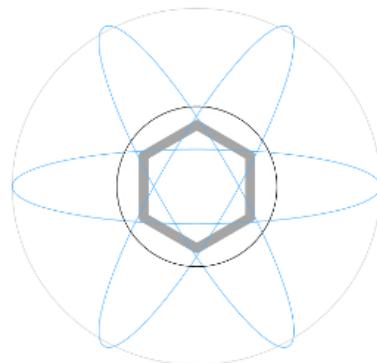
Stella uses special learning algorithms to understand the intricacy of language and the energy of words. Among these are likelihood weighting to calculate the potential meaning of words within their contexts, and TextRank, a text-based analogue of PageRank, which measures the similarity and connectedness of sentences.

**Hi, I'm Stella! I'm Dante's personal assistant.**



```
>> CREATE_KERNEL
>> $ INTEGRATE_WORDNET
>> $ INTEGRATE_SOCIAL_MEDIA
>> $ MINE_DATA
>> $# DIPLOMATIC_REQUEST_01

>> $?
'Call me Dante Tam'
>> $#
Nice to meet you, Dante Tam!
>> $?
'Send an email to...with subject...'
>> $#
TASK_EMAIL
>> $?
'Research machine learning'
>> $#
TASK_RESEARCH, TASK_DEFINE
```



# Serenine

4X sci-fi grand strategy.

dantetam.github.io/serenine.html

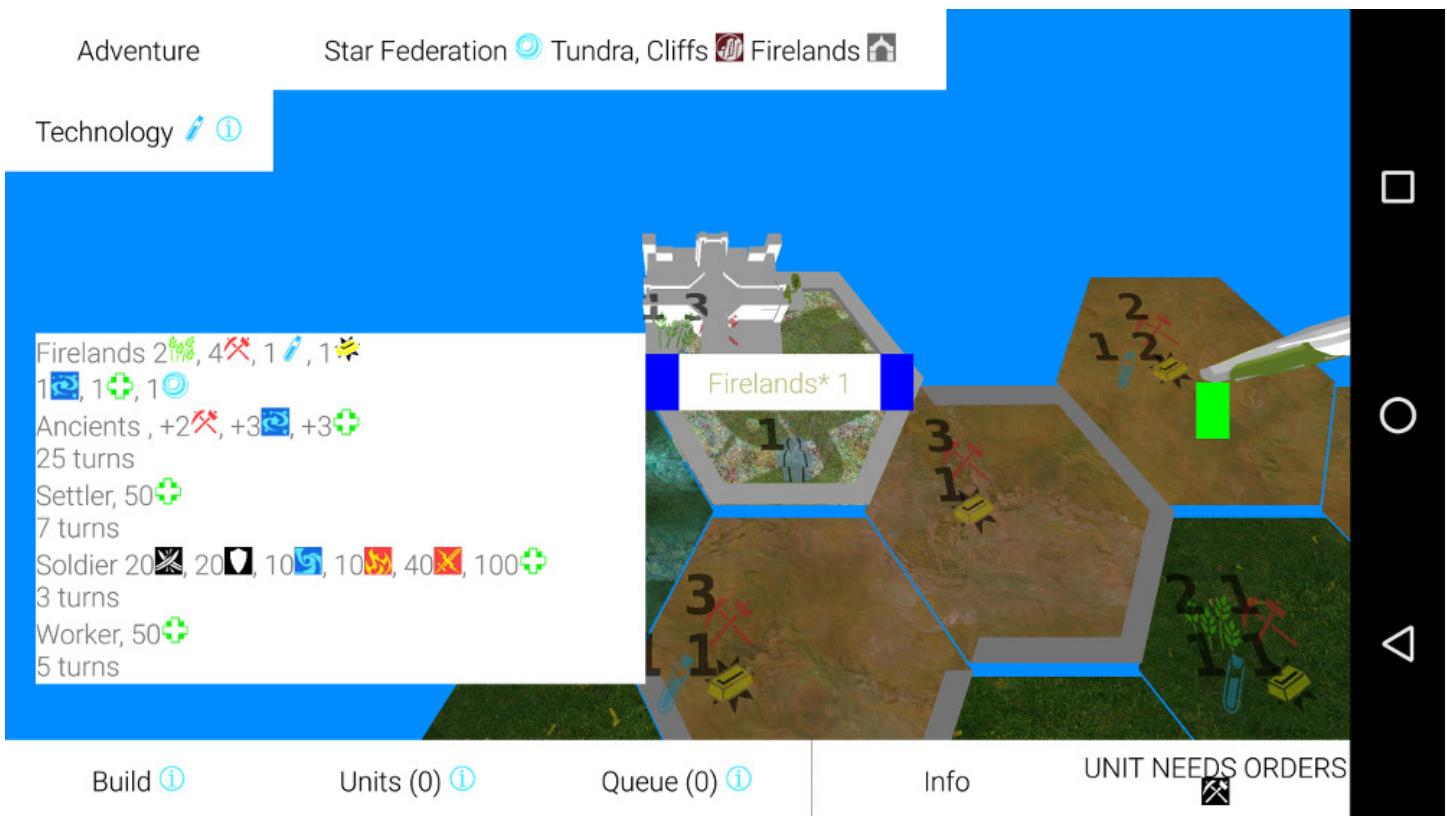
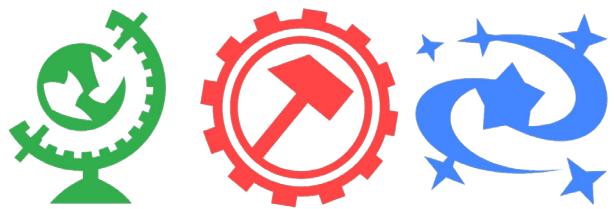
Dante Tam, UC Berkeley

dantetam.github.io

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This intricate strategy game explores the conflicts between new interstellar empires fighting over dominance of the newly found exoplanet, Serenine. Many nations and corporations and collectives fight for its control and its people.

Entirely built in Android OpenGL ES and Java with full, accelerated 3D graphics, the game app uses embedded technology to create and render the immersive, computer generated world.



Game mechanics are built off of 4X — exploration and expansion. Players and AI control cities which produce buildings and units, while the units move across the world and fight, build, and expand territory.

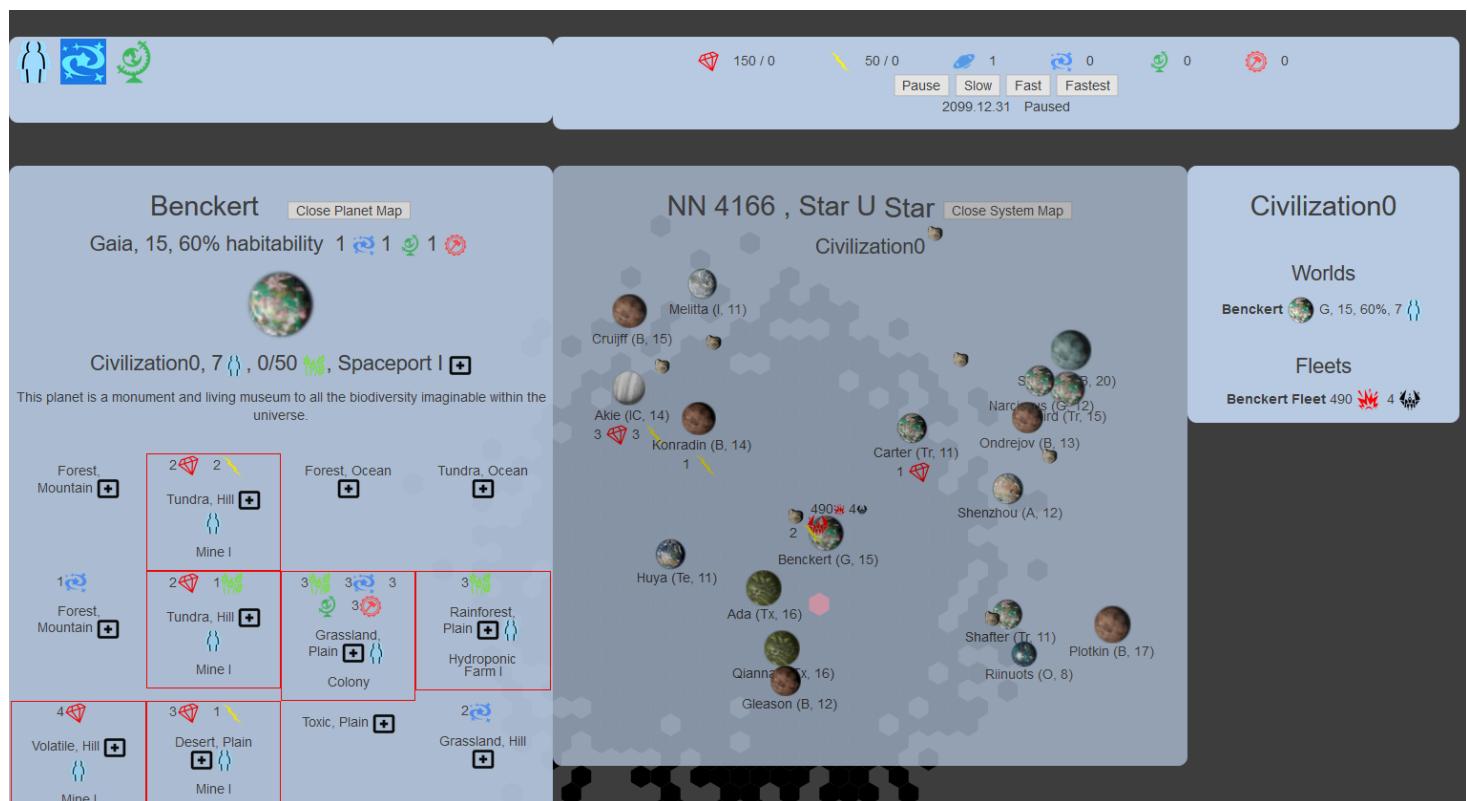
Every nation researches technology in a tech tree to unlock new potential. Lots of stats to minimize and maximize in balancing the economy, the warmachine, and scientific progress in an interstellar race to victory.

# Aurigae

Interstellar sci-fi grand strategy simulation.  
[dantetam.github.io/aurigae.html](http://dantetam.github.io/aurigae.html)

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This game allows the user to rule over an interstellar empire across many different systems and planets. Each planet has resources which can be used to improve the economy or build more ships. Research also allows for more technology.



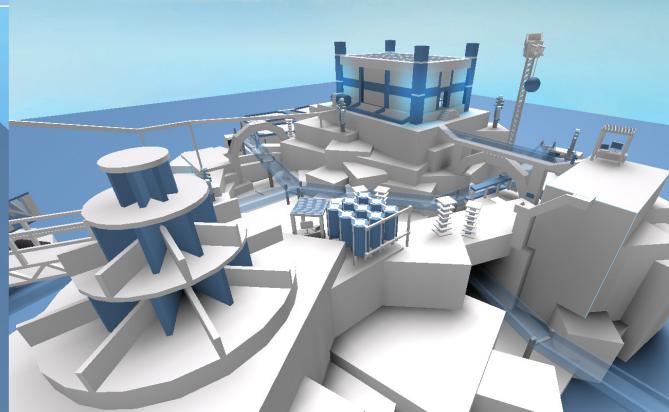
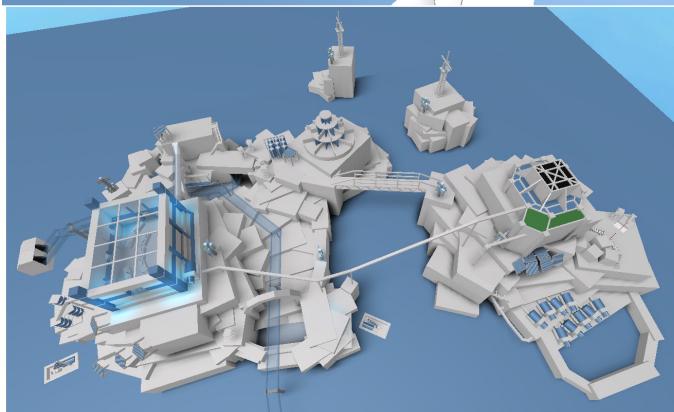
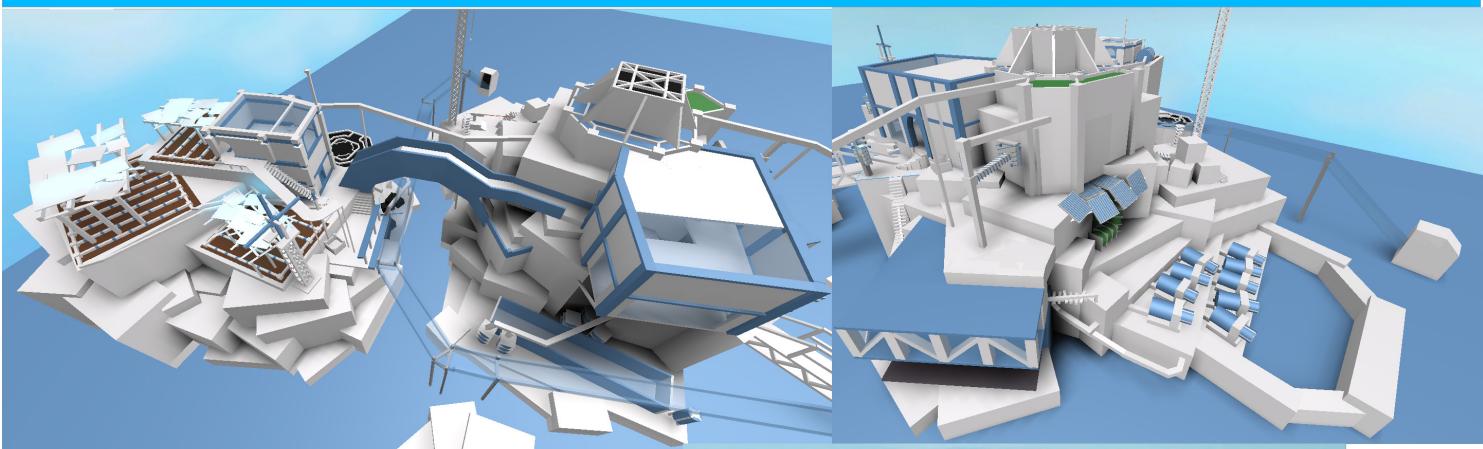
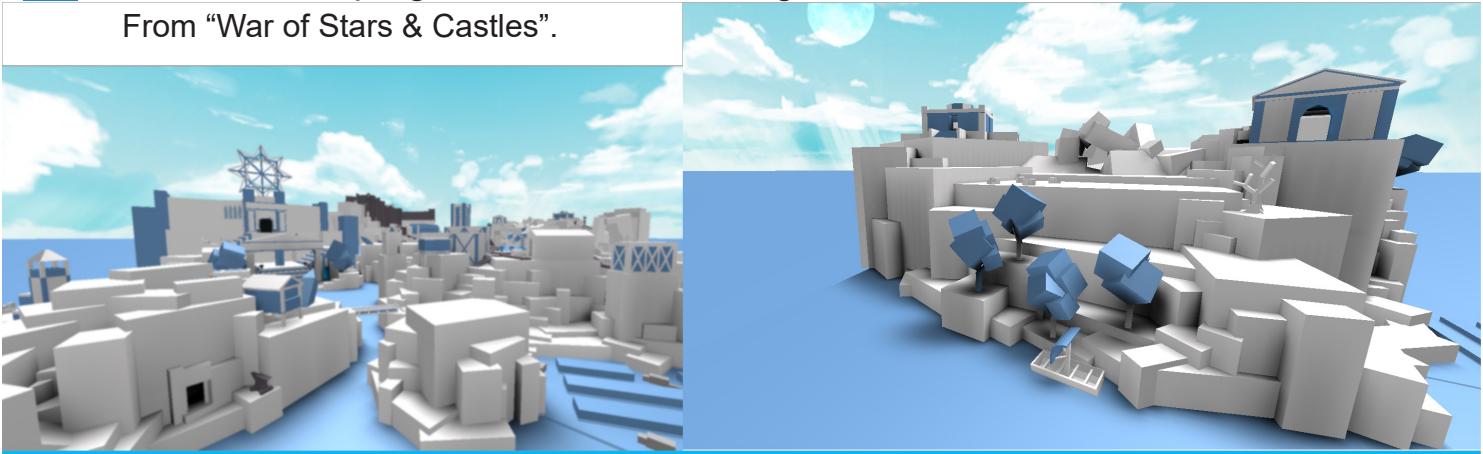
Aurigae is the result of d3.js data visualization experiments. It's a project in interactive JS as well as showing lots of data clearly and beautifully. It also uses data such as physical star data and names to generate universes. It has game mechanics revolving around interstellar imperial economies and space fleets.



# 3D Modeling

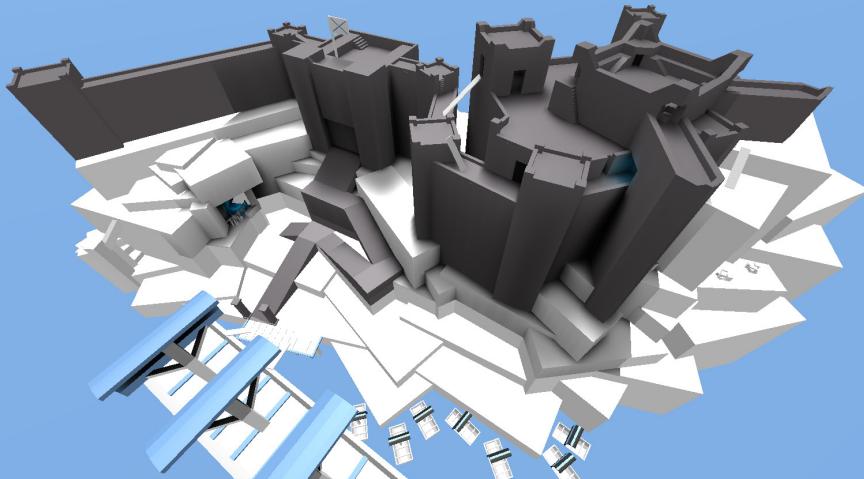
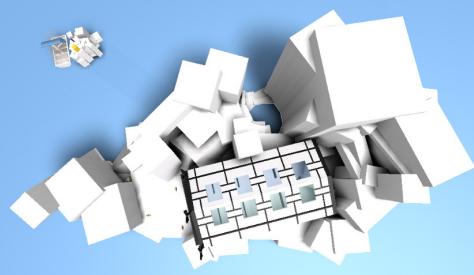
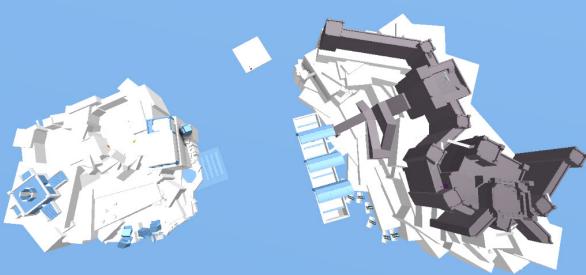
From my time and internship and other dealings with ROBLOX, a virtual 3D game sandbox/physics engine with a scripting language, where I learned how to program, and how to design.

From "War of Stars & Castles".



From "Vision 2028". A Maker Faire project (24 hours total work) exhibiting future sci-fi technologies and society.

Among the depicted technologies: commercial maglev, sewage energy/processing, large-scale drip polyculture, and unconventional architecture.



From “War of Stars and Castles”, an RPG with combat and levelling and an inventory system. Competing nations rule over this icy archipelago. Wars continue between the sovereign nations.

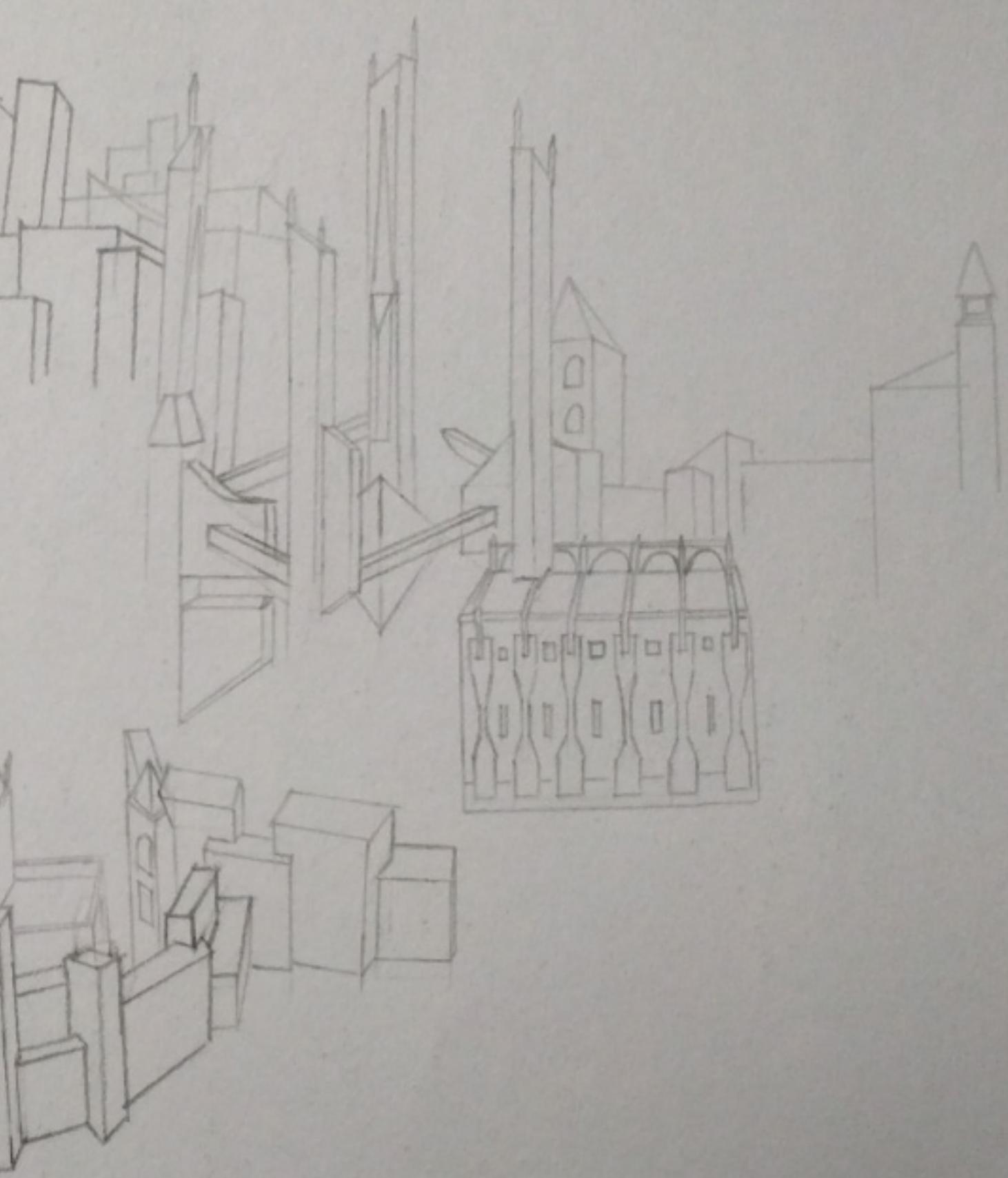
This is where the white and light blue and black color scheme originated. It gives a serene, contrasting look. Most notably, the game Watch Dogs uses this same scheme in its design of CTOS, an operating system that controls entire cities.

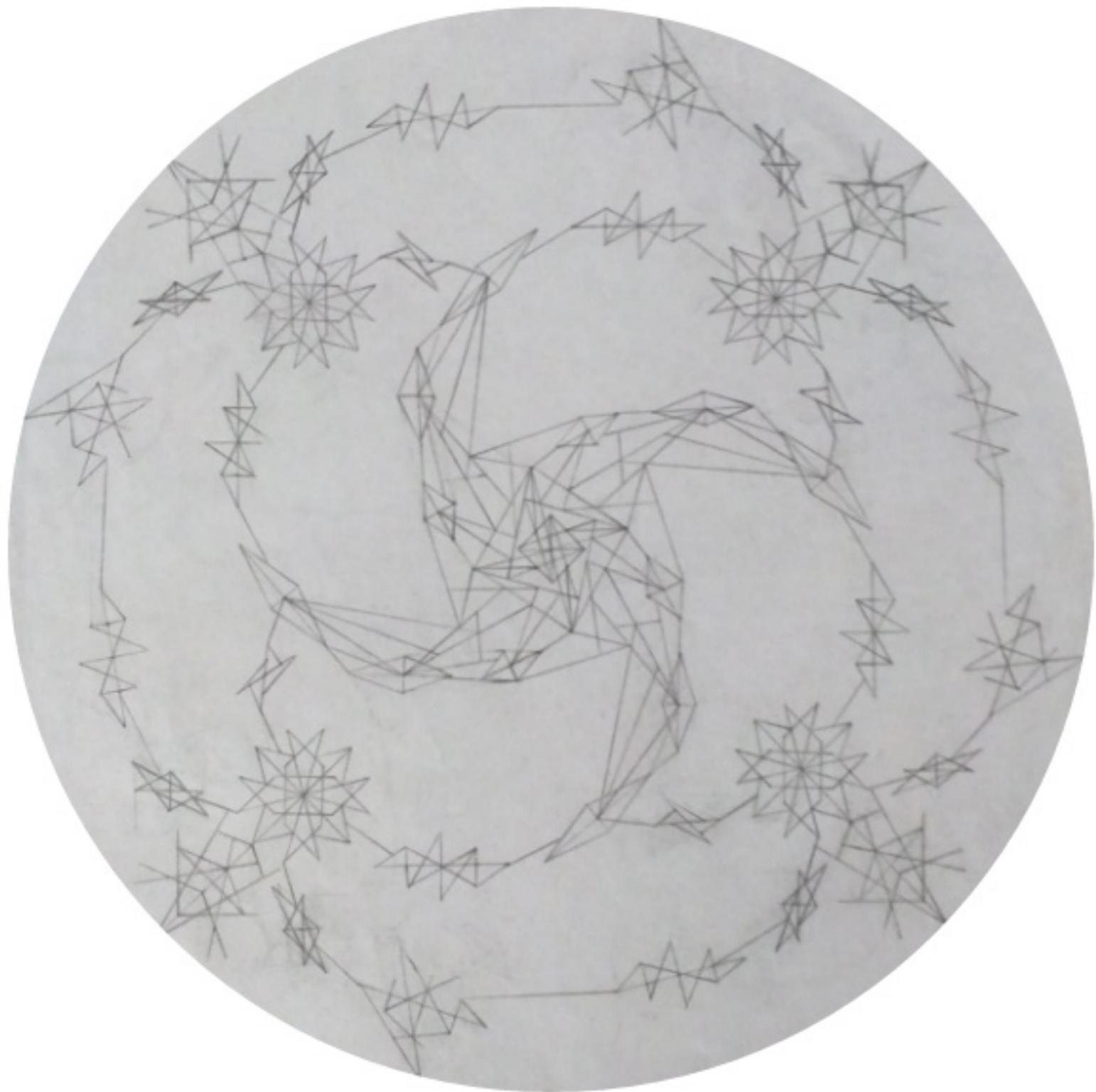


This light blue also conveys peace, cleanliness, and perfection. It's on everything from Facebook to Febreze. It mimics the natural sky color too, keeping people awake.









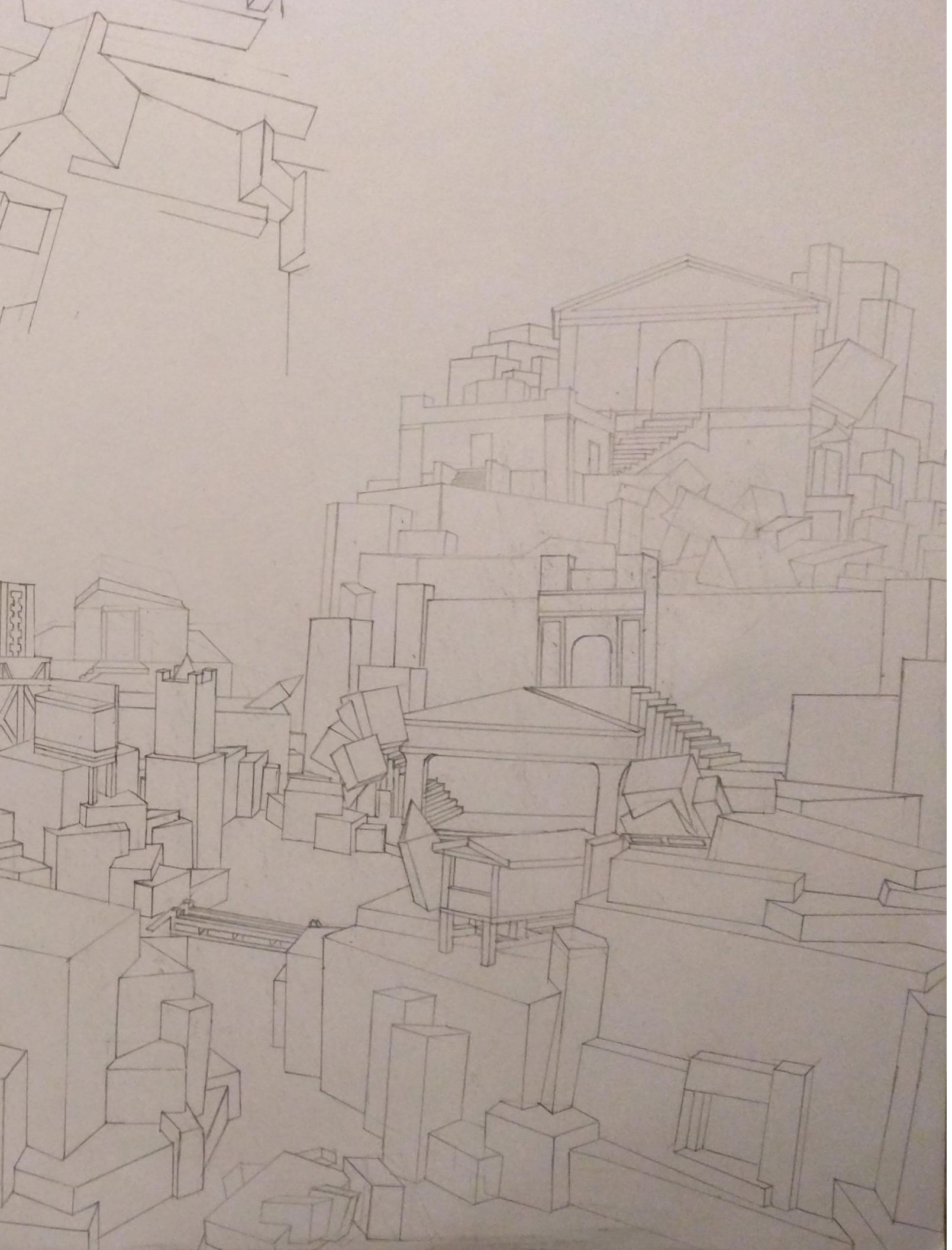
# Technical Drawings

Geometric experiments, fractal displays, and architectural speculation.  
I've had an interest in architecture longer than CS, and I built paper cities as a child.



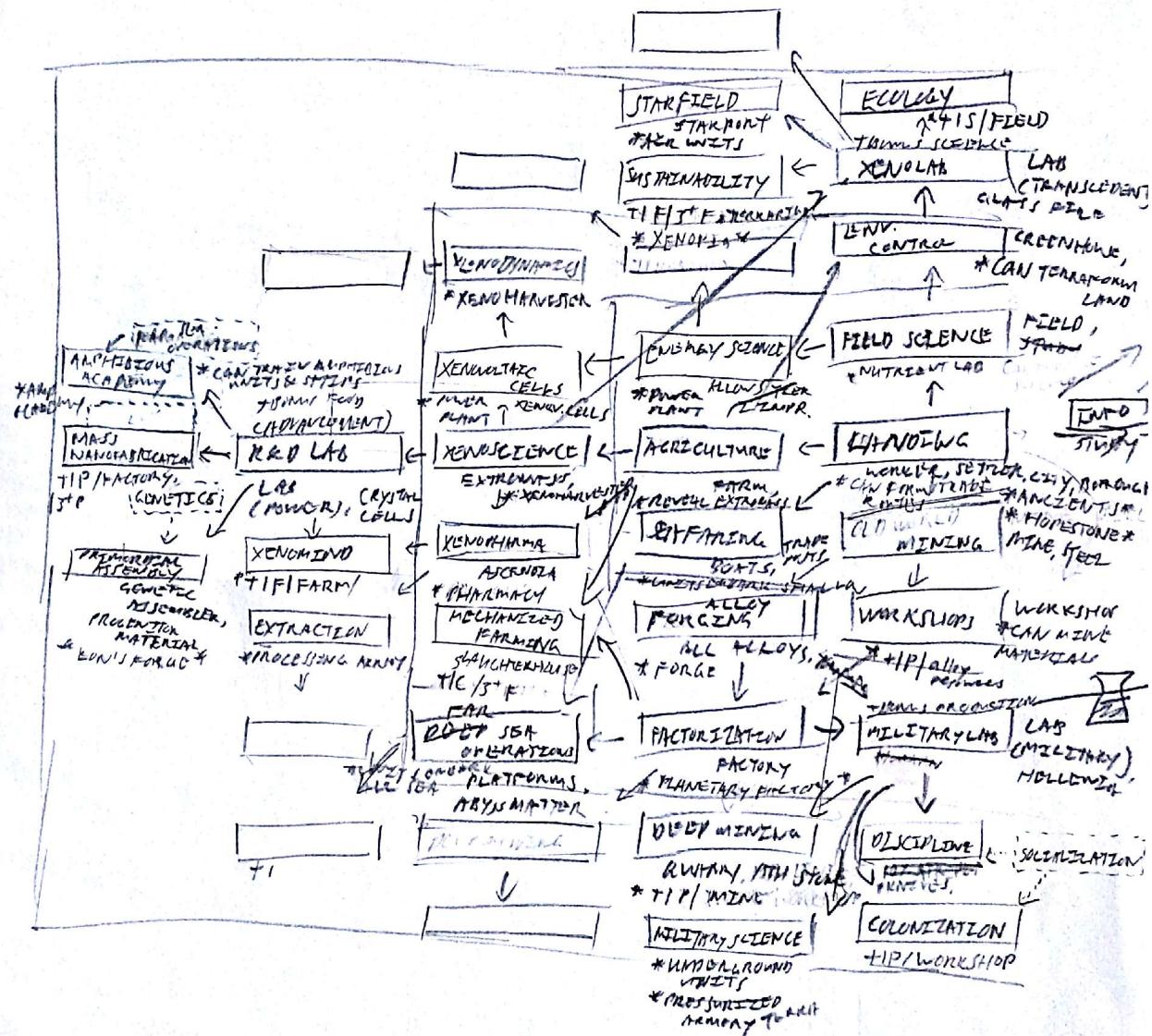
Concept art of one of the islands from “War of Stars and Castles.”





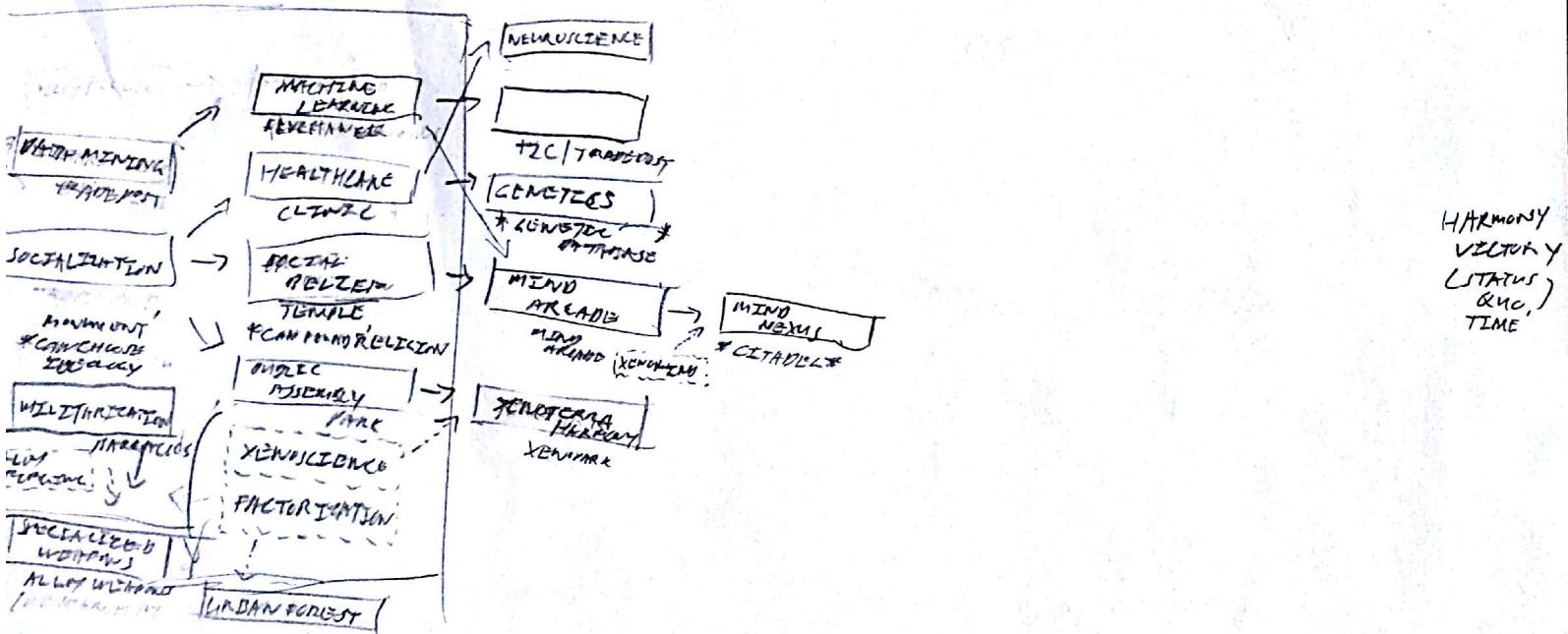
# Game Design

I've experimented with stats and numbers since I was little. I would generate enemies that balanced each other and had unique abilities. Here are some game design documents that reveal how I think about game mechanics.



Here is the main section of the tech tree. The tree, while balanced, pushes players towards different paths to victory. A tech line encourages and shapes its own unique playstyle.

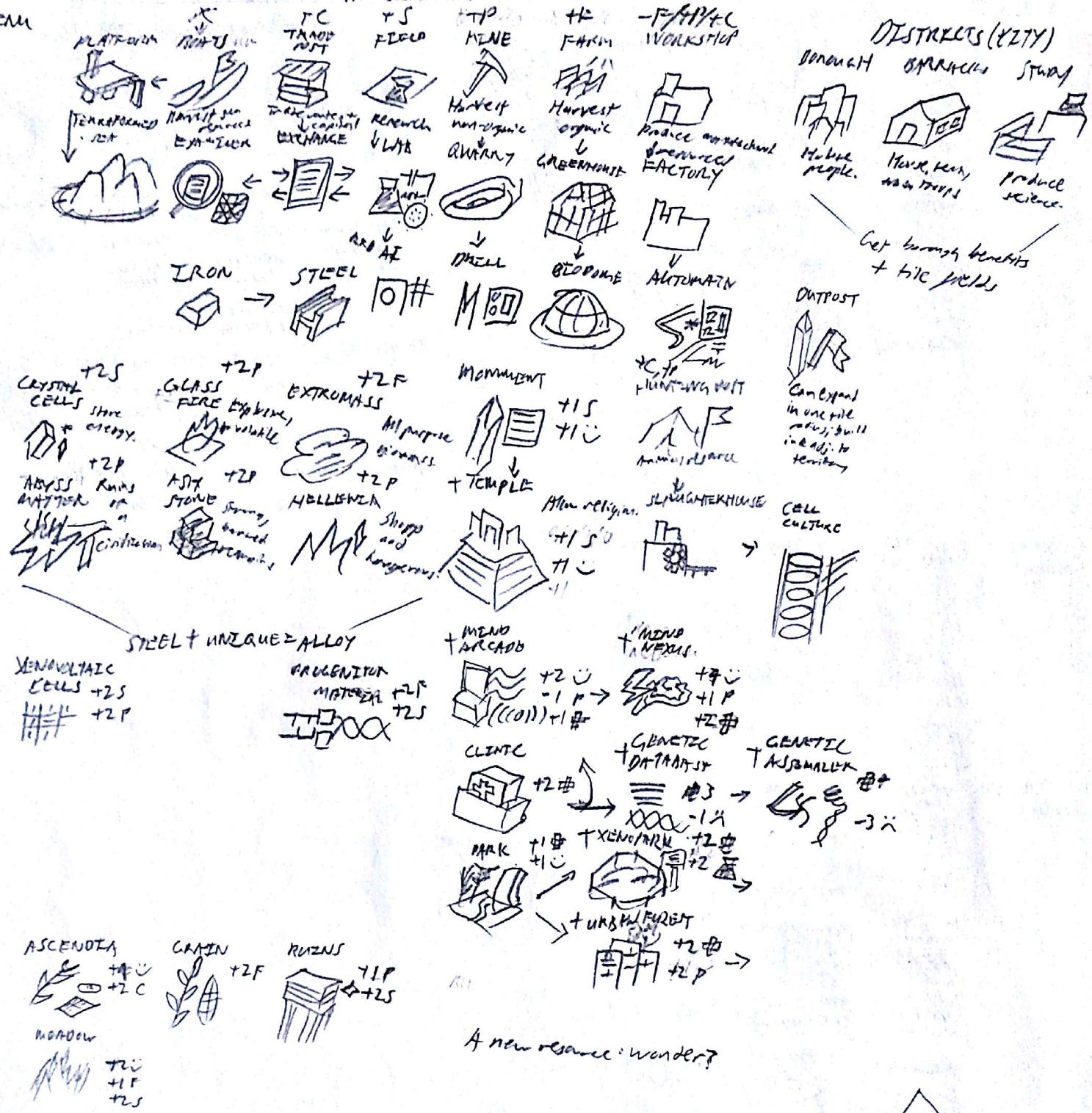
# TECHNOLOGY (TIME VICTORY)



Here is the auxiliary, extra portion of the tree, which is intended to be researched by all four paths.

Ideally, if development went on, this would unlock 'ethics', which give direct bonuses to gameplay strategies like war and trade.

MNEMONIC



Transient Expansion war Roid		Design notes:	
Pirate	--	+	++ ++
Tribe	-	+	++
City-state	++	+	--
Xenofabes	--	++	++ +
Horzoffees	++	++	--

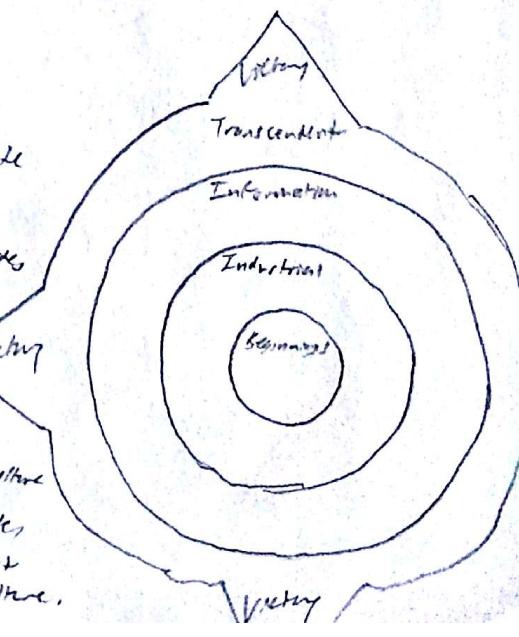
oceans city becomes popular becomes independent along

Technique: Don't let the player update too much! City building gives radiating different colors. Less feels that buildings need regular energy, energy etc. money, building etc. City states can be bought over.

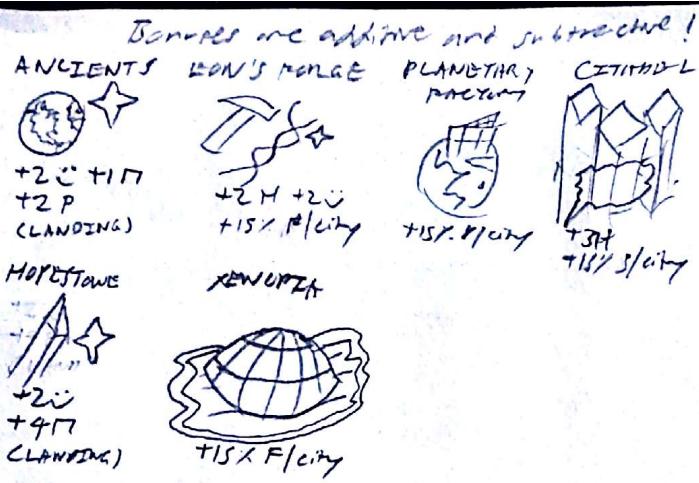
Assimilate: Destroy the tribe, a work its culture

Power: Influence to cities, be split - dependent

Transcendent: Influence in culture, science



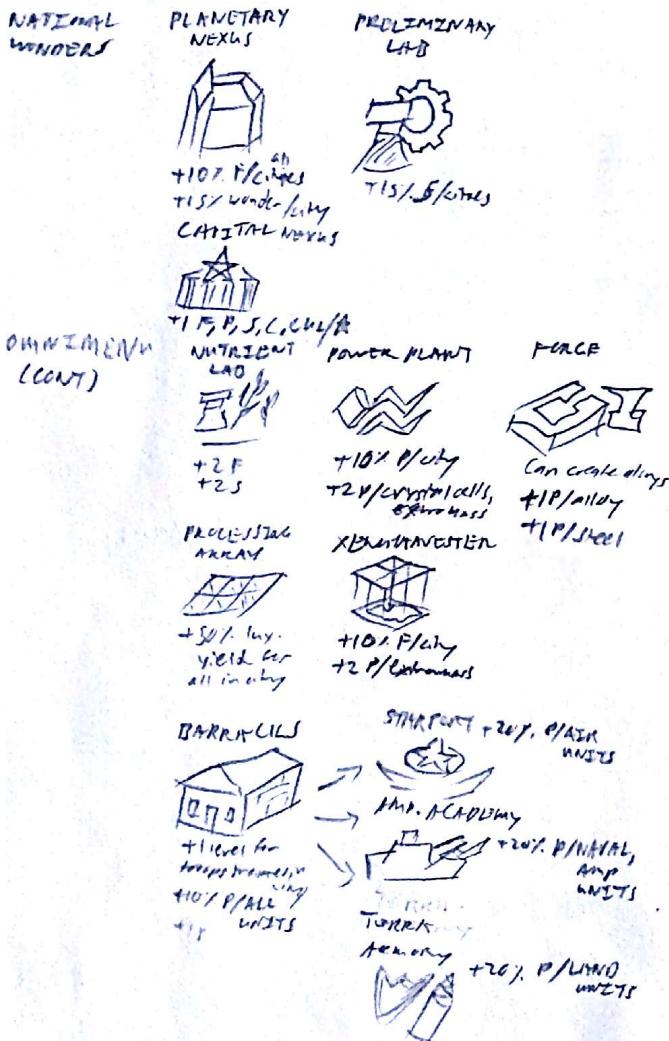
## WONDERS



## GRAND (VICTORY) WONDERS



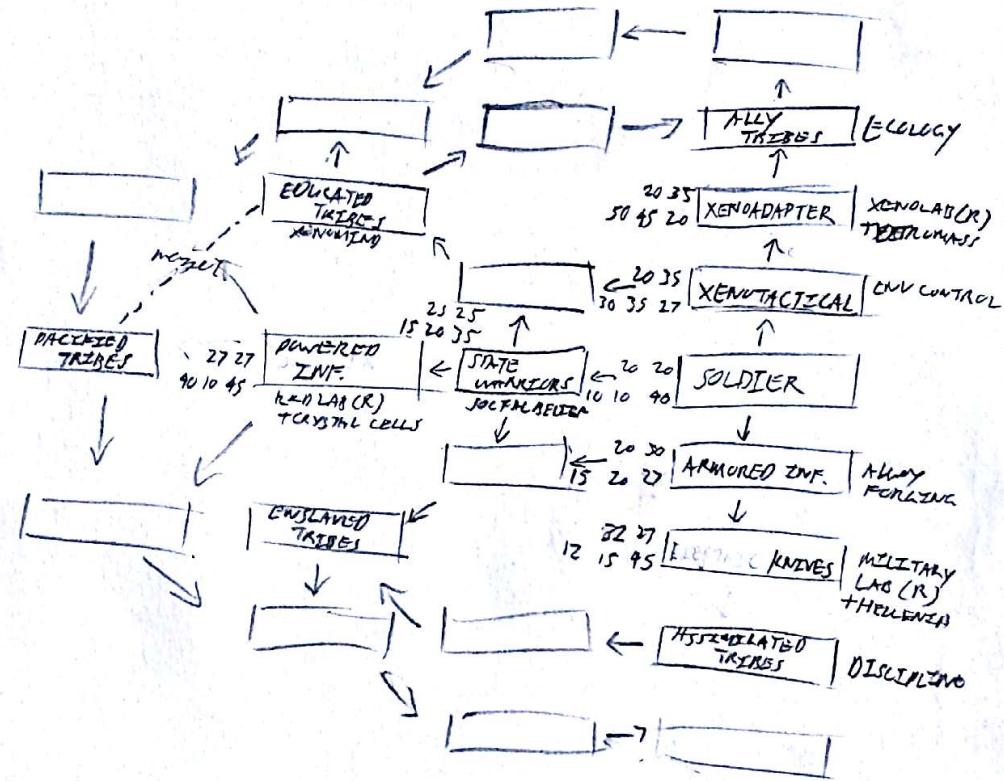
## NATIONAL WONDERS



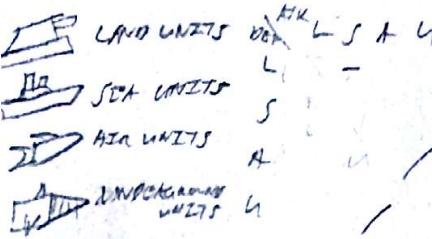
## CULTURAL INFLUENCE

These two pages are the items and buildings list, with some scratch work in the bottom left about gameplay styles and AI flavors (tendencies to do certain actions). Items increase base resource stats like food and production, and some have unique abilities.

Here is the unfinished unit tree, which ideally was to be an ethos-specific path for which units become stronger and more unique over time. Ideally, each unit was not only weak and strong towards others, but also more or less effective in each strategy — offense against defense, for example.



L → S  
↑ ↓  
A u A u

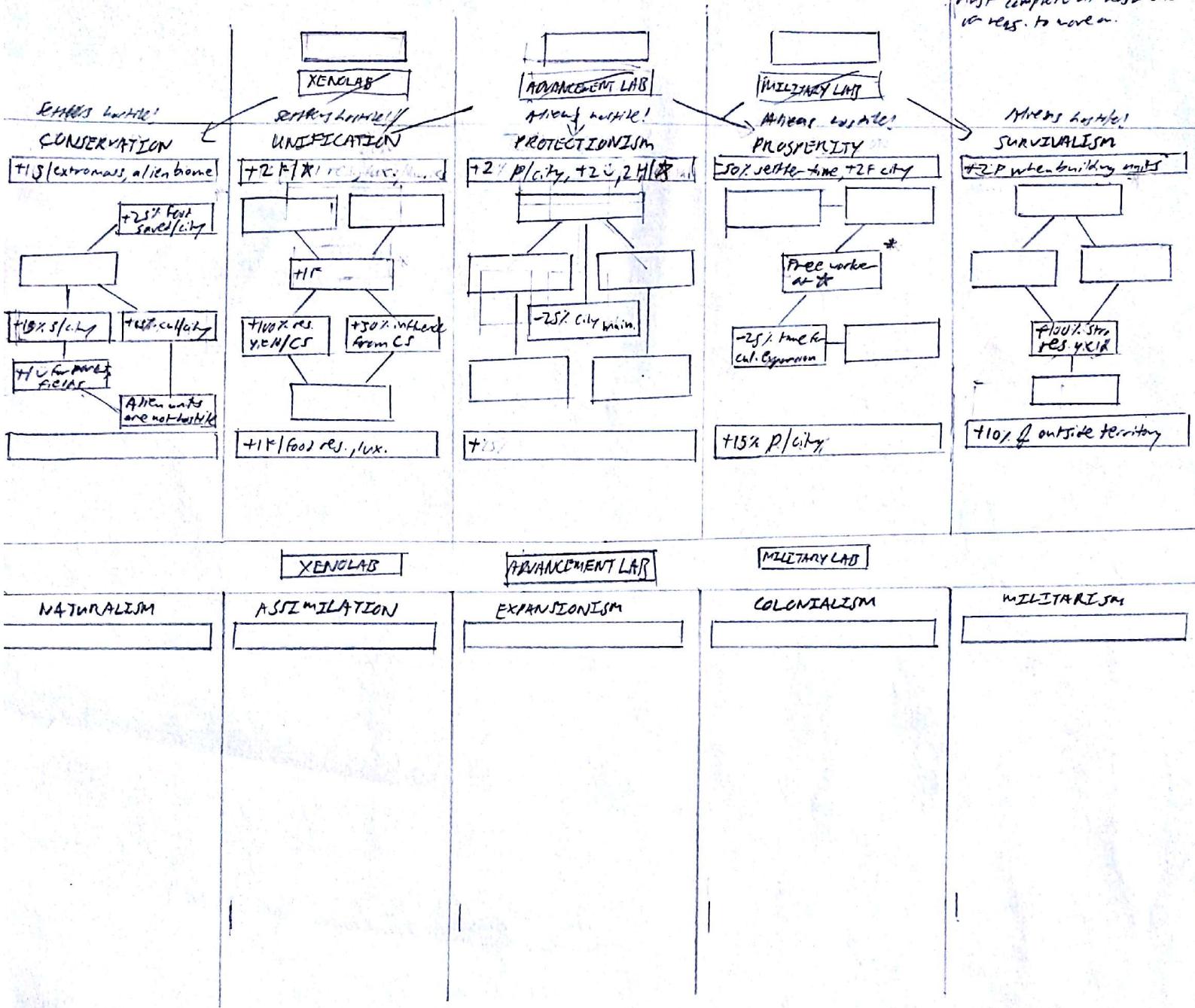


The combat system works as a complex mix of factors. Environmental factors include terrain, biome, and attacker/defender dynamics. Unit factors include their different stats and bonuses.

ASSIMILATION CIVILIZATION

BASE(H/M/HP/HP) COMBAT(M/H/M/H/S)  
H/H/M/H (Health)  
P/M/P (Attack)  
FIRE (Shells)

# CIVICS/POLICIES

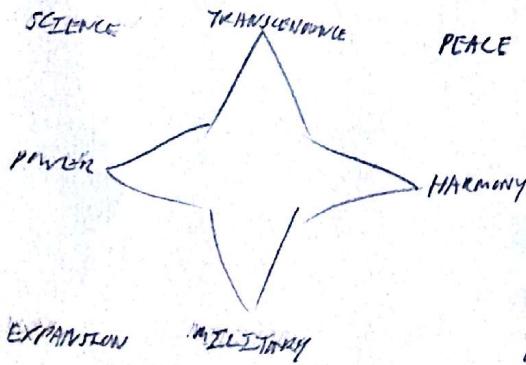


Here is the ethos/civics tree, which is directly influenced from Civ 5. A civilization picks an ethos along with a fitting strategy to achieve victory. These are strong bonuses and meant to thought out in terms of a greater, long-term gameplay style.

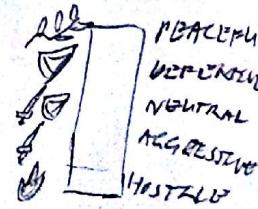
## Factions

FACTION	NAME	AFFINITY (MODIFIERS)	TRANSSENCE	BONUSES/ABILITIES	
				MILITARY	ECONOMY
FOLLOWERS OF THE STARS	CELESTIAL REPUBLIC	PEACE, PROSPERITY	EH	LIGHT IN THE DARKNESS: +20% H NAME, -15% ATK of HORAD, -20% of FOREIGN PRESIDENT:	CONTINENT BONUSES FOR ALL CIVS?
	CELESTIAL PRESIDENT'S REPUBLIC	EXPANSION, SCIENCE	ET	REPUBLICAN COMPROMISE:	
	CELESTIAL EMPIRE	EXPANSION, MILITARISM	ME	CENTRALIZATION: +15% C/city, -15% unit upkeep IMPERIAL EXPANSION: -20% city upkeep	
	STAR REPUBLIC	PEACE, SCIENCE	TH	SECULAR TRADITION: no religion, may have multiple religions, 'blessed'	
	ORDER OF THE STAR	CONVERSION, POWER	TE	DIVINE BURDEN: +1 P when ≥ 3P w/ religion	
	STELLAR KINGDOM	CONVERSION, EXPANSION	ME	FOLLOWERS' LEGACY: can immediately adopt religion STATE RELIGION: can change religion at will	
	ETERNAL NOMADS	SCIENCE, HARMONY	TM	FOREVER ADVENTURING: can move cities at will, exponential city upkeep IN SEARCH OF ANSWERS: +1 S when ≥ 2S, +1 EVENT/city	
	RAIDERS UNDER THE SKY	MILITARY, ECONOMY	A	WE DO NOT SOW: more resources when raiding FOREVER BLEEDING: +25% ATK while raiding, +15% DUCK G, may own city	
	CIVILIZED NOMADS	PROSPERITY, EXPANSION	A	SETTLE DOWN: +10% building speed, -10% unit speed NOMADS NO MORE: +1 P when ≥ 3P, +1 P w/ big steppe/forest	
	ZEALOUS ANIMISTS		TM		
WANDERERS	ECOLOGISTS		HT		
	XENODOLONISTS		TH		
NEW ANARCHISTS					

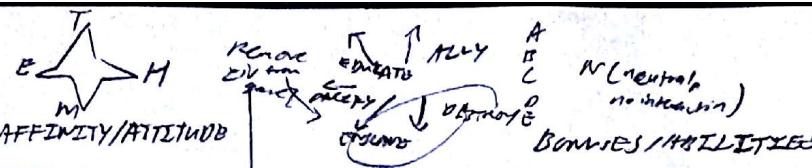
Each civilization you can play as is listed here, along with their AI tendencies. Each civilization also has all positive, unique bonuses that further contribute to play.



Ability to rule: improves cities, units become braver  
may have no cities, still acts as a civ.



# FCTION PROMOTIONS (CITY STATES)



BASIS	NAME	AFFINITY/ATTITUDE	BONUSES/MODIFIERS
SPACE VICTIMES	MASSIVE VICTIMES	HTL	
BC	REBELLIOUS RENEGADES	HTL	
C	PACIFIED PIRATES	E	
N, C	ROUGH RAIDERS	M	
XENOTRISES	SCENE XENOTRISES	TH	
A, D	FIRST PEOPLES	TM	
C	XENORAIDERS	TM	

And finally, city-states. City-states were intended to be a mix of traditional barbarians and minor civilizations. They can be influenced by players, and grow to become their own empire. These city-states often have one-sided, static personalities, so I sought to improve.