

Maddogs

By
Mungo Dakin-Poole

Preface:

My genre of preference in games has always been in the First Person genre. Some of my favourite games are Battlefield 1 (DICE, 2016), Space Marine 2 (Focus, 2024), and Doom Eternal (Bethesda, 2020). In two of those games, you are just another soldier making your way through an endless war. In another pairing of those games, you play as a super soldier whose effect on the battlefield significantly impacts the result of the conflict. As a player, it is an amazing feeling justifiably knowing you are the most powerful one on the battlefield. However, it also puts into perspective the scale of the conflict when you realise you are one of many. I intend to recreate both of those emotions in this game, Maddogs. This project has developed in a brilliantly satisfying way as I have written and composed this Game Design Document. Creating a narrative has been extraordinary fun and composing it to fit this game worked far more seamlessly than expected. I'm sure you will see the many inspirations I've had throughout this GDD.

I hope you enjoy this design script for Maddogs,

Mungo Dakin-Poole

Contents:

<u>Contents:</u>	3	<u>Art and Video:</u>	27
- Contents	3	- Overall Goals	27
<u>Game Concepts:</u>	4	- 2D Art	29
- Introduction	4	- 3D Art & Animation	29
- Background	4	- Cinematics	29
- Description	4	<u>Sound and Music:</u>	30
- Key Features and Unique Selling points	4	- Overall Goals and Score	30
- Genre	6	- Sound Effects	31
- Platform	6	<u>Story:</u>	31
- Personal Concept Art	7	- Immediate Story	31
- AI Concept Art	7	- Overarching Narrative	35
<u>Game Mechanics:</u>	10	- Multiple Endings	36
- Core Gameplay	10	<u>Level Design:</u>	37
- Game Flow	11	- Overall Level Strategy	37
- Characters	12	- Act 1: Counter	37
- Enemy Types	13	- Act 2: Approach	38
- Gameplay Elements	14	- Act 3: Castle	39
- Weapon Properties	16	- Act 4: Tower	40
- Game Physics and Statistics	17	- Puzzles	40
- Player Controls	18	<u>Market Analysis:</u>	41
<u>Artificial Intelligence:</u>	19	- Target Market	41
- Enemy AI	19	- User Experience and Timmy, Johnny and Spike	41
- Enemy AI & Player Combat Interactions	22	- Top Performers	42
- Friendly AI	22	- Top Performers Statistics	42
- AI Summary	22	- Feature Comparison	43
<u>Interface:</u>	23	- Predicted Production Cycle	45
- Flowcharts	23	<u>Bibliography:</u>	47
- Functional Requirements	24	- Bibliography	47
- Mock-up Screens	25		

Game Concept:

Introduction

Maddogs is a First Person experience, designed to be playable on PC. The unnamed and faceless protagonist has the role of a “Mad Dog”, a diseased soldier who rampages through enemy strongholds until nothing remains of either the foe or themselves.

Background

The game of Maddogs holds the potential to be the first in a franchise series, or to be a single one-off game with unique mechanics, world, and story. It will take place on the Unity engine, as ease of use and accessibility currently out-way the graphical fidelity and complexity that Unreal 5 provides (Kevuru Games, 2023). That is because this game relies more on conceptual and distant 2D vistas rather than realistic 3D graphics.

Description

Maddogs places the player immediately in the vision of the protagonist, calmly walking through a war-torn forest toward the frontlines. With nearby soldiers shocked and terrified by the protagonist’s presence, the player is instantly initiated into the world of Maddogs through this unique perspective. The player’s job is to clear and defeat strongholds of the violent and warlike species known as the Denür, a humanoid/orc like people, who operate purely for the joy of destruction. They are sophisticated and incredible craftsmen, with a developed culture. They wage a forever war with Humanity every winter season. Maddogs are required to eliminate their presence off human lands before each summer.

Key Features and Unique Selling Points

- *Maddogs’ World:*

This is a unique and gritty setting with plenty of potential to expand and adapt. It mixes dark comedy with the brutal reality of a land where happiness and peace are foreign concepts. War and loss are the only constants. The story and narrative aim to create the same emotions we would find in our peaceful world, but with the opposite parameters of this fictional chaotic world.

- *Episodic Deaths:*

This is refreshing take on a death mechanic. When the player loses all their health, instead of dying and respawning they instead have an ‘*episode*’. The protagonist’s eyes roll back in their head, and they lose consciousness. A couple seconds later it is regained; The player stands at the end of the room looking towards their next route. However, if the player turns behind them, all enemies in room they had the episode in, are now slaughtered on the floor. The player only has a limited number of episodes before the protagonist has a heart attack and dies (3-10 depending on difficulty). Once dead, the player is reset to the start of the act or chapter (depending on save chosen preference). This ensures the player is kept immersed in the game for as long as possible. As the game continues this

becomes a controllable element for the player in a format similar to rage mechanic seen in many games such as God of War (Sony Interactive, 2018), where the player has increased health and damage output. This will be managed to specifically avoid any cheese methods, especially with Bosses.

However, this mechanic can detract from the challenge the player is expecting. They could feel they have been cheated out of a fight because of a stupid mistake or from a random and unlucky event. To avoid this, rooms that have been cleared from an *'episode'* begin to refill with the exact same enemies 20 – 40 seconds after the player regains consciousness. This allows the player to immediately reattempt the section. At of course the risk of death again.

- ***Simple Melee Gameplay Loop:***

The simple progression and narrative that the player undergoes throughout the game is not meant to include vast skill trees or an extensive collection of weapons. It is designed to bring satisfaction, ego, and adrenaline through an incredibly simple system. This system is melee-focused instead of the ranged combat most other games utilize in the 'Boomer Shooter' genre. However, like Boomer Shooters, where melee is a secondary component, firearms will be in Maddogs. The system the player is given at the start of the game is no different at the end of the game. This requires the game to provide more interesting and interactive combat situations, rather than new abilities for the player. As the game progresses, the skill and ability of the player should improve exponentially towards a vast skill ceiling.

- ***Art Style:***

The goal of the art style and graphical quality is to be new and unique. Something that looks iconic and recognizable, not just to separate this small indie game from other titles in the genre, but also to help with the atmosphere and setting of the game. It experiments with a low resolution pixelated filter with detailed 3D models and textures.

- ***Sound Design:***

Many games within this genre often use adrenaline-inducing music genres, such as heavy metal, rock, techno, etc. In Maddogs the intention for the player is to build adrenaline and paranoia gradually throughout the game. This will be done with a different approach of slow pessimistic orchestral music focusing on the fact the player knows they are probably going to die. They simply don't know when or if they may somehow actually survive.

- ***Difficulty:***

Difficulty will split into 4 levels: Easy, Normal, Hard, Maddog. These difficulties will have a clear difference in the amount of 'Episodes' the Player can have before death, and if they respawn at each Act or Chapter. The player should find it quite difficult to perma-die when playing Normal mode. At this difficulty, combat events are not designed to kill the player, but prove to be a longer task to defeat and clear. Normal mode will be structured to keep the player in near constant immersion. Frequent deaths and resets often remove that immersion, whereas the risk of perma-death amplifies it (Ruddy, 2014). Easy and Hard will not change the core experience, simply give enemies more/less health and damage. They will also alter the number of 'episodes' before perma-death, and

the save preference of the player. Maddog difficulty will change how the game is played. It includes a scoreboard at the end screen, and enemies at the start of the game will act like enemies you would normally fight at the end of the game. The purpose of Maddog difficulty is to be for speed-runners, and for people who want to prove they have mastered Maddogs. They prove themselves, by obtaining the highest final score possible (Wohlfarth and Samtani, 2023).

This difficulty system will possibly include more variables than the vast majority of games, and actively encourages speed-runners. This system would set it apart from other titles within the genre, who use a simpler system that alters the aggression and health/damage parameters of enemies. In Maddogs, the difficulty alters the type of game you play, and the risk of being reset several hours back in time after death.

- ***Variable Boss fights:***

As the player defeats each boss in acts 2 and 3, the result of each fight will change the parameters for the next boss fight as well. This can change depending on whether the player successfully kills, wounds or only defeats a boss without any significant victory. The outcome of this process and whether the player defeats all obstacles they encounter will determine subtle but noticeable changes to the ending of the game in the final scene.

- ***Scoreboard***

Maddogs will actively encourage players to achieve the highest score possible throughout the game. The score will take into account kills, time, achievements, secrets and skill. It will be a detailed and complicated score system, that will determine the best players of the game. This is strategy to encourage re-playability (Wohlfarth and Samtani, 2023).

Genre

Maddogs lies between First Person Shooter, Hack & Slash and Boomer Shooter. It is a blend of these three genres and takes inspiration from many different games. Its melee system is inspired from many first person hack and slash games, whilst its structure and art style is similar to that of a classic Boomer Shooter. This is then brought seamlessly together by a narrative and setting unfamiliar to each genre, somewhere between fantasy and steampunk, without completely becoming either.

Platform

Maddogs aims to initially release on PC, with potential ports to both Xbox Series X/S (Microsoft, 2021) and PlayStation 5 (Sony, 2020), depending on the game's success.

Personal Concept Art

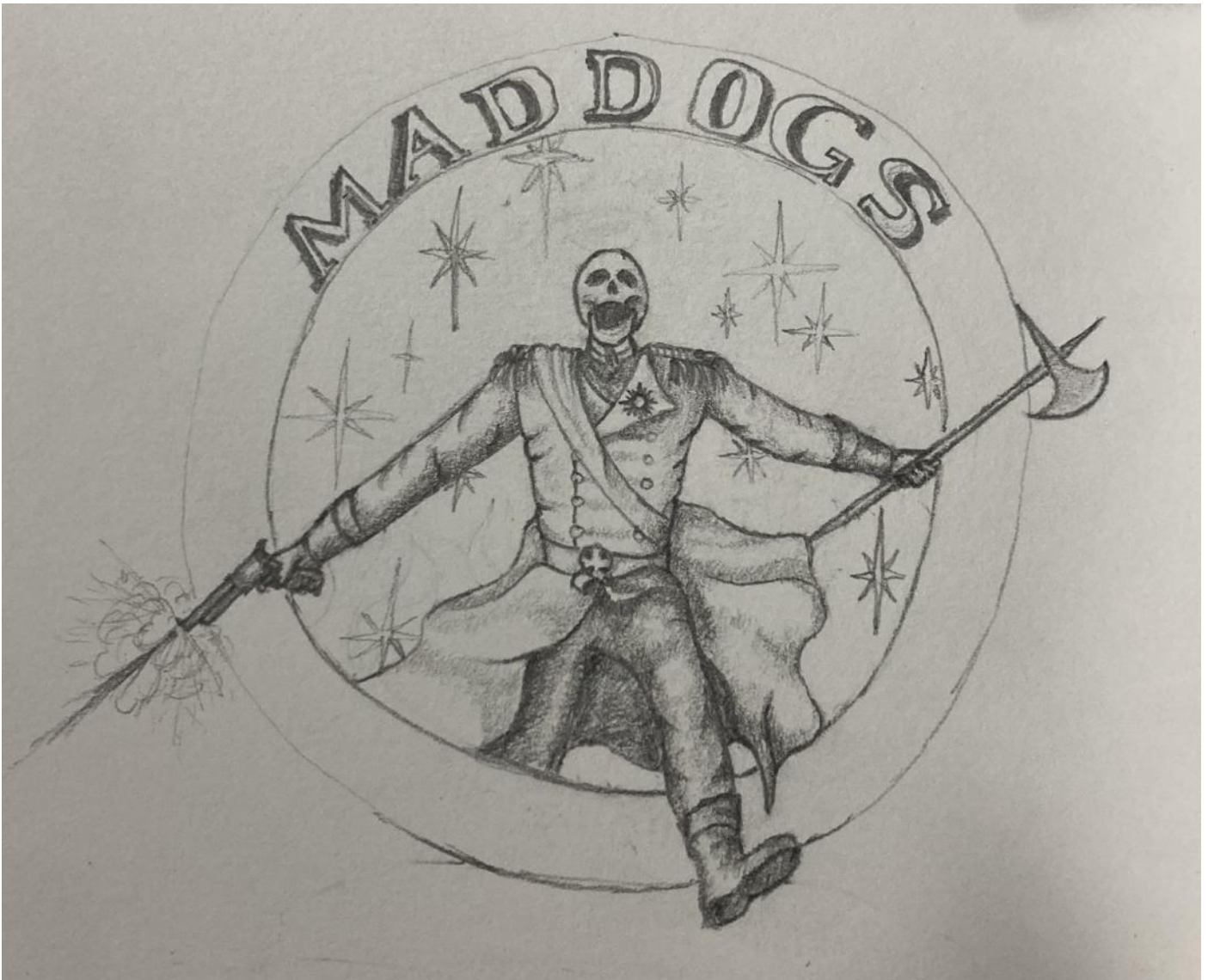


Figure 1 - This is the original proposed cover art concept sketch I drew myself which could be developed with further work. It shows my artistic competency which supports my reasoning and the design basis for the use of AI concept art throughout this GDD.

AI Concept Art

I have used the AI art engines ImagineAI (ImagineArt, 2023), and Midjourney (Midjourney, 2022) to provide temporary examples of concept art. My simple reasoning for this is time. I am a competent artist and was an art scholar earlier in my education. However, I do not regularly practice, and therefore take substantial amounts of time to create any artwork of a satisfactory level myself. The image in *Figure 1* above only just reaches the margin at which I am content with the result.

The AI concept art below is both inaccurate and has no comparison to actual concept artist work. However, it can quickly guide the viewers mind to vaguely the right direction of thought. AI art is a brilliant tool to quickly convey a general idea into someone's mind. However, this still pales in comparison to an actual concept artist, who can recreate exactly what you want to convey. The concern people often have about how AI concept art will make Concept artists redundant is completely false in my eyes. They hold two different roles, based in accuracy and originality. AI can only create from what you write and bases it on pre-existing images on the internet. A concept artist can create something entirely original. (Jiang et al., 2023)



Figure 2 - Both of the above images show examples of 'The Maddog' protagonist and the environment in which the game is set.

AI Concept art will be used throughout this GDD.



The image to the left shows a Denür. This image looks near identical to God of War (Sony Interactive, 2018), which was not the intention.

Denür have been inspired by multiple Tolkien-esque species. They are an amalgamation of Elves, Dwarves, Orcs, and Man. They are meant to have their own elaborate culture and artistry.

However, they have never had to evolve to reach the top of the food chain. They have been at the top from the beginning. Now humanity challenges their position.



Figure 3 - The Denür and the Protagonist, with a skull face, to show his hidden identity.

Game Mechanics:

Core Game Play

Maddogs' gameplay will mostly consist of clearing progressively more difficult arenas, dungeons, and rooms. To break up this constant loop there will be puzzles of traversal and of the terrain. Completing puzzles will allow the player to determine where they are meant to go next. This is meant to be a very hands-off approach, where the game helps the player very little in completing their goal. It is instead, something that the player must discover for themselves. In a game where the protagonist has no voice and often no friends or side characters to help narrate, the player must use the information around them to determine what they must do. There will be no checkpoints, or objective markers unless prompts are required for the player when lost. Combat, although simple, should be an ever-evolving system for the player as they discover more combo possibilities and learn more about the system.

The game will be split into three sections. The first tutorial level introduces the player to the world they are playing in. The second will be the approach to the castle. Enemies and extra mechanics will begin to be introduced to the player. The player should now have fully learned the basic mechanics and should now be experimenting with how to combine them. By the third and final phase, the player should now be mastering the mechanics they have access to. They should then be able to dispense and utilize this by playing against difficult Bosses with story significance.

At the start of the game, the player is told about the specific disease and condition that makes Maddogs who they are, and such effective killing machines. They are super soldiers on a ticking time clock, destined to die in combat from heart attack or finally facing a foe too great. They are treated like kamikaze units and infinitely expendable soldiers. Because of this fact, the setting of the game shifts focus away from being an indestructible soldier like in *Doom Eternal* (Bethesda, 2020) or *Space Marine 2* (Focus, 2024). Instead, this is replaced with pessimism and the inevitable death of the character, however, it is unknown to the player how or when this will happen. This is also different from other games such as *Red Dead Redemption 2* (Rockstar Games, 2018), where the main character 'Arthur' is diagnosed with Tuberculosis, and is given a finite amount of time to live. In Maddogs the expectation for the protagonist's death is simply inevitability due to their role, however, it is not entirely conclusive. This gives the player a small glimmer of hope for, "What if my character does live?". Therefore, the grey, hazy, desaturated, and negative aesthetic direction makes this a much more grim reality.

The direction of the Gameplay is based upon a structure that is quite different to most other games within this genre. It is written and designed to be played in 7 hours or under. It is much more like an interactive film. Immersion is not meant to be broken by death screens. If the player does die, they are immediately reset to the start of the chapter, not to halfway through the previous fight. Although annoying, it is meant to punish players, at lower difficulties death should be very rare, and it makes the player think far more about how they are not this respawning machine like in every other game. There should be no point in the game where the player is helpless. If they find themselves in trouble, there should always be a way out. Only when the player neglects this retreat and fights a clearly unwinnable battle will they die.

Combat will be arguably the most important factor of this game in keeping it entertaining. Instead of normal Hack & Slash games, with just an attack and block, I want a far more expansive but simplistic combat system. It includes parry, riposte, attack, and block all to create flowing and hopefully mesmerising duels between player and AI. With highly skilled AI, duels could last many seconds with no hit or contact. Higher level enemies should not only have their attacks be different, but also their duelling skill, and how difficult they are for the player to land a hit. The player's secondary ability is the "Hand Cannon" revolver, which is designed to be a damaging and highly concussive weapon. Its use within duels should quickly change the tide of combat when not in the player's favour. The benefit of using AI as the player's duelling companions is that as the developer, we can alter the AI's behaviour to best fit a flowing duel, even if it is technically not fair to the AI.

Game Flow

As immersion will be a key focus of this title we want to remove as many needless cut scenes, and instead keep the player in control as much as possible. This is not a long game, so cut-scenes will very quickly make up a large percentage of Maddogs if they are not sparingly implemented. The main game flow will follow a 4-step strategy.

Linear section

- For player learning, target or mission initiation, and new enemy introductions

Open section

- The largest chunk of gameplay in each chapter, for the player to use their initiative in order to complete the goal set out in the linear section. Less significant narrative elements, weapon inclusions and extra activities take place in this section.

Boss Fight

- This is where the player expresses all they have learned in order to complete their current objective; it is the ultimate test of their abilities so far.

Cutscene / Narrative Conclusion of Chapter

- A break for the player to calm down whilst taking in high-density content that is relevant to the story and the overall objective of the player.

This cycle repeats each chapter with potentially minor variation, particularly around the boss fights and when exactly they happen. For the start of each objective the player will be unknowingly directed by the game in the linear section. This is where you can guarantee the player will experience all we intend as the game designer. Once the player has a clear mission, the hand-holding ends as they are thrown into the vastness of the castle. This is when the player must navigate and fight their way to the objective which is often determined by their own decisions.

Characters



- **Protagonist**
- The protagonist's face is unknown, as is their voice and past. The emotions of the protagonist are exclusively the ones that the player holds themselves throughout the game. Other than a killing machine who is both feared and revered, the rest of the identity of this character is determined in the player's own mind. They wear a red coat, indicating their status as a Maddog, whilst wielding an iconic revolver and axe.



- **Maddog Sergeant**
- The Maddog Sergeant is the most experienced member of the 3-man Maddog unit, however every member has no definitive hierarchy. She is battle-scarred and wears the iconic cap and red trenchcoat. She survives until towards the end of the game and encourages and inspires the player to fight on. Her character also acts as a catalyst for the player to completely despise the enemy by this point. The Sergeant was technically the least superior member of the team, but has been a Maddog the longest, giving her significantly more experience.



- **Maddog Captain**
- The Maddog Captain is the least experienced member of the team. Only recently diagnosed, he still has his speech in fleeting amounts and seems not to care or be concerned with his imminent death. For that reason he is at times reckless but effective. He dies early on as a shock for the player. This death acts as a reality check for the player relating to the disease they all have.



- **Game Keeper**
- This is a minor character who the player meets at the end of the tutorial scene and throws the player into the back of a carriage after the protagonist kills several friendly soldiers. He is also the person that then delivers the mission objective of clearing the castle at the start of Act 2. He is dressed in ragged leathers, almost like a gimmick dungeon master. He speaks in a strong cockney accent and has a generally rude, horrible and dark humour.



- **Goblin**
- The Goblin is the only source of friendliness and lighthearted humour throughout the story, as everything else is pessimistic, harsh and dark. He is short (only about a foot tall), fat, and dressed in oddly smart clothing. He jokingly guides, mocks and converses with the player. He makes no significant difference to the story (apart from the post credits scene), his purpose is simply to give the player an element of rest and calm in between intense scenes. Additionally, his character's humour should be so different to the rest of the game it may genuinely make the player laugh.



- **Tutorial Boss**
- This is the first Boss the player encounters. He is visibly exhausted, doesn't speak at all and is dressed in mid-level war gear. The player is meant to respect this noble warrior. He is tall, muscular, bearded and bald. But this muscularity doesn't compensate for a lack of mobility. He is fast.



- **Warboss 1**
- As the first Boss the player encounters within the castle, this boss is to be the first guardian. His appearance is one of a distinguished warrior, with trophies and a cocky aura. But he treats the player with respect. He wields a large sabre.



- **Warboss 2**
- This second Boss in the castle is taking no chances, he is cunning, smart, and lacks any respect or rules in combat. Wearing more ragged, bloody and dirty clothes he gives an appearance of evil disgust. He wields a machine gun and hammer.



- **Sublord**
- The Sublord has a commanding image, he is heavily armoured, masked and wields a shotgun, shield and mace. He is very silent but grows more frustrated and erratic as you fight him.

- **Overlord**
- This Warlord is brutal. He is covered in blood from executing and massacring foes. He commands respect and fear from his subordinates. He is in half clad armour, helmless and robbed. He is massive and grey in colour, showing his age and seniority. He speaks English in a clear and deep voice. He doesn't play fair, and the player should detest him during their fight. But he also isn't cocky, he intends to win at all costs but does not immediately expect to. He wields a one-handed melee weapon iconic to him alone and also a gigantic but elegant revolver.

An example of a roadblock reached with AI concept art, I was not able to get the detail and convey the description of each Boss. This is something I would require a concept artist to create. However, they would all be clear differentiations of the same Deniur species appearance.

Enemy Types

- **Sopra:**
 - A Basic enemy with a variety of melee weapons that slightly alter attacking-speeds and damage-per-hit outputs. They are easy to kill, lightly armoured and lack significant duelling capability. They do not cohesively attack, and the player must crowd control to defeat, not attack individuals.
- **Alto:**
 - A medium tier enemy that can operate both guns and melee weapons. They are slightly larger, clothed in more substantial armour, and are more vocal. Attacks deal

more damage, and health is increased. However duelling ability still remains low, so this is still more of a crowd control character.

- Teno:
 - Another medium tier unit, they appear as Sergeants, often commanding smaller units. They tend to operate single-handed weapons, both guns and melee weapons together. Higher damage, medium health, and medium agility. This is the first main character that will actively duel with the player. Far more armour is worn by these characters.
- Bari:
 - This high tier unit can come in a variety of different formats. They are specialists, and depending on their weapon which is entirely random, can determine how they play. High duelling capabilities, high damage, high health and high agility. They are formidable opponents and the player will need to pull every trick in the book to defeat them. They are heavily armoured, helmed and light grey in colour. They are veterans, and generally speaking larger in stature.
- Duolo
 - Duolo are elderly giants, who are only there to wreak havoc upon the enemy. They are about 10 feet tall and are muscly colossi. Slow, cumbersome and stupid they can be easy to defeat. However, a single hit can be devastating and destructive to both the player and their surroundings.

Gameplay Elements

- Revolver
 - The revolver in Maddogs is a secondary ability. It is a high damage concussive shot. It can instantly kill enemies of a low to medium level with a headshot, and stun higher level enemies. It can be used with no charge or cooldown timer. As long as there is ammo in the 5 round magazine then it can fire. However, it also has the ability to charge and output one single shot that can only be used with a full clip of ammo. This can kill almost all enemies with a headshot. It cannot be removed from the players inventory and has no upgradeable aspects.
- Axe
 - The Axe is the protagonist's iconic melee weapon of choice. It is a perfectly versatile weapon, with medium damage, range and speed. It cannot be removed from the player's inventory.
- Grenade
 - The grenade is a throwable object with accurate physics such as in CS:GO (Valve, 2012). It is an extremely high damage weapon when enemies are in close proximity to it, with a degrading damage amount applied as distance increases. They are replenishable throughout the map and have a stack of 2.

Secondary Melee Weapons

The player has a single slot for a secondary weapon other than the axe. This can be either a melee or ranged weapon. For Melee however, we have a selection of items the player could choose to use.

- Shield
 - Blocks all ranged and melee attacks when blocking. It also has a stun ability. Can be dual wielded with the Axe.
- Saber
 - A low damage, high speed, medium range
- One Handed Hammer/Mace
 - High damage, medium speed, low range
- Two Handed Axe/Hammer
 - High damage, low speed, medium range
- Spear
 - A low damage, medium speed, high range



Secondary Firearms

The same rules apply for Firearms. These can be placed in the secondary slot instead of melee weapons. Each ranged weapon has a different set of statistics and aiming styles, relating to the crosshair. This means that each ranged weapon will have a very unique way of being played.

- Shotgun
 - Shoots two individual cartridges that are low accuracy and damage at range but inflicts heavy damage at close range.
- Long Gun
 - This is a single shot massive damage precision ranged weapon.

- Machine Gun

- A spray and pray weapon holds a large magazine which causes medium damage with equivalent accuracy.

Map Interactables

Throughout the map there are explosive barrels, ammunition and ropes/pulleys that are all interactable for the player. These are key gameplay elements and are heavily encouraged. There is a deviation I would like to make in this game in comparison to the status quo. Instead of just the player utilising these assets, I would like it so that the AI also notices and uses these objects. For example, if the player is standing in the open next to an explosive barrel visible to the AI, the AI should shoot the barrel.

Weapon Properties

- All values in the tables below are subject to change through balancing and testing. However, these placeholder values indicate the general direction I would like each weapon to follow.
- All weapons can block within 90°, however, bullets cannot be blocked with exception of the shield.
- Ranged weapons all have the same critical strike hit of 2x when a headshot or critical area is used.
- Melee weapons have a critical strike chance percentage per hit.
- Ranged weapons can only be activated once a whole clip/magazine is fully replenished. When replenishing from empty to full reserve and magazine. The initial loaded magazine is automatically loaded. However, should the player continue firing, they must reload the next magazine.

Weapon Properties

Melee Properties

Weapon	Damage	Speed (/s)	Reach (m)	Range (°)	DPS (/s)	Critical strike %
Axe	20	1	2	75°	20	33
Saber	15	0.5	2	75°	30	20
Mace	30	1	1	60°	30	20
Hammer	30	1.5	3	90°	15	50
Spear	15	1	3	90°	15	33
Shield	5	1	1	60°	5	10

Firearm Properties

Firearm	Damage per shot	Damage /s (DPS)	Rounds per magazine	Reserve Round amount	Kills per regain of round	Rate of Fire (s)	Reload speed (s)
Hand Cannon	50	100	5	5	1	0.5	2
Shotgun	5 x 10	100	2	4	2	0.1	1
Longgun	70	70	1	5	2	1	1
Machine Gun	20	100	20	20	0.25	0.20	2

Grenade Properties

Distance (Radius):	1m	2m	3m	4m	5m	Maximum Throw Distance	Stack amount
Damage:	140	100	70	60	35	20m	2

Game Physics and Statistics

Movement

The player will have 2 movement speeds, walking and sprinting. There are also additional movement features the player has access to. Dash, jump and crouch are the primary additions. Crouch if combined with sprinting can activate a sliding mechanic. Movement will be designed to be fluid, but not insanely fast. The overall goal of the movement will be slow and methodical, however, when desired the player can be fast and agile to avoid attacks and output maximum manoeuvrability. This will be enforced by having a modest stamina meter. This meter will encourage the player to avoid utilizing these extra movement capabilities in-between intense combat situations.

- Stamina Total: 5
 - Sprint: -0.2 /s
 - Dash: -1
 - Jump: -1
 - Slide: 0
 - Crouch: 0
- Stamina regeneration: 0.334 /s (whilst inactive)

Ranged Combat

All shooting mechanics of the player will be designed to be responsive and devastating for the enemy. For that reason, I have chosen to use hit-scan bullet registration. This contrasts the enemies, who wield ranged projectile weapons with reduced bullet velocities. This gives the player an immediate ranged advantage over enemies. Each ranged weapon also has a penetration statistic, this is mostly for the sniper, having infinite penetration. However, revolver is also a recipient of this mechanic.

Melee Combat

Melee is meant to act seamlessly with the movement mechanics. As the primary combat mechanics are melee, they have significantly more depth than firearms. It is based around hitbox mechanics and physical moving objects instead of damage boxes in radial AOE attacks. The combat is designed to be simple with a high skill ceiling, so the player is continually learning how to perfect these simple mechanics. There has been a long and considered development to the system, which is detailed later in the document.

Duelling is also a key component of the combat. This takes place with higher level enemies. Duels are more likely to take place with enemies who have greater block chance. The term “Duel” refers to the action of repeated attacks and blocks by the player and AI. It is not a triggered effect, but a scenario sequence that is designed to frequently happen.

Player Controls

Forwards	W	Axe	1
Left	A	Hand Cannon	2
Backwards	S	Melee 2	3
Right	D	Firearm 2	4
Jump	Spacebar	Interact	E
Crouch	C	Reload	R
Slide	C	Grenade	Q
Sprint	Shift	Selected Gun	F
Pause	ESC	Map	Tab
Shoot	LMB	Light attack	LMB
Aim	RMB	Heavy attack	LMB (Hold)
Episode	G	Block	RMB

Artificial Intelligence

Enemy AI

Enemies in Maddogs will react to sound and sight. However, reinforcements can arrive for open areas with prolonged combat sequences. AI will be designed to have realistic movement and utilize cover effectively. This will likely be shown by specific object indicators. Depending on the type of enemy, speed and reaction times will be affected.

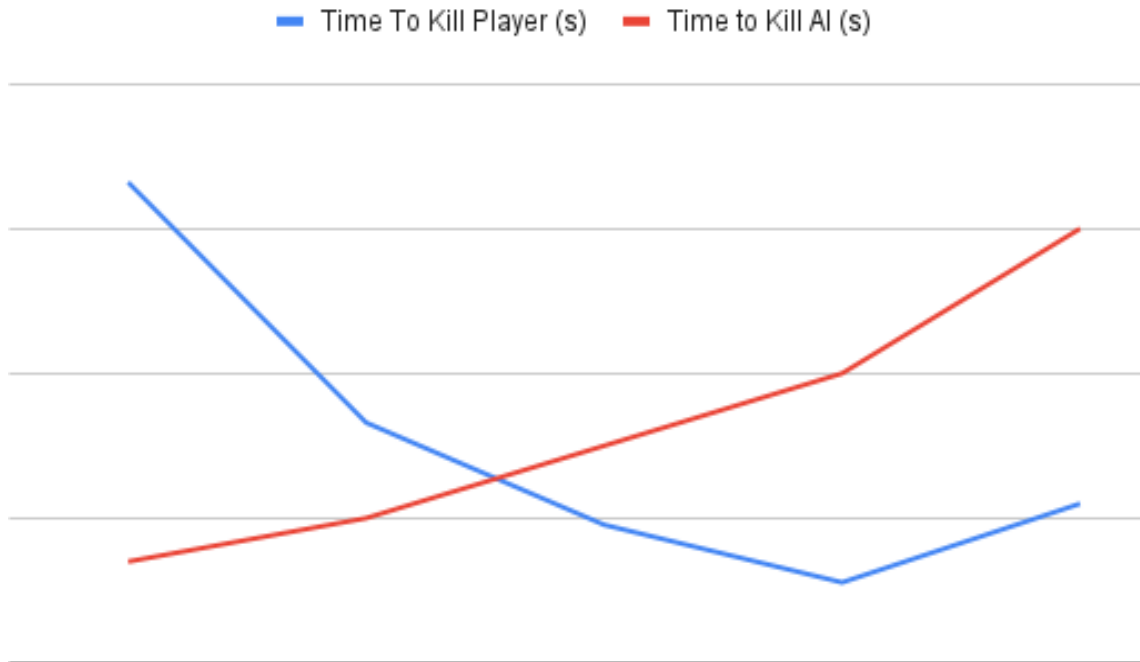
Bosses will be slower moving in their attacks or confined to a smaller arena, with much larger health bars and greater damage. However, their movements will be more scripted and therefore slightly harder to track and predict.

Intelligence and behaviour is another aspect of the AI that must change depending on the scenario. Aggression and use of cover, are the main behavioural changes that should be altered depending on the weapon being used. This should also change depending on the skill and intelligence of the enemy type. Lower tier enemies, or very skilled enemies should have completely different styles of fighting. For this reason I am implementing a modifier to aggression, to each weapon and enemy type. Depending on the weapon being held, the intelligence of the class will be greatly swayed or only be fractionally altered. This will also come with a base aggression statistic.

	Sopra	Alto	Teno	Bari	Duolo
Skill / 1.0 (<i>Sk</i>)	0.1	0.5	0.75	1.0	0
Aggression / 100	90	70	50	50	90

Skill: This is the multiplier that Aggression is altered by when using different weapons. Low skill, means that the aggression is altered very little, and enemies just want to attack. High skill means the AI will drastically alter their aggression depending on the weapon they are using, however, they will skill use cover and flank regularly.

Aggression: The variable that alters how much cover is used, the distance from the target, and the amount of flanks. Low aggression means few flanks, little cover used, and a very close distance from the target.



A table describing all of the base properties of different enemy types:

Enemy Type	Health	Damage Per Second (DPS)	Damage / Hit	Speed % (Sp)	Dueling %	Weapon Dueling Bonus %
Sopra	70	6.06	20	30 (3.33s)	20	100
Alto	100	12	30	40 (2.5s)	30	70
Teno	150	21	35	60 (1.67s)	50	40
Bari	200	32	40	80 (1.25s)	80	10
Duolo	300	18	60	20 (3.33s)	20	50

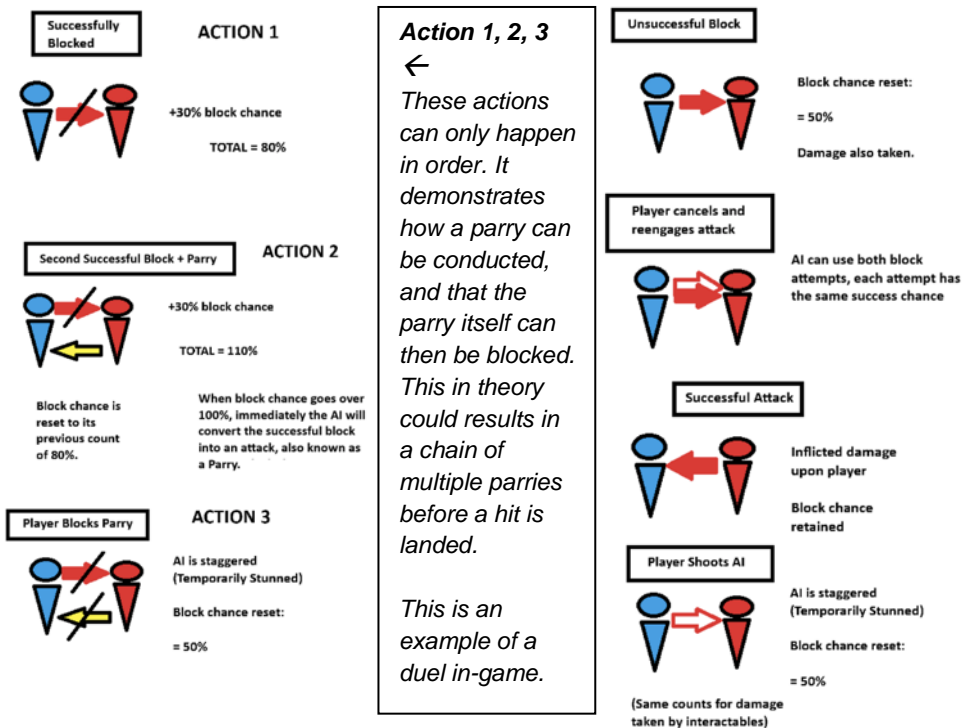
Below is a table containing all statistics and properties for ranged weapons wielded by the 3 enemy classes that use firearms (*not including bosses*).

Alto <i>DPS: 30</i>	Damage / Bullet	Rounds / Magazine	Bullet Velocity (m/s)	Fire Rate (s)	Reload Speed (s)	AOE radius (m)	Aggression Change
Shotgun	3x10	2	24	0.5	3	0	+(30 * <i>Sk</i>)
Boomstick	15	5	24	0.5	3	0	-(10 * <i>Sk</i>)
Auto Rifle	5	25	18	0.167	3	0	+(20 * <i>Sk</i>)
Teno <i>DPS: 35</i>							
Shotgun	3.5x10	2	27	0.5	4	0	+(30 * <i>Sk</i>)
Revolver	17.5	5	27	0.5	4	0	-(10 * <i>Sk</i>)
Auto Pistol	3.5	30	24	0.1	4	0	+(15 * <i>Sk</i>)
Bari <i>DPS: 40 (45)</i>							
Launcher	20	3	18	0.75	4	5	-(10 * <i>Sk</i>)
Sniper	40	1	45	4	4	0	-(30 * <i>Sk</i>)
Machine Gun	4	50	27	0.1	4	0	+(10 * <i>Sk</i>)

Below is a second table showing all statistics and properties for the far simpler melee weapons used by all classes (*not including bosses*).

	Damage Per Hit	Speed (s) <i>X</i>	Range (m)	Duel Bonus %	Aggression Change
Sword (2 handed)	<i>DPS * X</i>	0.5 + <i>Sp</i>	2.5	15	+(30 * <i>Sk</i>)
Axe (2 handed)	<i>DPS * X</i>	0.5 + <i>Sp</i>	2.5	10	+(30 * <i>Sk</i>)
Spear	<i>DPS * X</i>	<i>Sp</i>	2.5	15	+(20 * <i>Sk</i>)
Gladius & Shield	<i>DPS * X</i>	<i>Sp</i>	1	25	+(40 * <i>Sk</i>)
Mace & Shield	<i>DPS * X</i>	<i>Sp</i>	1	25	+(40 * <i>Sk</i>)
Duel Weapons	<i>DPS * X</i>	<i>Sp * 0.5</i>	1	30	+(50 * <i>Sk</i>)

Enemy AI & Player Combat Interactions



Blocking, Attacks, Cancellations and Ranged Attacks:

←
These actions can take place at any point throughout combat or a duel. They can be included within chained actions, but can also happen spontaneously.

These actions will undergo rigorous testing and will likely have multiple interactions. However the system described illustrates the intended overall outcome.

Friendly AI

The player will have 2 companions who engage in combat with the player, these are the two other Maddogs. These characters will have significant cutscene action and narrative components rather than functional companions. That is not to say they will not help. The technicalities of how these characters will interact will be very complicated, and something I don't completely feel comfortable predicting. However, a place the team should probably start with is damage statistics similar to a high level enemy type such as a Teno. This will give them purpose and an effective level of damage, without impacting the player's gameplay too significantly. For movement and strategy, they will mostly follow the Protagonist throughout the game. They will also engage with most strategy through narrative elements rather than actual combat mechanics.

AI Summary

Maddogs will attempt to utilise a simple and predictable system for the basis of all AI characters. However, as the level and skill of the character increases, an equally predictable increase in strategy and intelligence should be clear. The higher level characters will have more damage and health, yes, but the real difficulty will come from the strategies and techniques they use to defeat the player.

By the end of the game, the player should be fighting a completely different form of AI; one that is smart, cunning and tactical, to such an extent that the player is genuinely challenged and must rely on purely stronger game sense and mechanical skill to defeat smarter and more dangerous characters. Friendly AI, will most act as supportive narrative elements.

Interface:

Flowcharts

Boss Fight Determination System

Boss 1

1: Death 2: Escape

Boss 2

3: Death 4: Escape 5: Fear

Boss 3:

6: Death 7: Escape 8: Fear

Final Boss

A: Respectful Warrior B: Hated Nemesis C: Fearful Warlord

Death: All enemies in this boss fight have been killed either through execution or whilst running

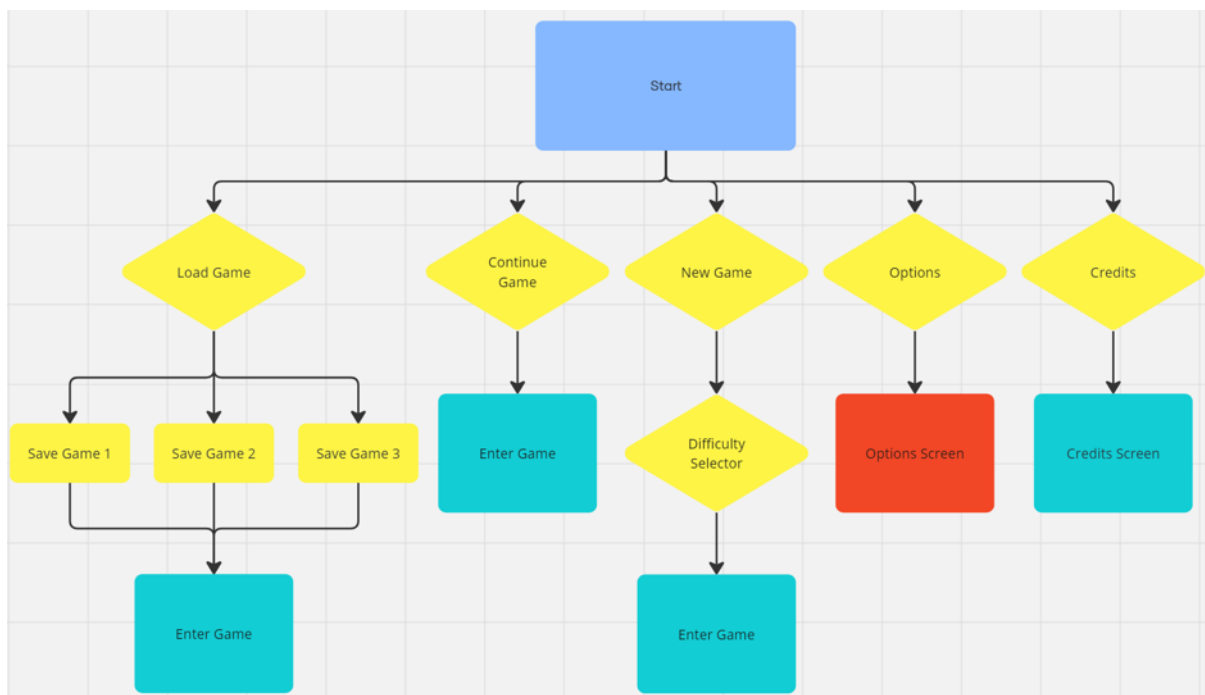
Escape: All enemies in this boss fight have been defeated but not killed, they shall return to fight later

Fear: One or more of the enemies have been killed, however, at least one has survived and escaped

A: Any random ending except the combinations forming **B** and **C**.

B: Player has killed each individual Boss without any issue: **1, 3, 6**

C: Player has killed each of the Bosses 1-3 in the 3rd fight, and then defeated the Final Boss: **2, 4, 6**



Functional Requirements

1 - Start Screen

The selection on the start screen uses simple highlighted selection.

1.1 - Load

The load screen is able to move across both memory card slots and be able to pick from multiple saves.

1.2 - Continue

Clicking on continue will immediately take you into your last game save by date/time.

1.3 - New Game

A new game must show a difficulty screen and a settings screen for brightness and contrast, etc.

1.4 - Options

The options screen includes:

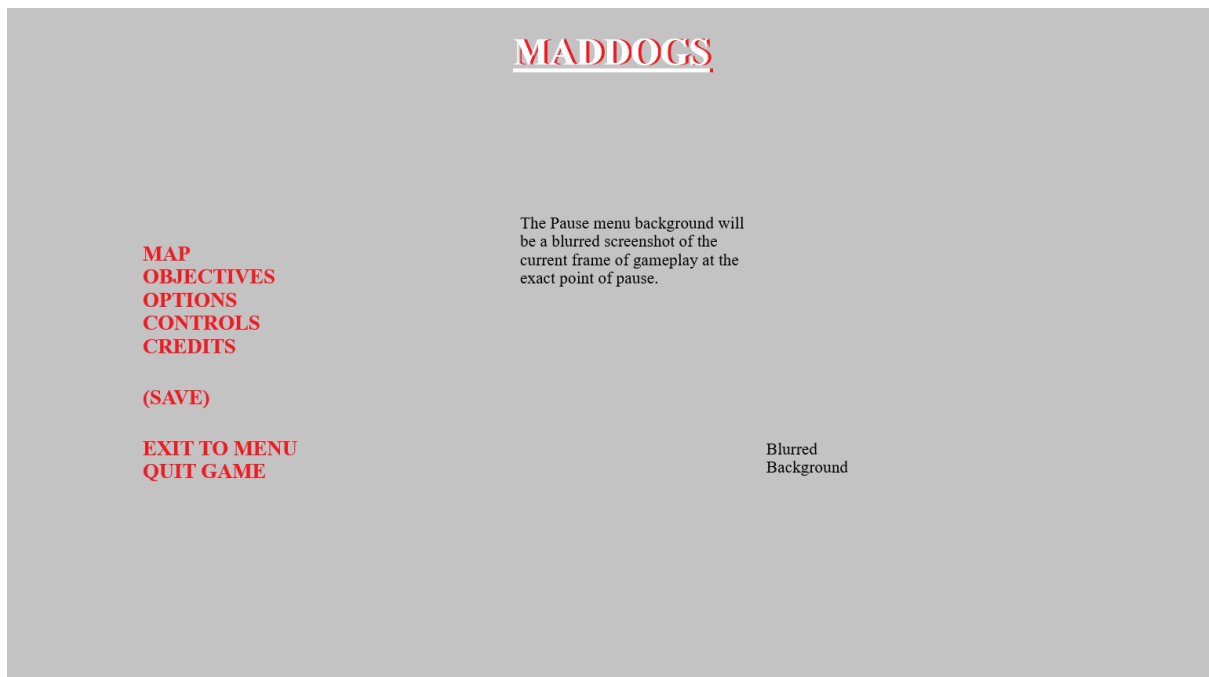
Brightness, Screen Position, Button Config, Control Type, Vibration, Auto Load, Language, Subtitles, Sound, Graphical settings, BGM Volume, SE Volume



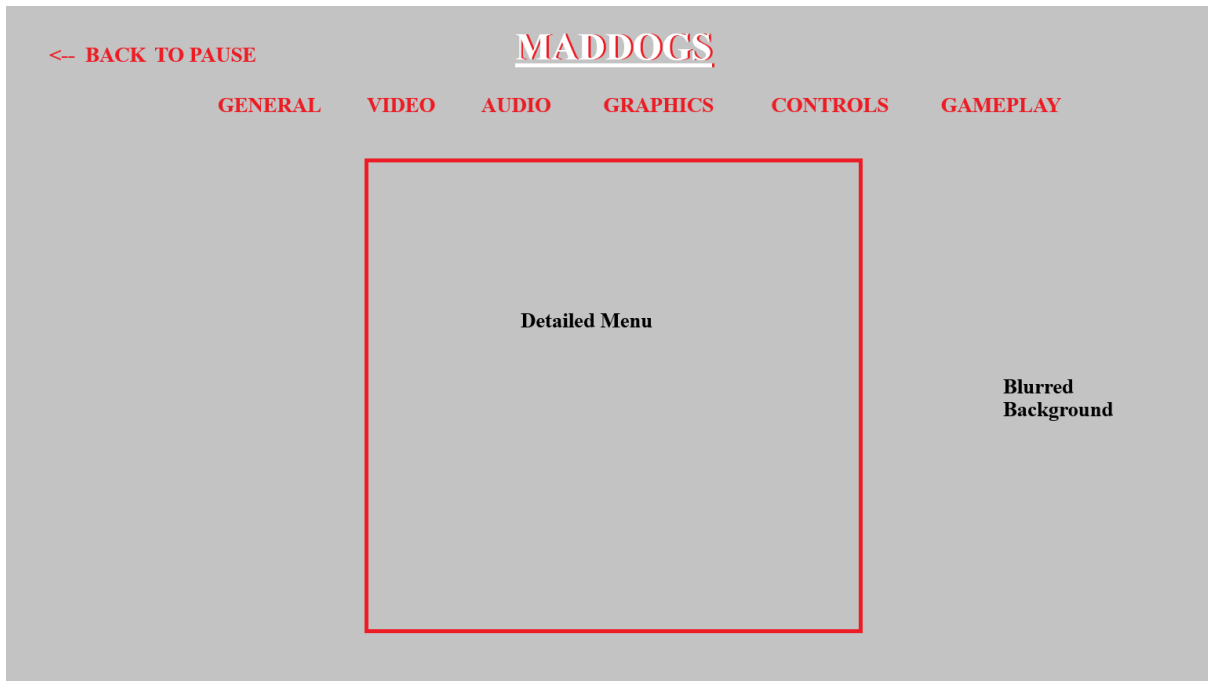
Mock-up Screens



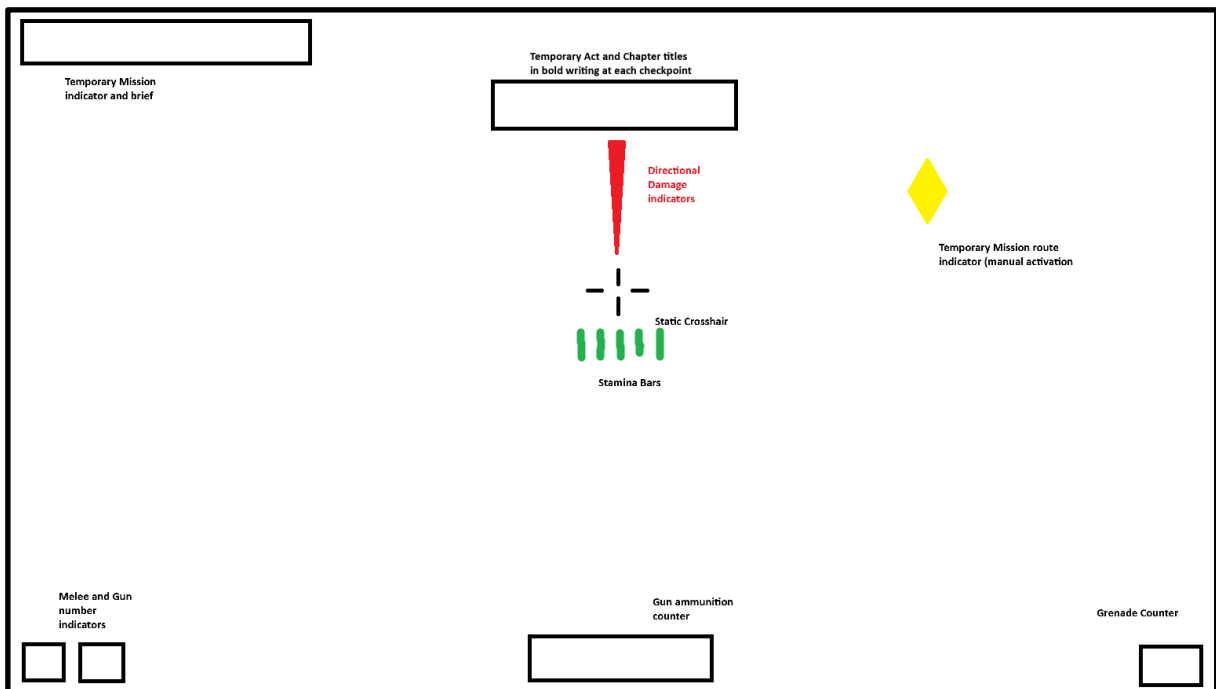
The Start Menu screen will be simplistic and focus on high resolution beautiful concept art in the background. The protagonist will feature in these shots, but without showing his face.



The Pause Menu will be simplistic and utilize the same fonts as the main menu. In the background it will be a freeze frame of the game at the exact moment the game was paused. A confirmation feature will be included when the player presses the "exit to menu" button and the "quit game" button.



The Options Menu will be designed to be as clear as possible, with each setting being easy and logical to alter. The darker blurred background should not make an impact to the clarity of the font, and the desaturation should make and script throughout the menu clearly visible. As well as boxes and other interactable objects throughout the menu.



The UI for Maddogs will be limited for the player. Only the essential information will be displayed, and it will be displayed in the most compact and easy to digest way. This takes example from Red Dead Redemption 2's (Rockstar Games, 2018) UI. The stamina bars in the centre of the centre of the screen may change position if we feel they are better placed elsewhere.

Art and Video:

Overall Goals

The normal art style of this genre is colourful and gory. Games such as DOOM (Sato et al., 1993) are the flagship examples to use, as they will also be the first comparison to make for first-time players. For Maddogs I want its art style to be unique and recognisable. Additionally, it must have a larger purpose of influencing the mood of the player. For this reason, as the narrative of the game is so pessimistic, the art-style will be the same. Bright colours (such as the Maddog's coat) will stand out greatly, as the setting and appearance of the levels will be desaturated and natural. Very few vibrant colours will be present, the only ones that will, shall have them for a specific reason. Examples of this are details like, enemy types having colour-coded uniforms, or blood splatters indicating inflicted damage, or the level object indicators (mentioned later in the document). Games such as Call of Duty 4: Modern Warfare (Infinity Ward, 2007) and Titanfall (Respawn Entertainment, 2014) are the primary inspirations of this colour pallet. They are dark and gritty games, and it is an art-style rarely used in modern releases.

This is not the only significant aspect of the art style. Many indie games in this genre tend to adopt the "retro" style. This is normally an homage to the original DOOM (Sato et al., 1993) game, and it's a good get-out strategy if one wanted to avoid high detail graphics. This art-style has become a somewhat staple of the genre. However, I would like to alter this tradition into something new and unique. First, we must understand the key aspects of this "retro" style and evaluate what can be changed.

Retro Style

In DOOM, textures are extremely low resolution due to the low memory available. The environments were 3D, but very low poly count for the same reason. Enemies were still rotating 2D objects called sprites. This is often replicated in modern games, such as Warhammer 40,000: Boltgun (Focus Entertainment, 2023). We will be using Boltgun as a reference quite frequently. In this example, enemies are 2D sprites, environments are still lower poly count objects, and an adjustable filter is placed over top of the screen to replicate these "retro" low-resolution graphics from the 1990's. It is an iconic art style, and one that will be used by designers likely for the rest of time, as it is now its own art-style, not just a lack of technology. I would like to adapt and evolve this art-style into a new technologically modern approach.



Figure 4 (Focus Entertainment, 2023) - Warhammer 40,000: Boltgun in action. 2D sprites scatter the ground, and a 2D enemy in front. You can also see the low resolution graphics.

I am proposing to keep the low resolution filter over the top of the screen, and instead have high-poly and high-texture models and environments. In combination with high level physics engines and models available to developers these days. This will create a modern game with only a retro art-style, not an entirely retro game. Boltgun sacrifices modern mechanics such as ragdolls and advanced physics engines for the art-style. It executes this very well, however there is a clear gap in the market for games that utilize both the retro art-style, and modern mechanics, as very often the art-style does not compromise with modern technology. In this genre it apparently does. Time to change that.

Environment

Scenes will foggy, gloomy and the weather of the game will be always overcast or rainy. Unlike Doom, Boltgun and other games in this genre where you are often enclosed within an arena, unable to look beyond your immediate vicinity, Maddogs intends the opposite. Although you will be within a castle for the majority of the game, windows will be clear and obvious points of attraction, balconies with grand vistas will be everywhere, and dilapidated parts of buildings will expose panoramic views. All of these views will utilize highly detailed and dynamic 2D landscapes.

Character Setting

Soldiers in the first scene will be rough looking and like they have endured many battles and horrors. Their costumes will have aspects of Georgian and Victorian European military uniform styles. However, their equipment and battle gear is for an early 20th century conflict, such as World War I. The Maddogs themselves will have similar smart and red clothing, such as trench coats. Far cleaner and well kept.

The Denür will not wear incredibly bulky armour. It will be heavy armour that normally covers at least half of their body and will be effective and designed with purpose. They are master craftsmen, not dwarves, elves or savage orcs. They are rational, but also like to display their grandeur.



2D Art

- All inventory objects (weapons, items, etc)
- All menu backgrounds
- Ending credits backgrounds
- All textures for environments
- All Environment backgrounds
- Advertisement art (mostly comprising of character renders with alterations)
- Web page art
- Level maps
- All individual pieces of art in-game (paintings)
- Ending Credits

3D Art & Animation

- All aspects of character animation
- All modelled assets (town, buildings, items)
- All Character & Enemy models

Cinematics

- All in-engine cutscenes
- Promotional video for Internet spots



Sound and Music:

Overall Goals and Score

The music direction will attempt the same as other games in the genre, to build adrenaline and pressure. However, instead of heavy metal and high bpm tracks, instead, it will also follow the art style and direction of Maddogs, being pessimistic. It will be slow orchestral music with increasingly threatening moments where the player enters combat. But, the music never crescendos, it's as if the player is expecting and waiting for the imminent death of the protagonist. Throughout the game is folk-like music and classical piano. This could also be portrayed by retro game synths. The player only receives the climax of the music in the final scene.

Weapon sounds are meant to be beefy and satisfying to listen to, especially firearms. The player should have a physical reaction to hearing the gunshots each time they happen. Such as the Martini-Henry rifle from Battlefield 1 (DICE, 2016). *Daniel Fearon* will write the majority of the musical composition from Guildford University, who has already begun composing and experimenting with different ideas to achieve the desired feeling of the game.

Sound Effects

The game will require a couple of voice actors for enemy types, bosses, and the few humans that can talk. This could probably be done by one - three individuals. To avoid repetition of frequently used sounds, specifically for interactable objects; there will be multiple samples used for things such as opening doors, exploding barrels, and puzzle items. For weapons, sounds will be used as indicators. Hits, critical hits, headshots, magazine final rounds, and successful blocks or parries will all have distinct sounds to indicate to the player not just the visual feedback but also the audio.



Story:

Immediate Story

The player controls The Protagonist. They are an unnamed and unmasked character, with a completely unknown history. *(This allows the player to imagine any story they would like for the person they play as.)* The Protagonist begins the game's story entering the battlefield of one of the final battles of the annual winter invasion. The final push by the Denür fails and results in the first counterattack, marking the end of the seasonal invasion. In the first act, the Protagonist proves integral to this outcome, defeating one of the final frontline warlords. It is an emotional and important historic moment, as this particular invasion was like no other, and was especially hard fought.

The Protagonist arrives, causing fear and awe from his fellow soldiers at the rear of the frontlines. *(The player should recognize the influence and reputation of the protagonist, even if it is not clearly stated.)* Some soldiers might murmur things about the Maddogs and feats the protagonist

has accomplished. *(But all of this should be vague and ambiguous to maintain the mystery surrounding them.)* As the Maddog continues he fights through wave after wave of Denür soldiers and warriors. After surpassing trenches, bunkers, a village, and a woodblock, they reach the final boss Warlord. As the Maddog waits to engage in combat with the Warboss, friendly soldiers form around to create a circle, entrapping the adversary. He has no option but to fight the Maddog protagonist. Heavily armoured and well-trained, he is a worthy opponent. However, as he is close to defeat he unleashes a surprise stunning move, knocking the Maddog to the floor. This attack makes the Maddog have an 'episode'; the eyes in the protagonist's head roll back and they lose consciousness. Moments later they regain consciousness to see a butchered Warboss on the ground, but also the dead bodies of friendly soldiers. After only a couple of seconds to register what has happened, the Maddog is tackled, bound, and thrown in the back of a prison wagon, meeting the Gamekeeper and ending the act.

(The purpose of this ending segment of the first Act is to inform the player of the dark and brutal nature of the game's world, as well as the disease the Maddog faces. It makes the player realise why those soldiers were scared or hateful towards them.)

After a black screen and a checkpoint, the player is brought back into the prison wagon. Around him are two other individuals, an elderly soldier in her mid-fifties (the Sergeant), and a young officer in his late twenties (The Captain). They are both dressed in their respective uniforms as Maddogs, the red trench coat and cap. They speak no words and stare blindly at the wall or floor.

(I wanted to create a dynamic between the two other Maddogs that was equal yet layered. There is the experienced but lowly Sergeant and the inexperienced but commanding Captain. Both of whom lie under the command of the Protagonist. The player will initially think this is a story where the team dynamic will be integral to the story, but it is not. The purpose of these two characters is to correctly portray the different realities of both the Maddog disease and the scenario they find themselves in. In essence, they are narrative cannon fodder and tools to make the player resent the Denür, and the circumstances of the Protagonist.)

The prison wagon stops, and the interest of all three Maddogs is peaked. The large metal door opens, and there they see the dirty, scrawny, and vile Gamekeeper once again. Once outside of the wagon, the gamekeeper directs them towards a large partially dilapidated castle in the distance. It is covered by many towers and battlements, with mist and mountains surrounding it. The Gamekeeper states, their mission is to clear the castle. During the brief, the Game Keeper makes it clear the care for their safety or health is non-existent. They have a single job, and they must complete it.

(The Gamekeeper will be relaxed around the Maddogs, but cautious as well. They won't be bound in this scene, and he will speak with familiarity to them. The events of the previous act are nothing new and happen far more often than he'd like to admit. He clearly enjoys his job of controlling and mentally torturing the Maddogs. However, there is meant to be an element of dark and uncaring humour in his dialogue. You are not meant to like the Game Keeper.)

Now the Maddogs have their mission, the player regains control, and Act 2 begins. The Maddogs begin their approach towards the castle, engaging with Denür patrols and interacting with human hunters (*specialised soldiers who raid the back lines of the Denür to sabotage or kill high-value targets*). The hunters give information and guidance throughout this act of the game. As the Maddogs progress they regularly split-up to deal with different threats simultaneously. The player is slowly introduced to urban combat with gradually denser clusters of buildings, clearing towers and farmsteads. As there are a limited number of enemy types, only two additional enemy types will be introduced to the player in this act. Towards the end of the act (*once the player has begun to properly master the basic combat mechanics and is now starting to experiment with different combinations*),

the Maddogs will approach the entrance to the castle. This is where they will encounter the first Warlord of the castle. He will taunt and survey the Maddogs, smartly utilizing his troops. He is a proud but respectful soldier. Throughout this act there will be hints towards later important narrative elements: These will include the question of “why the Denür are here” and “why haven’t they left”.

Finally, towards the end of the act, the Maddogs divide to find the best way into the castle. The Captain is spotted fighting against the Warboss, and the two other Maddogs attempt to support. When the protagonist arrives, he finds the Captain, who is having an “episode”, charging recklessly after the Warboss, who is baiting him into a further engagement. The protagonist follows and saves the Captain from a final blow. The player then engages in a duel with the Warboss. Once the protagonist has defeated the Warboss, the Overlord appears in the distance. The Captain attempts to chase once again whilst still under the influence of an episode. However, it is a trap and he is pierced by a hook and dragged away to his death. *(The purpose of this scene is to introduce the Overlord and his evil efficiency. The player should be disgusted and angry. It also demonstrates to the player what an episode looks like from another's perspective, and what it does to you when one loses consciousness.)* This signals the end of the second Act, and now the player has cleared the entrance to the castle.

As the Protagonist and Sergeant enter the castle, there is a distinct change in atmosphere and combat style. The combat is now urban and far more vertical. Enemies could be anywhere, and only meters away. The player looks upon multiple towers and halls making the different features of the castle. Many of these features are in a poor state and partially collapsed. Throughout this act, the player learns the intentions of Denür within the castle. *(These are often told to the protagonist by the Goblin, a funny yet vile creature that seems to follow the player around and is non-hostile. However, at times the Goblin sends Denür after you as a funny joke, he appears to not take anything seriously.)* They intend to create a new breeding ground also known as a “Deep Lake”, where older Denür travel to in order to die and be reborn as multiple new Denür. It is to be built within a giant ravine below the castle as well as an airship yard. These Deep Lakes only exist in the far southern wastelands, where the territory of humans end. This would pose an existential threat to all humans on the continent, as the castle is in a central location. It would mean the Denür would have no reason to retreat each summer. The secondary purpose for the Denür is to create a transport line of airships to re-deploy their numbers to the castle from the wastelands. As the Maddogs learn of these plans, their mission changes from simple extermination to complete destruction and sabotage. This mission brings them to encounter multiple bosses and Warlords, which depending on the results of each duel, can have different parameters for each fight *(mentioned in the Boss Fight Determination System)*. It is determined the priority of destruction is the airship yard hidden behind the towers of the castle, and then the elimination of the Overlord with the Deep Lakes.

Whilst attempting to destroy the airship yard, the two Maddogs are ambushed by the Sublord *(second in command)* and his minions *(which could include the previous 2 Warbosses depending on the results of their respective duels)* atop of an airship attempting to leave. This is the most difficult fight yet, and the Sergeant Maddog suffers from combustion of the heart once the fight ends, killing him, which is the other symptom of the disease. Before the Sergeant dies he uses the last of his strength to tell the protagonist to control the episodes, this becomes a running theme of the next stage of the next Act. There is a high chance of the Sublord surviving this fight to attend the final battle, although the airship is destroyed and crashes into the base of a tower. The Overlord makes another one of his now frequent appearances atop the tower to show his presence. The player should now have

full clarity of what he needs to do and also what he **wants** to do. The Overlord has nowhere to escape, and the player cuts off his only route. The fourth and final act begins.

As the player travels up the tower the protagonist should face increasingly difficult enemies, mini boss fights and combinations of enemy types that have yet to be seen. The tension and expectation for protagonist to die at any moment should be very stressful on the player. As the player has very limited respawn points, making it this far will feel like an insane amount of pressure. *(However, the player is beginning to control and activate the episodes each time they have one. Each time they happen, more control is gained, and more power along with it. But there still a finite amount before the Protagonists heart combusts.)* Each level in the tower will have slightly different characteristics and offer a new arena to fight in each time, the goal is to make it be as unrepititive as possible. At the very top of the tower you find the Overlord and maybe the Sublord, with plenty of minions guarding them. This is where the player engages in the final boss fight. Before the Overlord defeats the player, there is one final opportunity for an episode. If activated this throws the player into a controlled frenzy. The amount of force and power going through the protagonist's body strips flesh from bone for both combatants, and the tower gradually begins to crumble throughout the fight. This destroys the tower and causes the two combatants to fall. During this fall there is an extensive duel segment, which is the final aspect of the duel. The player is just as likely to die in this moment as before. Once the player has defeated and "killed" the Overlord they continue to fall deep into the ravine to land onto rubble that has now destroyed the Deep Lake. As the player falls, the protagonist's heart gives out just before impact. Within the ravine is a cathedral-like structure so deep in the ground it has little light. So, the objectives of the Maddog are complete, the elimination of the Overlord and destruction of both the Airship yard and Deep Lake.

The End.

(As a post credits scene, the Goblin returns and begins to rummage through the rubble, although we never know what he finds.)



Overarching Narrative

The story of Maddogs is a classic action hero story of an unstoppable super soldier, who faces an impossible challenge, with only the smallest inkling of hope. Maddogs is but a small story in a much larger world and setting. It takes place on a continent colonised by settlers 500 years ago, akin to the Americas, it is named Ödrhass. Its people speak many different languages and have many different cultures (*most of which are based on real European cultures and languages*) and have formed their own kingdoms and states within this new world. It is a dark and war-torn land, with technology stuck between the 1910's and the 1780's, in a gritty early modern to industrial mashup. However, it is distinctly **not** Steampunk. It is similar to our real Victorian period, with aesthetics and styles being far broader.

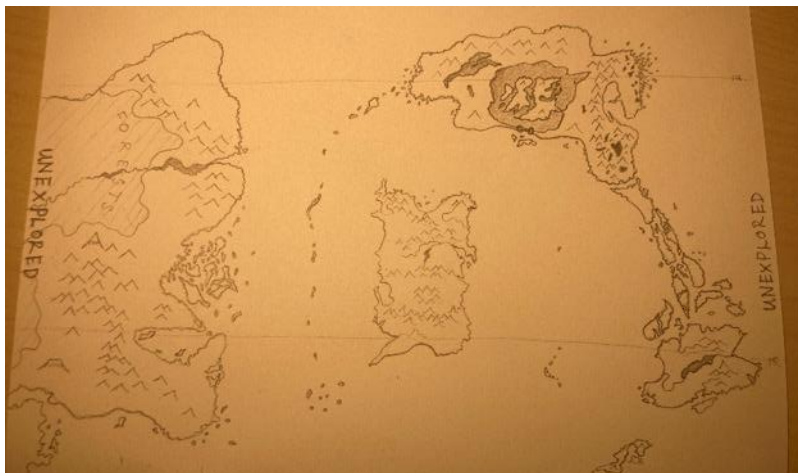


Figure 5 - A map I drew of the world of Maddogs. The central continent is Ödrhass. With the North-Eastern continent being the colonizer's origins.

Ödrhass is a unique continent even in this fictional world, as it houses a second intelligent species, the Denür. The Denür are intelligent but warlike creatures, who revel in the arts and crafts of war. They are the only other recorded intelligent species on the planet other than humans. Humans on the other hand reside on every recorded continent, which is approximately 75% explored. Every winter, the Denür launch an annual invasion, which attempts to reach the furthest point north. There have been two established lines for centuries. The first line is the Wasteland barrier, where summertime human and Denür lands meet. The second is the Finale line, which is the consistently northernmost point that the invasion ever reaches.

By the time Summer arrives, the invasion normally loses momentum, which results in Denür advances slowing, and their troops growing too old to continue (*Denür have a very short lifespan of only a year or so, they have to return to the Deep Lakes of the wasteland in order to be a net gain for the species*). This climaxes in the first human counter attack of the season, and then the retreat of the Denür, followed by the aggressive advance by the human armies. Once evicted from human lands, the cycle resets, and the Denür go back to reproducing and preparing for the next season.

In the context of Maddogs, the game begins with this first counter attack of the year, which signals the end of winter for many soldiers. The job of the Maddogs in the second, third and fourth act is to clear and eliminate any Denür from any strongholds remaining in human lands. They just happen to learn that these particular Denür have no intention of leaving, something previously unheard of.

Multiple Endings

The multiple ending available to the player have limited significance to the end result of the game, and do not drastically change the story. They simply alter the narrative elements of the final boss fight / scene as well as altering how the final boss fights the player. All of the parameters for each ending are clearly outlined in the “Boss Fight Determination System”, within Interface, page 23.

A. Respectful Warrior

The Warlord, conducts himself in a taunting but respectful manner. However, he still comments on certain acts throughout the game, such as the death of the other two Maddogs in a disgusting and dismissive way, which should anger the player and dissuade them from thinking any positive thoughts about the Warlord. The Warlord clearly thinks he can relate to the player but is obviously wrong. Before his death the Warlord shows acceptance and pride. Which is designed to irritate the player even more, as he clearly thinks he is correct in his thinking.

He fights with a balanced approach, it is difficult to fight against, and he doesn't attempt to cheat or deceive the player until the very end.

B. Hateful Nemesis

This ending takes place when the player has killed each boss in their own solo fights. This has made the Warlord increasingly frustrated and hateful towards the Maddog for slowly destroying all his plans. The Warlord insults and mocks the Maddog, taunting about the death of the other Maddogs to incite rage. Before his death he continues to insult the protagonist, and attempts cheating moves.

From the beginning he will fight with no rules and use anything at his disposal to defeat the player, it is very difficult to fight against, and is very unpredictable. Even before his death there will be last ditch attempts to win at all costs.

C. Fearful Warlord

The final and rarest ending is when all 3 Subboss are defeated within the castle in the same fight. For the Warlord, his emotions have gone from immense confidence to everything crashing down in a matter of minutes, and he is both perplexed and fearful of the Maddog. Because of this he fights like a cornered rat. He is not calculated, and attacks without consideration. It is unpredictable, wild and incredibly aggressive. He speaks very few words to the player and is purely focused on his survival. He knows taunting or insulting will not improve his odds.

During combat, the plans the boss comes up with to escape or kill the player are far more elaborate, as he has considered the level of insanity required to kill the player.

Level Design:

Overall Level Strategy

For the Level design of Maddogs it will be transitional and will not have many constant features throughout all four Acts. However, there are several level design pillars throughout the game. There will be a very limited HUD in the game, and quite a minimalist amount of guidance for the player, giving the feeling of a sandbox. Because of this, there will have to be subtle indicators for the player on where to go, or which paths are eligible. The intention is for this to be made up of two elements:

1. Characters of Guidance

Throughout the game there are multiple characters who interact with the player and give them mission information, guidance, or lore backstory. These characters will be used to guide the player in general directions, as well as when the player is clearly lost for direction.

2. Object Signposting

In different scenes and acts there will be different objects around the level indicating the possible routes and which are dead ends. This method is regularly used in many different games and is a proven method of guiding the player. The object type used for guidance will be thematic to each act. It will not be like other games which use a specific paint on the walls or a method of lighting. It will be a slightly more relevant topic for the scene and setting the player is in.

Act 1: Counter

For the Tutorial Level, the setting of the level is in an open, rural and devastated battlefield area. For that reason, the object of choice will be a clear, regularly occurring object of a battlefield, such as a dead body, ammunition crate, or banner. This level is much shorter and significantly more

linear than all other levels, so the need for these indicators is less vital, but it could provide a good area to train the player to look out for these objects. As for the guidance character, these will be the soldiers surrounding the player, whose actions and ambient comments or shouting will direct the Player towards the next frontline and objective.

The level is a constant climb up a mountain valley and shows many different environments of the battlefield. This is the first impression the player has of this world, and therefore, all aspects of its conflict should be shown. It will begin with the player calmly walking through a pine woodland, that reveals dense trench lines dug throughout the woodland. As the player walks over gangplanks towards the frontline, they enter a muddy war-torn battlefield at the base of a hill. With more sparse trees now, the player advances up the hill clearing multiple trenches towards the first objectives.

Two bunkers sit either side of the thin, steep valley. They are heavily defended and are surrounded by emplacements and more trenches. Once cleared, the player will fight against their first Teno enemy in a mini boss fight. Once defeated the player advances up the valley to reach a village. This will be the player's first urban combat fight and should act as foreshadowing for the combat later in the game. Finally, after engaging in a battle within dense pine woodland, the player reaches a clearing where the final boss fight takes place. The player can now finally look back down the mountain, to see a grand vista of burning villages and towns in the distance, as well as a mountainous and hilly countryside.



Act 2: Approach

The second act is slightly less linear, and has a greater area for the player to explore. During the Approach, the Maddogs encounter Hunters, who will be the narrative guides throughout the level. For the object we shall use to signpost, it will likely be a reoccurring item from a village or urban area, such as a lamppost or fencing.

The Gamekeeper gives the initial mission brief at the top of a ridgeline above the plain on which the castle lies above, which is visible in the distance. It is surrounded by a large mountain range which is gigantic in comparison to the elevation of the castle. The player begins descending down the

mountain, encountering Denür patrols and camps as well as dilapidated human-civilian buildings and a destroyed watch tower. Once the player reaches the flat planes at the bottom of the ridgeline they encounter more bunkers, trenches, and lightly defended positions. As of yet, it's still a very rural environment, with not too many buildings. This section is quite open world and is a large area for the player to explore, as long as they move in the general direction of the Castle. As the protagonist comes closer to the castle they reach the first defensive line, marked with bunkers and towers. It sits outside the castle walls, but is still a substantial defensive position, with artificial earthworks.

The player has multiple options of how to breach the defences. Depending on the route chosen by the player, the companion Maddogs will take the unchosen options, with the plan being to regroup at the entrance. Once breached, the player engages in a mini boss dual against their first Bari enemy. (*The player will also see glimpses of a Duolo in the distance at some point during the level, just to make them think "What the hell is that?"*). Once the Bari is defeated, the player advances throughout the outer defences of the castle. This is where there is more urban combat (*still sparse*) and has to clear more towers as well as completing puzzles on how to advance through the defences. The player is still alone in this section. The player eventually reaches the entrance of the castle where they encounter the first Warboss of the castle and complete the Act. The castle has a grand and elaborate entrance in ruins, showing both the destruction of the war and the craftsmanship of the humans in these lands.

Act 3: Castle

In the castle, it will be items such as barrels, supplies or dead human skeletons/corpses that indicate routes to the player. For the narrative element it will be the arrival of the infamous Goblin. Who directs, teases and taunts the player. He appears out of nowhere and only when the player is alone. He sometimes updates the player on the other Maddogs and their progress. Overall, the castle area is completely open and has no clear linear route, it is much more like a Dark Souls (Bandai Namco, 2011) game in a castle. The player can take any route they would like to. There are also multiple paths to different objectives. Some more linear than others.

The protagonist is almost constantly climbing the castle, starting in the large halls of the lower levels and eventually reaching the absurdly high and interlinking towers. The goal for the player at this stage is still to eliminate all enemies, however they learn of different objectives, such as fuel barrels, Duolo nests in the upper towers, and the Airship near the Deep Lake below. Again, this is another element of the gameplay that changes throughout the act. At the start of the act, fight locations and timings seem to be more predictable, however, as the map continues upwards it evolves into a messy and unforgiving sprawl of corridors, balconies, and bridges. On one of these bridges is the first encounter of a Duolo for the player. The following battle experiments with constantly changing verticality for the player mid battle. The player continues upwards until they reach a Duolo nest (*Where old and tired Duolo rest*). Protecting and keeping them in order is the second Warboss, whose mission is to defeat the protagonist before the nest is destroyed. Once the player defeats both the boss and the nest, it is revealed what the intention of the castle force is.

As narrative revelations for the player take place, the story takes the Maddogs downwards towards the ravine below. This should be done in a natural and organic way for the player, who utilizes clear pathing to quickly descend the many towers. This should be indicated by clear imagery and the Goblin. Once the player descends, a ravine appears below, which is something similar to a

large industrial mine, however at the bottom lies a cathedral like structure (Deep Lake), above which is the Airship yard. This is again **not Steampunk**, just early modern.

The Act ends when the Airship attempts to leave, with both Maddogs atop of it. Then there is a large boss battle, which causes the airship to crash into the nearby castle spires. Act 3 ends with the destruction of many castle spires and only a couple extraordinarily tall ones remaining. The Protagonist stands at the bottom of the elaborate and complex tower looking upwards at the Warlord at the top.

Act 4: Tower

For the final scene, the player must ascend a large tower. It's interior aesthetic, as mentioned before, changes drastically as the player ascends. There should be very little objects indicating the route (*as it should be self-explanatory, just go up*) and there will be no narrative elements from the Goblin or any other character, as it is just the Maddog alone now. The enemies grow more difficult and challenging, with more and more difficult terrain at each level. It is meant to be a 'run of the gauntlet' challenge for the player. The tower contains gothic architecture with many outside balconies showing gloomy but beautiful vistas. Some of the tower is damaged, which also contributes to the great scenery. It also has very few puzzles, unlike previous Acts. The final room is very open and resembles a classic Boss fight arena. However, there is still some elevation and change in how the room works. This is to put both the boss and player in as many different scenarios as possible to truly determine the best warrior.

The Act ends with the destruction of the tower and the characters falling into the deep ravine. Whilst falling the player notices high-explosive barrels falling downwards and exploding into the ravine as they fall. It is just for the cinematics and to show the destruction of the Deep Lakes. This scene finalizes Act 4 and the end of Maddogs the game.

Puzzles

The Puzzles throughout the game will not be small 2D puzzles, they will be larger in scale, such as "*this route is blocked, but can be opened by doing X,Y,Z in a particular order*". Completing a puzzle should be a longer affair of maybe 10-20 minutes and span over a large area. They should be action packed and involve the Maddog companions. In addition, there will be hints and assistance available to the player if required.



Market Analysis:

Target Market

Maddogs has been designed for the PC platform, the reasons for this are that Steam is a great platform for releasing smaller indie titles, with fewer barriers obstructing development and release. Additionally, it allows for smoother development as it will be played on the same platform it is being created for. The movement mechanics for this game have also been designed for a PC player in mind. They are extremely technical mechanics which would be best utilised and experienced on a platform where turning speed and aim assist are not obstructions to this.

User Experience and Timmy, Johnny and Spike

For this persona experience I will be using different personas to describe three broad categories of players who will likely play Maddogs. These personas will show how certain players will interact with this game. The vast majority of players will fit within multiple categories and will not fit into only one specific category.

Timmy

This person plays the game for the story. They want to be invested in the world around them, as they love the idea of the setting. Timmy doesn't care about his speed, skill or efficiency particularly much. The only reason Timmy would get in a duel with an enemy is because he has no other choice. Any tools at his disposal will be used to follow his vision of what the Protagonist would do. He is a developers dream user in effect. Timmy enjoys the game for the world he is playing in.

Johnny

Johnny is aware of the story, but it isn't why he's here. Johnny is here because he loves the game genre of boomer shooters and loves the idea of a challenging melee equivalent. Johnny wants the biggest and the best kills. Even if an arena takes him ages, and he dies in the process, he will be there to get the most majestic kill available. Johnny focuses on the weapon mechanics and doesn't care about a missed dialogue line because a grenade goes off. Johnny will focus purely on mastering the combat mechanics from the first minute he touches the game. Johnny enjoys the challenge of proving he's the best.

Spike

This player is dangerously efficient. They may have played the game the first time around with an attitude similar to Timmy, enjoying the world and story but uncovers that he wants the mastery of the combat mechanics. Then once he sees that hallowed scoreboard at the end of the game, he's hooked. Spike will do anything to achieve maximum efficiency, he will not focus on expression, as it happens without trying. Spike is there not to pretend he's the best at the combat or story. Spike is there to be the best and prove it to everyone else on a scoreboard seen around the world.

Top Performers

Some of the best performing games in this first-person linear action singleplayer story genre are games such as Doom Eternal (Bethesda, 2020), Boltgun (Focus Entertainment, 2023), Ultrakill (Patala, 2020), and Selaco (Altered Orbit Studios, 2024). Each of these games have fast movement, speed, fluid combat and very similar settings. They have a great deal in common with each other. The outlier would be Doom Eternal as it is a AAA studio. The other three have retro graphics and have gory fast paced levels and combat situations. They are very similar to each other, and to say this genre is quite saturated is an understatement. This is why Maddogs has a way to break through, as its slower paced, but still agile movement, with a focus on close quartered combat instead of ranged. Finally, its new art-style and change in tone could refresh and un-stagnate the genre.

Top Performer Statistics

Examples: Ultrakill, Boltgun, Selaco

All figures below are estimates and are not 100% accurate. In the final column is Maddogs, and the statistics I intend to achieve. The games below have been selected for their production size, genre, and gameplay similarities. There is a great deal of information to learn from.

ADJ Regional Pricing, Discounts, and Refunds are all deducted from the Gross Revenue of each sale. Once calculated, the Steam cut of 30% (*For games that sell under 10 million copies*) is taken from the Net revenue. After which, the VAT is taken from the final number.

Game	Ultrakill	Boltgun	Selaco	Maddogs (Aim)
Est' Gross Revenue	\$139.4m	\$8.4m	\$1.8m	\$7m
Est' Units Sold	5 million	400,000	93,000	300,000
Gross ADJ %	8%	9%	-	8%
Gross Discount %	20%	20%	-	20%
Gross Refunds %	12%	12%	-	12%
Gross Steam cut %	20%	18%	-	20%
Gross VAT %	12%	12%	-	12%
Net Revenue	\$41.1m	\$2.5m	540,000	\$2.3m
Team Size	1-5	40	10	10
Est' Development Time	2 years - EA	2 years	4 years	2 years
Est' Game Duration	5 hours	10 hours	8 hours	7 hours
Review %	97%	91%	93%	95%

(VG Insights, n.d.), (Gamalytic.com, 2023), (Steam Revenue Calculator, n.d.)

Feature Comparison

The three case studies above display games that are within the broad genre of FPS, Boomer shooters, with retro graphics, which is the genre Maddogs can be most closely related to, despite having many different characteristics. Doom Eternal and Wolfenstein will only briefly be used in this example, as they are both costly AAA games developed by Bethesda, and serve as good templates to contrast Maddogs to, instead of a competitive feature comparison.

Artistic Direction:

All three case study games utilize a genre authentic art style of a retro take of graphic. These styles each differ slightly, however, they ultimately convey the same iconic genre aesthetic. Arguably the greatest features of this style are;

1. The low resolution textures
2. 2D Sprite enemies and objects
3. Stop motion animations.

Maddogs has none of these features. The only one that it mimics is the low resolution textures in the art style. In Maddogs this is done by massively reducing the overall resolution of the screen for the player but having high resolution textures behind. This will artificially copy the iconic genre aesthetic, whilst creating a modern higher fidelity game. 3D enemies with complex and realistic ragdolls will be used for enemies, as well as objects with realistic physics. Animations will be smooth and not include stop motion.

Music is almost completely unchanged throughout the genre, being heavy metal (*Selaco is the only exception I could find with 80's Techno. I am not sure if that is the correct genre title, sorry in advance*). Even with the few exceptions to this rule, music is only provided in a high intensity and bpm setting, designed to induce adrenaline and excitement into the player. As described in the Music section of this GDD, I have no intention of following the same genre stereotype. Instead, music will be orchestral or midi, creating tension and anticipation throughout the game with calm and pessimistic pieces. The music will finally climax in the final scene of the game, expressing an outburst of pent-up adrenaline in the final battle.

The environments of Maddogs will differ greatly to any competition. It will be 2D, and attempt to show beautiful, misty, peaceful scenes. For the location of the game, it won't take place in a fire consumed and extremely colourful arena. The world around the player will be de-saturated, gloomy and natural, with even the battles being entwined with local nature.

Mechanical Differences:

All of the case studies, and AAA games within this genre rely completely on being shooter games. Maddogs flips this and uses the ranged weaponry as a secondary ability. Melee combat is front and centre and is the aspect of the game that will snatch players into the grind of improving and getting better. This is actually a common feature in this genre to have little weapon progression, and simply a high skill ceiling combat system. The same is in Maddogs, but with hand-to-hand weapons instead of ranged.

Movement is different in Maddogs and is slower. It focuses on more methodical but explosive combat movement which is designed to optimize the melee experience. Dueling is a new system which makes the player have more personal combat situations with the enemy, this system was not something at all present in other games, unless it was a specifically designed Boss character.

Narrative Comparison:

All games in this example use the premise of a Super soldier or warrior. This is a perfect setting for the player to be in. It explains all their power, and why it makes sense you are borderline unkillable. This narrative method is key to the majority of singleplayer games, and many multiplayer ones as well. Maddogs subscribes to the same method. However, unlike all the other titles, your character is far from unkillable, in fact, they will almost certainly die. You can only try to get the protagonist as far as possible before they do. There is a more personal element in Maddogs, as the protagonist has no choice or options but to fight until they die. In all the examples and case studies the character is a mindless killing machine, who doesn't speak out of choice. The protagonist in Maddogs is diseased, and the player is made to experience all the emotions the player is probably thinking, which is strangely similar to Half Life 1. *(Also as a side note: Out of the five examples (three case study, two AAA), three of them take place in Hell, and all five have an apocalyptic setting. So Maddogs is a definite change.)*

Summary:

Overall, I am confident there are enough stark differences and USP's that Maddogs will shine above the other titles as something fresh in the Market, as long as they are clearly demonstrated and advertised. There are so many genre stereotypes that are broken in Maddogs, without losing the familiarity of some of the most iconic features. This should entice fans of the genre, whilst also bringing in players who want a different experience from a now repetitive and stale genre after the most recent releases. If Maddogs is produced as intended, it has the chance to break the mould of a stale genre, with groundbreaking new mechanics, art and stylistic choices. Investors will almost certainly receive a return if textbook development procedures are followed. Maddogs has been created to be a breakout title, rising above all other titles in the genre. If the success of Ultrakill is achievable (which it very easily is), investors could easily receive a 10x or 20x return on investment. Maddogs has Golden Goose potential.

Predicted Production Cycle

The following statistics and estimates are budget examples of what would likely happen if a team of ten people was tasked to develop Maddogs for two years. This only acts as a prediction for a specific production scenario and is compared to the success of Boltgun in the games listed above. Which would be the minimum expectation for the success of Maddogs. As a team, we should not at all have a success level below the one displayed below. ***This would be the minimum required to consider Maddogs a success.*** To put into context, with a much larger team, Boltgun was a failure.

Example:

With the greater manpower, a more polished and faster product can be produced. The goal for this team is to strike for 20% interest to investors at around a £1.2-1.5 million production cost (including advertisement). With the 20% interest, the game will be targeting £7 million with 300,000 sales. Which should be roughly £2.3 million in net income.

Maddogs will be fully released after a roughly 2-year production cycle, with a 3 month potential extension period (approx. £150,000). The Game will be announced at the 1-year-before release mark. The aim should be for this reveal to take place at a large gaming convention. Which will likely cost between £100,000 and £300,000 for a main stage advertisement.

It is estimated that marketing costs will be an additional 50% of the total costs of salaries, office rental and administrative costs, which will likely be close to £1 million after a 2-year period. Marketing should begin 1 month before final release at 50% intensity. Within a week of release it should be at 100%. This should include paid sponsorships of streamers, and in particular large youtubers who will be given early access. After 2 months the intensity should return to 50% for approximately 6 more months, after which the marketing campaign will end.

It is very difficult to gauge the administrative costs of production, in particular office rental. It is extraordinarily dependent on location and can range anywhere from several hundred pounds in single group payments to £300 per person per month. However, for other administrative costs such as PC's and equipment, that will likely cost between £1,000 and £4,000 per employee in an initial investment, which will likely significantly decrease in year 2.

Expect Hiring Costs: (Annual Salary Figures in the UK)

Role	Average Salary (Indeed.com)	Ideal Number Required	Upper Salary Bracket	Cumulative Salary Total
2D Artist	£34,441	2	£40,000	£80,000
3D Artist	£32,214	2	£40,000	£160,000
Programmer	£36,768	2	£45,000	£250,000
Sound Designer	£30,577	1	£40,000	£330,000
Game Designer	£34,022	2	£40,000	£410,000

Final Estimated Statistics:

All following statistics are estimates in an example compared to the statistics of 'Boltgun' that will likely not reflect real world results.

Annual Costs

Hiring total cost: £410,000
Equipment cost: £30,000
Administrative costs: £10,000
Office rental: £10,000 - £50,000
20% contingency cost: £100,000
Total = £600,000

For 2 years = £1.2 million

Marketing costs (*during pre/post release process*) = £250,000 - £500,000

Fiscal Targets

Average Unit Cost: £20
Units Sold: 400,000
Total Gross Revenue: £8,000,000
ADJ. Regional Pricing: £640,000
Discounts: £1,600,000
Refunds: £960,000

Net Revenue = £4,800,000

Steam Cut (30%): £1,440,000

Before Tax Net Revenue = £3,360,000

VAT (20%) / Sales Tax: £672,000

Net Income = £2,688,000

Corporation Tax (25%): £672,000

Investment Total Sum: £1,250,000 – £1,500,000

10% Return = £1,375,000 - £1,650,000

Studio Net Income = £641,000 - £516,000

Bibliography:

- Altered Orbit Studios (2024). *Selaco*. [online] Steampowered.com. Available at: <https://store.steampowered.com/app/1592280/Selaco/>.
- Bandai Namco (2011). *DARK SOULS*. [online] Bandai Namco Europe. Available at: <https://en.bandainamcoent.eu/dark-souls/dark-souls>.
- Bethesda (2020). *DOOM Eternal*. [online] bethesda.net. Available at: <https://bethesda.net/en/game/doom>.
- DICE (2016). *Battlefield 1 - Award Winning FPS by EA and DICE - Official Site*. [online] Electronic Arts Inc. Available at: <https://www.ea.com/en-gb/games/battlefield/battlefield-1>.
- Focus Entertainment (2023). *Warhammer 40,000: Boltgun*. [online] www.focus-entmt.com. Available at: <https://www.focus-entmt.com/en/games/warhammer-40000-boltgun>.
- Focus, Entertainment (2024). *Space Marine 2*. [online] Focus-entmt.com. Available at: <https://www.focus-entmt.com/en/games/warhammer-40000-space-marine-2>.
- Gamalytic.com. (2023). *Gamalytic*. [online] Available at: <https://gamalytic.com/game/1229490>.
- ImagineArt (2023). *Imagine AI Art Generator*. [online] www.imagine.art. Available at: <https://www.imagine.art/>.
- Infinity Ward (2007). *Call of Duty® 4: Modern Warfare®*. [online] store.steampowered.com. Available at: https://store.steampowered.com/app/7940/Call_of_Duty_4_Modern_Warfare_2007/.
- Jiang, H., Brown, L.T., Cheng, J., Khan, M., Gupta, A., Workman, D., Hanna, A., Flowers, J. and Gebru, T. (2023). AI Art and Its Impact on Artists. *AIES '23: Proceedings of the 2023 AAAI/ACM Conference on AI, Ethics, and Society*, [online] pp.363–374. doi:<https://doi.org/10.1145/3600211.3604681>.
- Kevuru Games (2023). *Unity vs Unreal Engine: Differences and Performance Comparison*. [online] Kevuru Games. Available at: <https://kevurugames.com/blog/unity-vs-unreal-engine-pros-and-cons/>.
- Microsoft (2021). *Xbox Series X/S*. [online] Xbox.com. Available at: <https://www.xbox.com/en-GB/>.
- Midjourney (2022). *Midjourney explore page*. [online] Midjourney.com. Available at: <https://www.midjourney.com/explore?tab=top>.
- Patala, A. (2020). *ULTRAKILL*. [online] store.steampowered.com. Available at: <https://store.steampowered.com/app/1229490/ULTRAKILL/>.

- Respawn Entertainment (2014). *Titanfall*. [online] Electronic Arts Inc. Available at: <https://www.ea.com/en-gb/games/titanfall/titanfall>.
- Rockstar Games (2018). *Red Dead Redemption 2*. [online] Rockstar Games. Available at: <https://www.rockstargames.com/reddeadredemption2>.
- Ruddy, H. (2014). *The Resurrection of Permadeath: An analysis of the sustainability of Permadeath use in Video Games*. [online] Available at: <https://publications.scss.tcd.ie/theses/diss/2014/TCD-SCSS-DISSERTATION-2014-046.pdf>.
- Sato, T., Carmack, J., Hall, T., Cloud, K., Koseruba, D. and Murvey, C. (1993). *Doom*. [online] IMDb. Available at: <https://www.imdb.com/title/tt0286598/>.
- Sony (2020). *PlayStation 5*. [online] PlayStation. Available at: <https://www.playstation.com/en-gb/ps5/>.
- Sony Interactive (2018). *God of War*. [online] PlayStation. Available at: <https://www.playstation.com/en-gb/games/god-of-war/>.
- Steam Revenue Calculator (n.d.). *Steam Revenue Calculator*. [online] steam-revenue-calculator.com. Available at: <https://steam-revenue-calculator.com/>.
- Valve (2012). *Counter-Strike*. [online] Counter-strike.net. Available at: <https://www.counter-strike.net/home>.
- VG Insights (n.d.). *Video Game Insights - Games industry data and analysis*. [online] Video Game Insights. Available at: <https://vginsights.com/>.
- Wohlfarth, T. and Samtani, S. (2023). Our Scoreboards Reveal Our Priorities. *Journal of Character Education*, 19(1/2, p113-128).