



Your Freedom in Learning

Senior Design Project Report COMP491

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ABSTRACT

ARTIFICIAL INTELLIGENCE SUPPORTED 2D STORY-DRIVEN VIDEO GAME

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Unlike the common 2D story-based games that are in today's game market, the aim is to bring a different perspective to the market by supporting the in-game quests with Artificial Intelligence (AI) and multiple decisions made by the player during the game to set in an imaginary World, this game is a story-driven 2D RPG, so to add a new viewpoint to the game industry by encouraging different algorithms of AI in in-game quests and story flow accorded to the player's decisions is the most important part, and applying that idea in a 2D story-driven game is the project's must. In this imaginary world player is going to play the game as an American army soldier against Nazi Germany in Second World War and going to understand cruelty in the world events.

Keywords: 2D, Story flow, AI, Role Play Game (RPG)

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1. INTRODUCTION

1.1 Motivation

The main motivation to start this project is the group members' desire to create a game and a story due to their interests and imagination. Group members chose to add a new and different game to the game market because they had an idea about the games available on the market. It is determined to design a 2D story-based game using artificial intelligence in mini quests and storyline.

1.2 Content

The content is designed to express the effects of war on human psychology, ideas, and living standards. To better express these effects game and environments going to be designed in three different parts, the first part takes the middle of the war and the problems that it causes as the topic from the perspective of a soldier, in the continuation of the story the psychological effects and disappointments of the first episode is dealt with, at the end of the fiction with the concreted emotions which are decided by the player, the alternative endings came up.

1.3 Artificial Intelligence

The role of AI in the game is to give a challenge to players on the different side and main quests like the 3x3 isolation game. Almost all these quests are going to be compulsory to achieve full progress in the story, and the level of AI is going to change related to the player's decisions and play style.

1.4 Economic Aspects

The project doesn't have an economic income expectation, the main idea is launching the game on different computer platforms and to be accessible by other players.

1.5 Impact

1.5.1 Global Impacts

The global impact of this project we have done is that people play this game. Because as the number of people playing this game increases, the rate of people being talked about will increase and will begin to attract people's attention.

1.5.2 Economic Impacts

This project does not have much economic impact. Because we will offer this game free of charge in the game environments we will install. Only by increasing the popularity of the game environments we have installed has contributed to those environments.

1.5.3 Societal Impacts

An example of the societal impact of the project can be the negative factors such as the stress experienced by the individuals who play during the day by enjoying this game. Having fun while playing this game is among the main goals.

2. PROJECT DEFINITION AND PLANNING

2.1 Project Definition

This game is a story-driven 2D RPG set in an imaginary universe. In the game, you play as a soldier of the American army against Nazi Germany in WW2 to complete quests in the story to reach multiple endgame scenarios. The decisions of user are important because they affect the storyline and Artificial Intelligence in quests. These choices are very important as the game strategy of artificial intelligence will change according to the user's decisions.

2.2 Project Planning

2.2.1 Aim of the Project

The aim is serving a new perspective to gaming industry by implementing an AI supported, story-based 2D game. The role of AI in this aim is giving an extra challenge to player and force him/her to make correct decisions.

2.2.2 Story

The first scene starts with hope about the end of the war, soldiers are talking about that situation, but all hope ends with a sudden attack on the second facade of the American Army which is inside the Nazi Germany area, this facade doesn't have concrete buildings. Before that attack soldiers are training in different zones of the facade, this scene is about basic quick tips about playstyle and conversations of our

two main characters (old man [Gerard] and young one [Sam]), on these conversations Sam realizes that Gerard has some problems about remembering things, because of that he gives a photo of himself to Gerard in that day.

On the night of the day that attack happens by enemy planes, as soon as Sam wakes up, he runs out of the tent checks for Gerard's tent and realizes that he is missing, after that he tries to help other soldiers and sees the injured commander, takes command from him, and starts his first actual quest about ringing the alarm and communicating the third facade about the situation.

After finishing these quests and saving people, Sam still worries about Gerard and returns to the second facade which is officially under the invasion of the enemy, in some area that is close to that facade he finds Gerard. Gerard remembers him and talks about the plan he made for that they need to split up, this part has two different stories for each main character, and we are going to play them one by one, also they will have quests together.

In the middle of this plan, enemy soldiers notice our main characters and start shootings, one of the characters is going to be shot but the screen will be almost fully blurred, and we won't be able to see who is shot.

After a while we are going to play with Gerard while he is running away from the area without Sam, after some time he will be out of breath and going to faint in a secure place, then we will see that Sam got shot and the enemy soldiers around the body, they will leave him by thinking he is dead, when they are gone, he will wake up with an injured body and goes to a German city after changing his uniform. Besides all that he thinks that Gerard has left him and run away, but at the same time he thinks if he is in Gerard's foot, he will probably do the same thing.

The main story starts in the German city, Sam is going to try to get himself a new life, he is going to work in a casual job, with the time he will get the news about the end of war and victory of Germany, he is going to fall in love with a girl named Elizabeth in this period. With some of the side and main quests he can be able to find gifts for Elizabeth or useful goods for himself, for example after a game against ai in the city tavern, if he can do enough success against ai he will get two tickets for a prom, on this prom scene we are going to see how their relationship is going to move on (player will decide that by his/her decisions).

On some of the parts, Sam will realize that he is not able to do some of the things that he can do before that injury, but he won't mention this situation to anyone. After all these, it will come out that Elizabeth's father is one of the commanders which saw Sam's dead body, but he won't understand that because of time past and changes on Sam.

One day Elizabeth mentions a man, which his father trying to catch, to Sam and shows the photo of him, after a little shock Sam realizes that the person in the photo is himself, then starts thinking about Gerard, he thinks Gerard is probably captured by the enemy and they took his photo from Gerard's backpack.

Because of recent events Sam decides to avenge and does little sabotage operations while everything was on the rail. After successful sabotages Elizabeth's father understands that Sam is responsible for all that, but he doesn't reveal this situation. At the end of all these sabotages Sam decides that he did take revenge of Gerard, but it is too late for everything because Elizabeth's father threatens Sam, with his own daughter's life. This is the last decision of the game, the player can save Elizabeth but not Sam, can lose both or save both, it is all about understanding the trick in the story, because all the scenes, including Sam's first injury, is a dream of Gerard, actually we are playing Gerard's ideas in Sam's body. There will be more signs to make the player realize that everything is a dream

2.2.3 Quest Types

- **Main Quests**

These quests are mandatory to pass levels and will be in interaction with the main story. For example, in the main quests we will take command from the injured commander, our mission is ringing the alarm, but the bell on the bell tower will be broken because of a shrapnel, we will find 3 different parts of this bell on the main facade zone. On each bell part, we will face a challenge, like take it from the behind of tree, or clean the rubble on the area to pass to the destination tent, after combining all parts we will be able to call soldiers to the watchtower.

As a different example of main quests, the commander will send us to the communication tent, we need to solve the puzzle in that tent by checking documents,

environment, etc. For example, we will find 2, 3, 7 numbers from documents after checking the map on the wall, we will be able to find coordinates of the third facade.

- **Side Quests**

Side quests are not mandatory to pass levels, but they may affect the scenario like, on the first scene before the attack, a nurse and soldier will stay under a tree and will have a romantic talk, we will be able to see all these but we can pass too, after the attack nurse is going to be running in screams to somewhere, if we follow her we will see that a tree fall to soldier and nurse couldn't help him, that's why she is screaming if we save the soldier we can easily get the bell part which is in the main quest, or it may have different effects like that.

- **AI Oriented Quests**

One of the most important part of the game is AI because they will be the actual challenges, as we mentioned in the introduction.

Isolation Game and Implementation:

The main idea in Isolation game is making the opponent unable to move, all of the moves of Artificial Intelligence is going to be calculated and decided via minimax algorithm.



Figure 1: First move of Isolation Game

As you can see in Figure 1, we played bottom left and AI played middle.

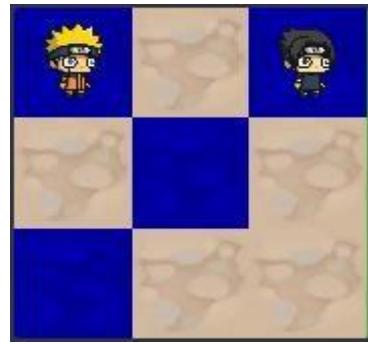


Figure 2: Second move of the Isolation Game

In figure 2, we played top left and he played top right.



Figure 3: Third move of Isolation Game

In figure 3, we played top middle, and he played middle right.



Figure 4: Fourth move of the Isolation Game

In figure 4, we played the middle left, he played the middle bottom. After all this, we don't have any moves left but he does so he won.

The isolation game is going to be edited and attached to the main story, as like

1. In a sabotage mission main character is going to sabotage a building which has 3x3 rooms and containing a camera system.

2. To make a move player is going to play a mini-game in an in-game computer, if he/she can win the level in a dedicated time, the sabotage is going to be successful.
3. After the player's round, AI is going to play its move and lock the doors of a room.
4. If character sabotages dedicated number of rooms successfully, he will be able to escape from the zone.

Minimax Algorithm:

The algorithm is a kind of depth-first tree search, tries possible outcomes in a tree and selects the best continuing way related to weights of nodes.

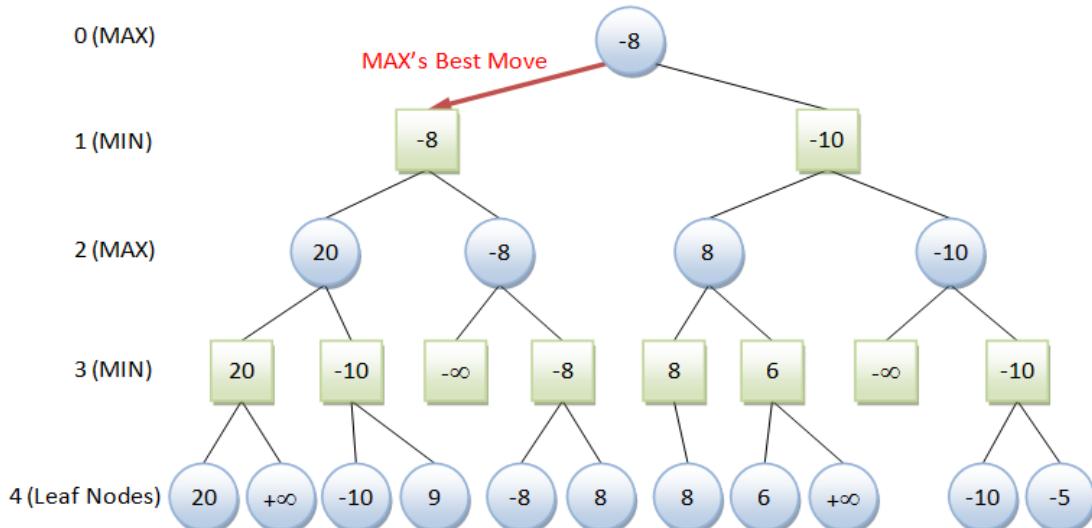


Figure 5: Minimax Algorithm Example Tree ^[1]

As can be seen in Figure 5, weights calculated are stored in the leaf nodes, after assuming the leaf nodes are maximizing nodes, with a sequence of max to min and min to max, algorithm can determine the best maximizing or minimizing values. The maximizing values are the moves of AI, and minimizing values are the moves of player.

Weights can be calculated related to different heuristics comes from the decisions of player, these situations can be listed as:

- Full offensive: Tries to minimize opponent's moves instead of maximizing its own moves.

- Aggressive: Tries to minimize opponent's moves while trying to maximize its own moves.
- Defensive: Tries to maximize its own moves while trying to minimize opponent's moves.
- Normal: Tries to maximize its own moves and minimize opponent equally.

Instead of just this isolation game, we will have different types of AI's too, like a board game in the tavern or an AI agent that uses naïve bayes algorithm to rethrow bombs that we threw to him by checking old thrown positions.

2.2.4 Project Time Planning

Table 1: The events done by group members

Task	Responsible Person	Weeks												
		1	2	3	4	5	6	7	8	9	10	11	12	13
Character Drawing	Zeynep Ayyüce Çay													
	Muhammed Rahmetullah Kartal													
	Atakan Ermete													
Background Drawings	Zeynep Ayyüce Çay													
Items to be Drawn in the Environment	Zeynep Ayyüce Çay													
	Atakan Ermete													
Items That Need to Be Scratched Inside the Tent	Zeynep Ayyüce Çay													
	Atakan Ermete													
Animations of Characters and Environment	Muhammed Rahmetullah Kartal													
Designing the Scenes in Unity	Muhammed Rahmetullah Kartal													
Coding and Testing	Muhammed Rahmetullah Kartal													
	Zeynep Ayyüce Çay													

Report and Project Presentation	Muhammed Rahmetullah Kartal															
	Atakan Ermete															

In the project, the things done in the past are as follows.

- First, the important characters were drawn. However, most of these drawings have been redrawn in their original versions. Then, the animations of these drawings were made for each character. However, the animations of the characters contain the animations so far. Then the required animations will be made as the game progresses.
- Necessary items were drawn in the environment. Then the main image was created by drawing the background. The adjustments of this scene were made through unity and the main character was placed. Codes were written in unity to create and combine these scenes.
- After the functions of the first scene were finished, the production of the scenes inside the tents and the tower was started. First, the backgrounds and the necessary items were drawn. By combining these drawings on unity, many scenes have been obtained.
- To pass between these scenes, codes were written on the unity and the transition of the actor was provided.
- These drawings, animations and scenery are the first part of the game.

Table 2: The events is going to be done by team members.

Task	Responsible Person	Weeks													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Character Drawing	Zeynep Ayyüce Cay														
	Muhammed Rahmetullah Kartal														
	Atakan Ermete														
Background Drawings	Zeynep Ayyüce Cay														
Items to be Drawn in the Environment	Zeynep Ayyüce Cay														
	Atakan Ermete														

Animations of the Characters	Zeynep Ayyüce Çay															
	Atakan Ermete															
Environment Animations	Muhammed Rahmetullah Kartal															
Designing the Scenes in Unity	Muhammed Rahmetullah Kartal															
Designing Normal Tasks in Game	Zeynep Ayyüce Çay															
	Atakan Ermete															
Designing In-Game AI Tasks	Zeynep Ayyüce Çay															
	Atakan Ermete															
Coding AI Tasks	Muhammed Rahmetullah Kartal															
Coding and Testing	Muhammed Rahmetullah Kartal															
Report and Project Presentation	Zeynep Ayyüce Çay															
	Muhammed Rahmetullah Kartal															
	Atakan Ermete															

The course of the project will be as follows in the second term and semester break.

- First, the drawings of the second part of the game will be made. Here again, the tools that should be found in the environment and even more character drawings will be at the forefront. Then, after the background drawings are completed, the stage will be designed in the unity.
- Animations of these character drawings will be made in their own way. Then, the animations of the items in the environment that should be animated will be made.
- In addition to these, the design of the tasks in the game and the coding of these tasks will be done in the next period.
- The most important of these tasks will be created with artificial intelligence. The coding and design of these created tasks will be done by different group members.

- Artificial intelligence tasks will be the most basic elements of the game. Therefore, more time will be spent on the creation of these tasks.
- After the design and tasks of the second part of the game are finished, the third and last part will be started.
- In this section, drawings will be made again for the environment and the tasks to be found in the environment. Since this part is the last part of the game, the tasks in this part will be more difficult as it is known that the player will remain in his mind more, so the design of the tasks will be emphasized more.
- This last part will focus on the coding for the artificial intelligence task. And then the design of these missions and combining the scenes through unity will be done.

2.2.5 Success Criteria

In this project, the success criteria are that all the tasks we have planned for the game are formed without any additional. Then, this project we have done is compatible with the project we started with this work.

Another success criterion is that the players who play the game enjoy this game and recommend this game in their environment.

2.2.6 Project Time and Resource Estimation

This project is a project in which three people work together. It does not cost anything, but employees must devote a significant amount of time to this project.

The estimated time required for the project to take place is nine months. All the members working on this project during these nine months have shown a great amount of effort. All the employees have shown their efforts for the project by doing the work they need to do on time.

2.2.7 Risk Analysis

One of the biggest risks that may occur in this project may be the tension that may arise between the members of the group and the interruption of the project due to this. But this event does not contain a high probability of occurrence. Because, thanks to the respect and cooperation within the group, teamwork proceeds well.

One of the other risks is that the drawings we make are recorded on a cloud. This is the deletion of records for any reason. The probability of this problem is somewhat higher. The solution to this problem is to prevent the loss of data by keeping the drawings or anything made by each group member on their own computer.

2.2.8 Tool Requirements

Adobe Photoshop: For environment and character designs.

Unity: Animations, scene designs, and the main game.

C#: Coding Language

3. THEORETICAL BACKGROUND

Physicist William Higinbotham created the “Pong” first video game in October 1958^[2], after that event a journey is started into the gaming world, players, and creators all around the world are together in communication via video games. By the time and evolve of technology, game qualities are improved, nowadays with the Virtual Reality concept games are changing our lives.

3.1 Literature Survey

In the gaming literature first story-based game is the original Donkey Kong arcade game, which released in July 1981^[3]. Cutscenes is one of the most important way to produce a story tell, after Atari released Donkey Kong, Pong and Space Invaders kind of games, industry understand that artificial intelligence can be used in better than just hard coding^[4], by the time PacMan is created and it can be assumed the real AI. Nowadays story-driven RPGs can still be the game of the year and earn lots of awards, The Witcher 3 is one of the most important examples of that^[5]. Besides story-based games Alien Isolation game can be given to AI in modern games^[6].

3.2 Solution Method

To touch human feelings topic is chosen from the current world and history, and to produce that topic game type is set as RPG. Most importantly the usage of AI separates the game from others because in most of the story-driven games game's hardness is related to damages of enemies, but in this game, there will be AI heuristics that are determined related to player's playstyle, this idea is going to give a competitive perspective to the game.

4. ANALYSIS AND MODELLING

Since the project will be played on a computer platform, other 2D story-based games in the game market were analyzed. In line with the analysis, the most important factors of the game were determined before the modeling. Elements such as being a story-based game, being a 2D game, containing mini tasks, giving an alternative ending scenes and artificial intelligence tasks were determined.

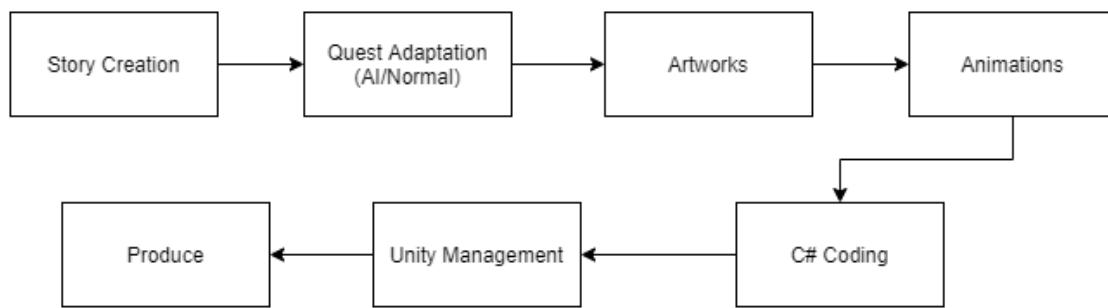


Figure 6: Workflow Scheme

4.1 System Factors

In this project, there are factors affecting the development process of the project. These factors are the best example of current news in the game market. The game market is a platform that is renewed and developed every day. On the computer platform, it is important to follow this current news. Since artificial intelligence has roles in game, changes may happen in the tasks and planning within the project with new developments.

4.2 How System Works

The art design, which is the first step for the system to work, was realized. Since art design is decisive in many factors in the game, it started with design. After making progress in the art design part, animations were used to be story-based, one of the biggest features of the game. The system started to work as the main story was set up and designed. Another most important part of the system is artificial intelligence. Since artificial intelligence will be in tasks in many areas of the game, studies on artificial intelligence have been designed. Various artificial intelligence games were

coded and prepared. The system was planned as a 2D story-based game that emerged together with all of them in Unity.

4.3 Modelling and System Architecture

The design part includes all the design details such as the game's characters and the gaming area. All the visuals in the game are designed and prepared. The game, which stands out with its story-based nature, creates, and designs mini missions to create side missions by adhering to the story. The most important part is artificial intelligence. Tasks and games for artificial intelligence started to be designed. The designed tasks are coded and developed. These tasks will be combined with the design to match the game and the story.

5. DESING, IMPLEMENTATION AND TESTING

5.1 Design

There are three main aspects of project, and these are artworks, story, and artificial intelligence, all the things are set to satisfy storyline. At the first stage of creation a story is written and agreed by team members, and then with several meetings some quests are designed to support story, after all creation of artworks is started.

The artworks have four different aspects, they are character design, environment design, object design and in-game animations, after a while from start job share is assigned to members.

Ideas about artificial intelligence are shared between team members and with these ideas some quest types are designed too.

5.2 Implementation

The implementation is about unity aspects, which are coding and scene management. First thing about coding is almost every object in the screen needs a script, like movement of players, running animations, noticing about collusions or dialogue management. Besides scripts scene management is also important because there is a story that needs to flow, to satisfy this condition each object needs to be in a harmony, also if something changes in a part of map, that change must be permanent.

All artworks can be seen in the Appendix section.

5.3 Testing

Lastly, after each script or scene design, its compatibility is tested by team members and feedbacks are given to designer. Feedbacks are the most important things in this part because for example artworks must be in the same quality, or the scenes should support each other.

6. RESULTS

While doing these things, we found good models by watching lots of videos on YouTube and from different movies, games, and artworks. Since the first presentation teamwork was changed, the environmental design was assigned to Zeynep Ayyüce, the surrounding objects to Atakan, and the animations, coding, and integrity elements to Muhammed Rahmetullah. The idea behind the first period is to learn how to use Unity and Photoshop, to improve team skills, Artificial Intelligence and the rest of the story will be done in the upcoming period. The infrastructure for artificial intelligence tasks was prepared with the codes designed as the project progressed. By combining the designs in Unity, the story started to be formed. After that, the necessary scenes and animations for the story flow started to be created. On the other hand, additional games have begun to be coded for artificial intelligence tasks that we will use in the future. It will be associated with a nice bridge between the coded games and the project in the future.

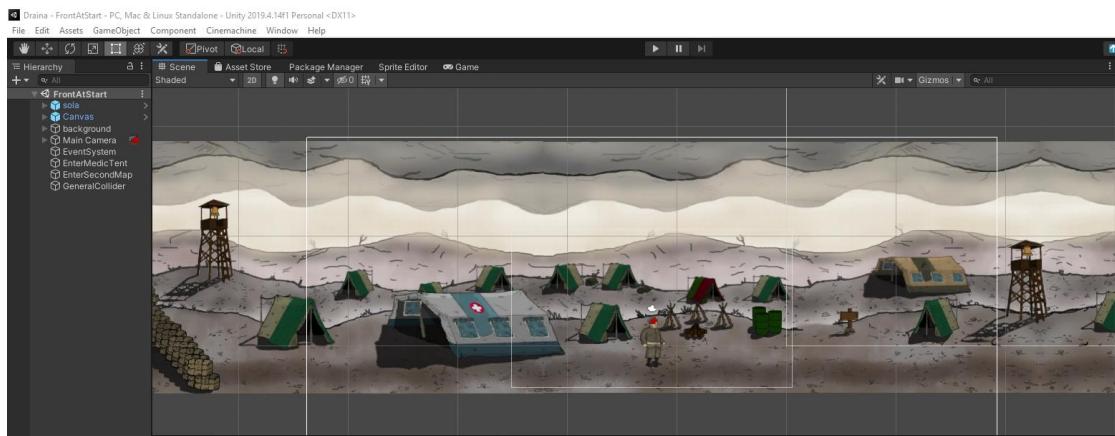


Figure 7: Facade Scene

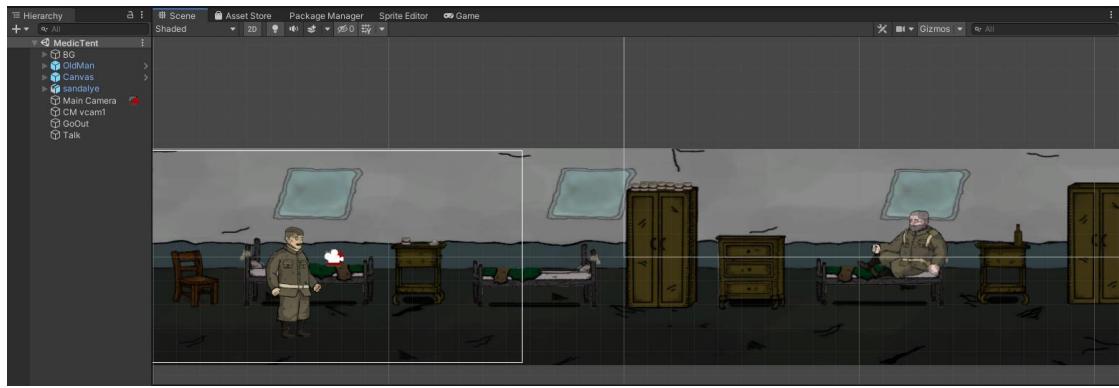


Figure 8: Medic Tent Scene

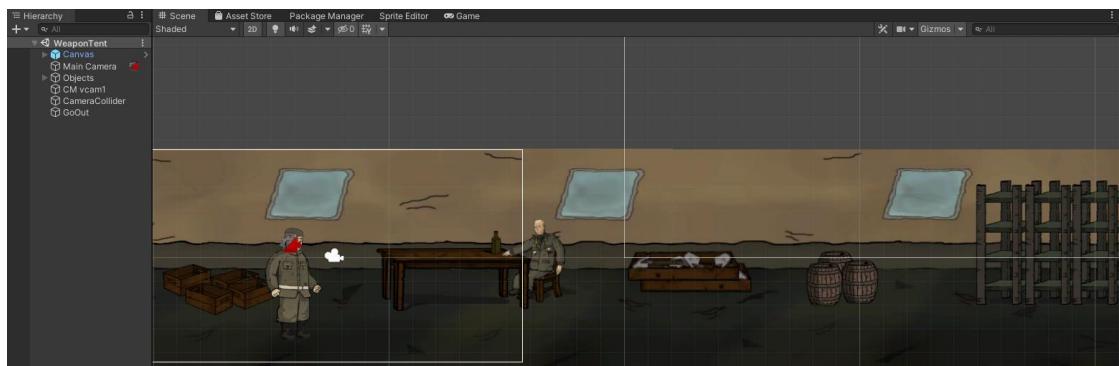


Figure 9: Weapon Tent Scene



Figure 10: Tower Scene

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3|4|5
-+-+
1|2|/
X or O?o
| |
-+-
| |/
Your turn! Choose a place between 1-5.2
| |
-+-
|o|/
Computer's turn!
| |
-+-
x|o|/
Your turn! Choose a place between 1-5.5
| o
-+-
x|*|/
Computer's turn!
|x|o
-+-
*|*|/
Computer won!

```

Figure 11: Output of 3x2 Isolation Game

You can have an idea about current situation of game in figures above.

7. CONCLUSION

7.1 Lifelong Learning

While working on this project, the biggest advantage of all employees is that we learned about the programs that we did not have experience with and learned about these issues. By learning these programs, ourselves, we saw the problems encountered while accessing information and had the opportunity to improve ourselves on this issue. In addition, we are gradually gaining the experience required for the game industry. Thus, when this project is finished, we will have gained experience on behalf of the sector, and we will be able to use the information and programs we have learned in other projects.

7.2 Professional and Ethical Responsibilities of Engineers

In this process, it is the principle of professional reliability in our project. Another important principle is honesty. For example, in this project we have done, we emphasize that we only progress our own drawings without any external element. If we want to follow this sentence, we must continue exactly like this. Because the principle of reliability is very important to us. Another important element is respect. We can exemplify this as follows. First, the members in the group respect each other.

Then, in this project, we continue the project within this framework, respecting the social and social events.

7.3 Contemporary Issues

The aim of this project is for the players to enjoy playing this game, thus making bad thoughts less prominent. The technologies we used in this project were not used until the last ten years. In the upcoming period, we think that these technologies will progress in a big way. Because this sector we have entered is one of the most active and fastest growing sectors in the world. For this reason, the technologies we are using now may not be used next year. For example, maybe we will design the players we have designed in such a way that the time spent on the design process will gradually decrease.

7.4 Teamwork

Teamwork was the biggest influence on this project. Knowledge of accountability, which is one of the variables in the development of this teamwork, is very crucial. They will not face a major problem if the individuals in a team meet their obligations. Another significant concern is that individuals value one another. Since the first presentation teamwork was changed, the environmental design is assigned to Zeynep Ayyüce, the surrounding objects are assigned to Atakan, and the animations, coding, unity aspects are assigned to Muhammed Rahmetullah.

8. REFERENCES

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https://www.gamasutra.com/blogs/TommyThompson/20171031/308027/The_Perfect_Organism_The_AI_of_Alien_Isolation.php. [Accessed: 21- Jan- 2021].

9. Appendix

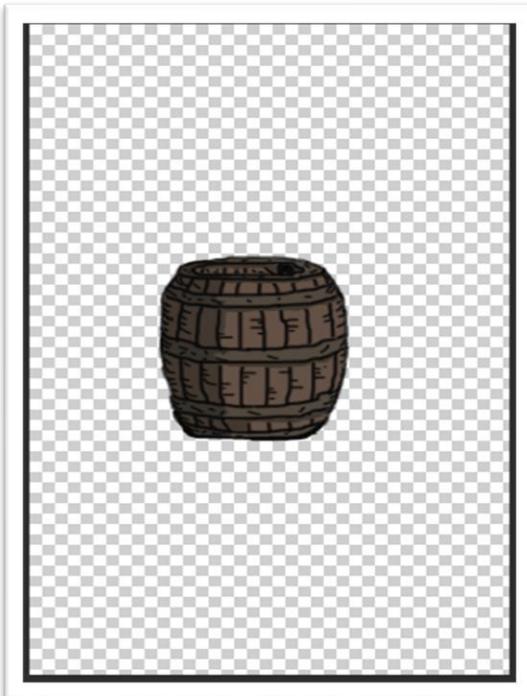


Figure 12: Barrel Without Shadow

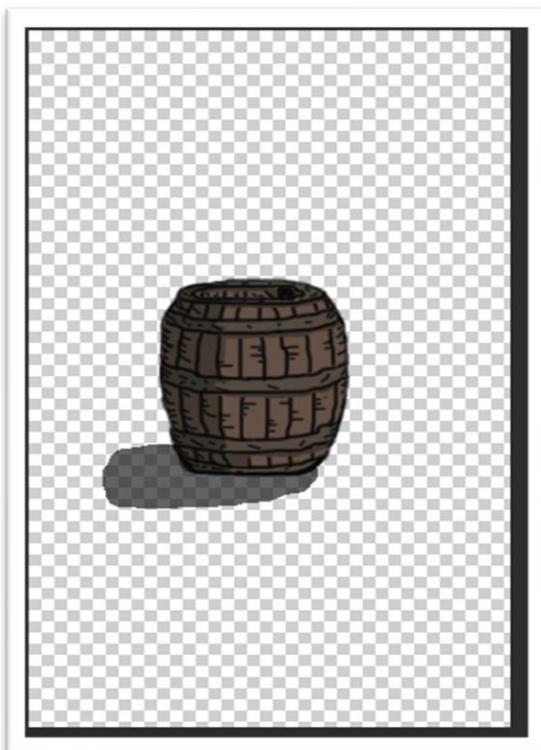


Figure 13: Barrel

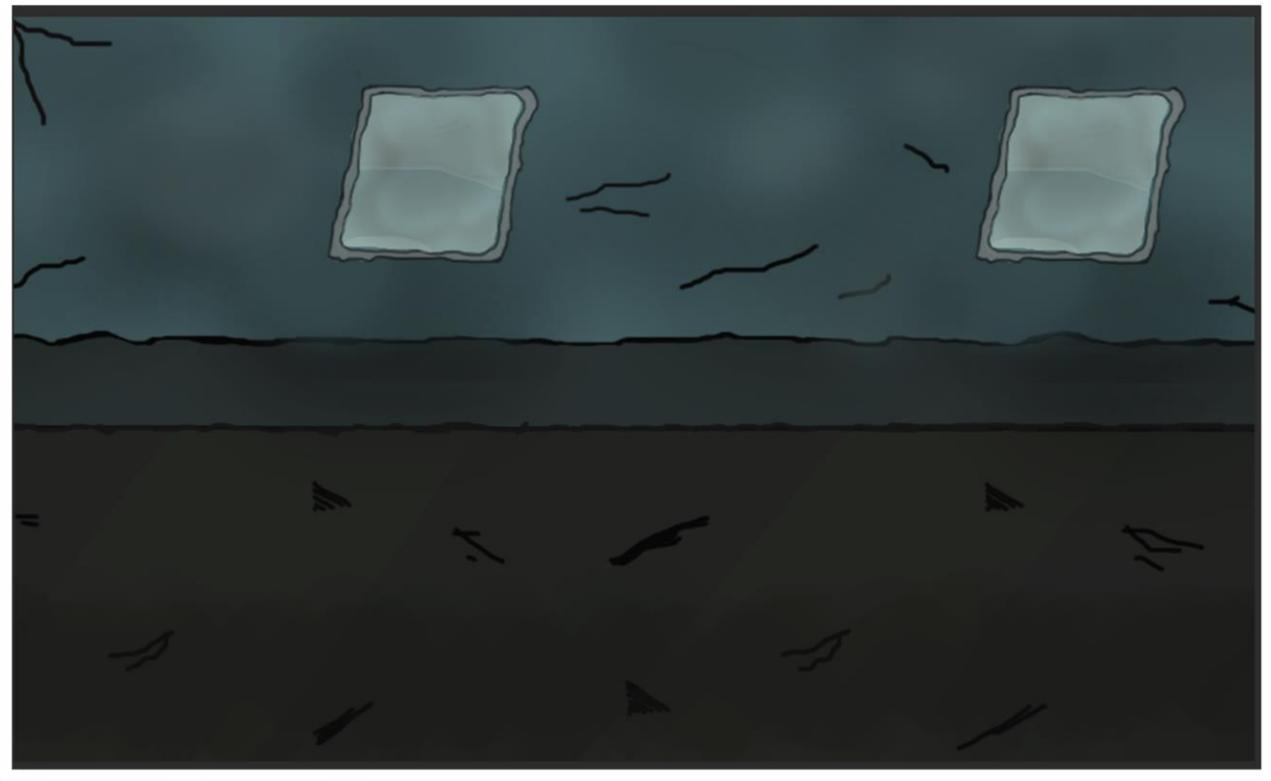


Figure 14: Begin of Communication Tent

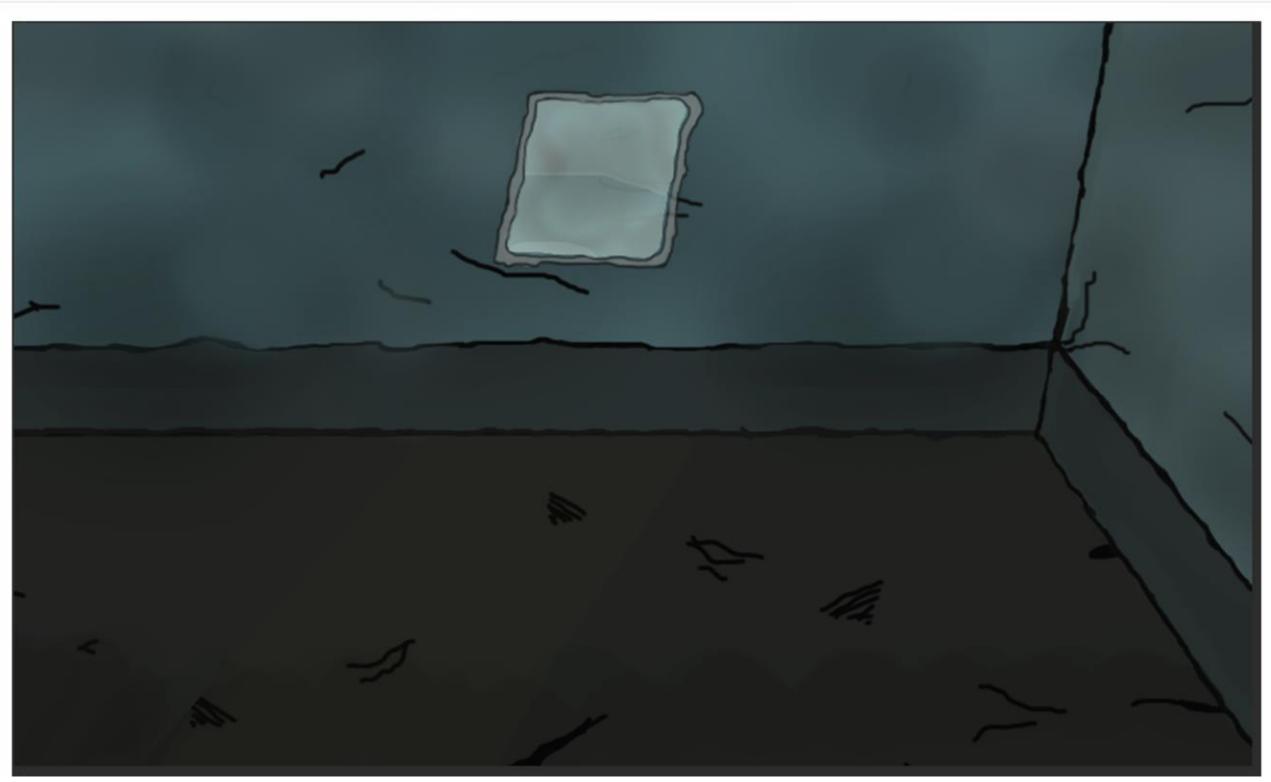


Figure 15: End of Communication Tent

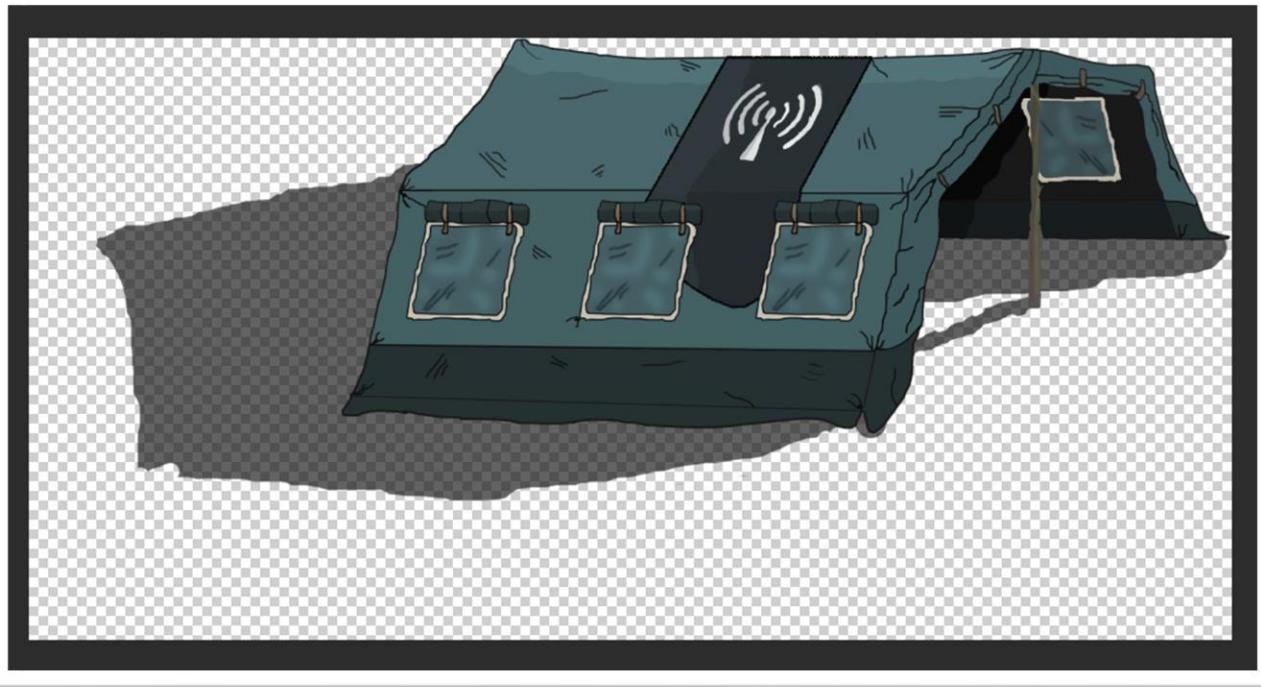


Figure 16: Communication Tent Another View

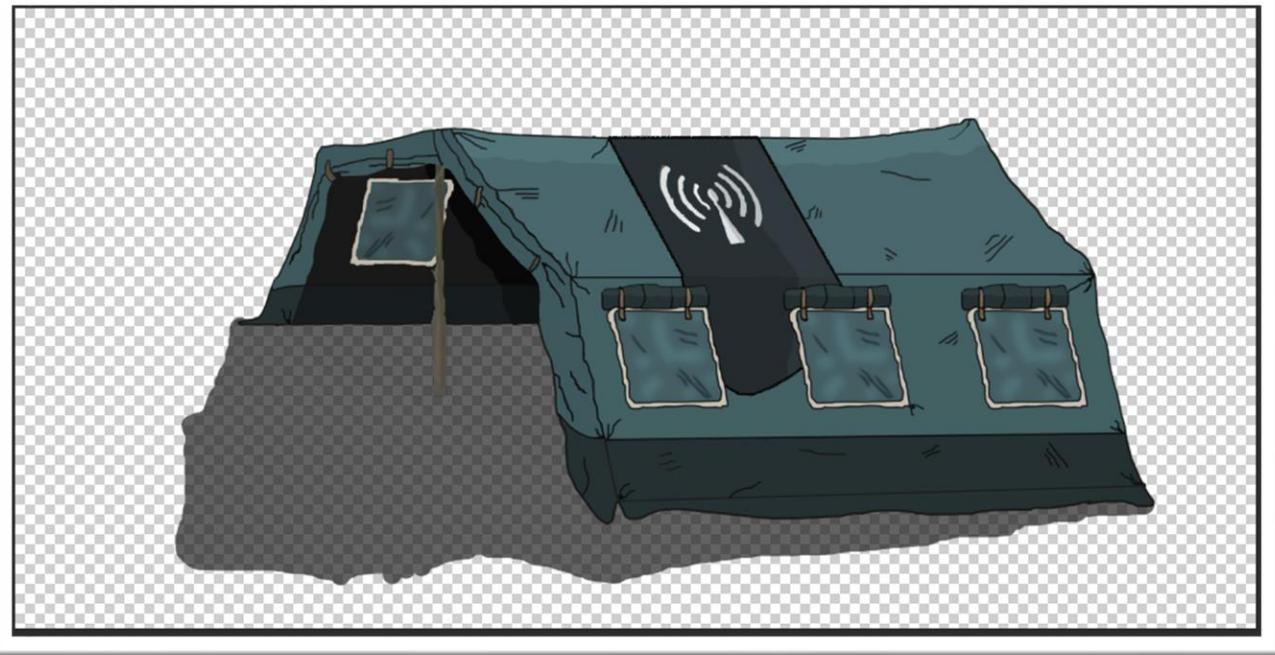


Figure 17: Communication Tent

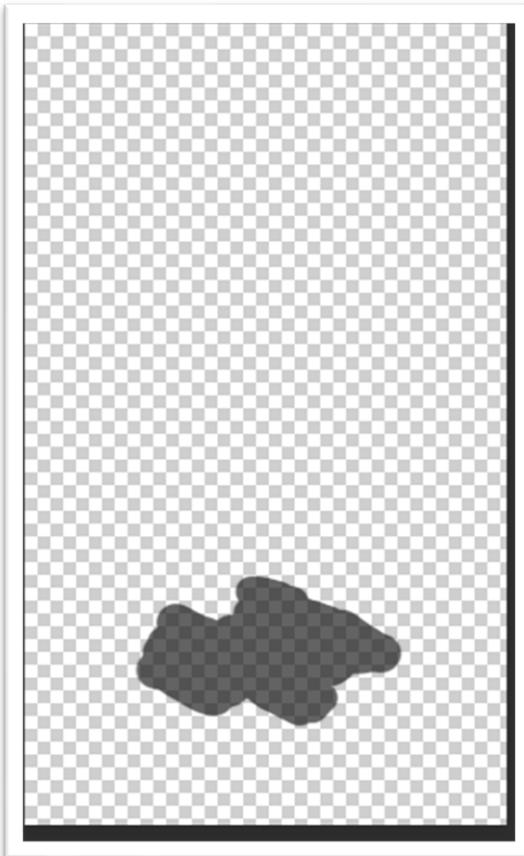


Figure 18: Characters Shadow

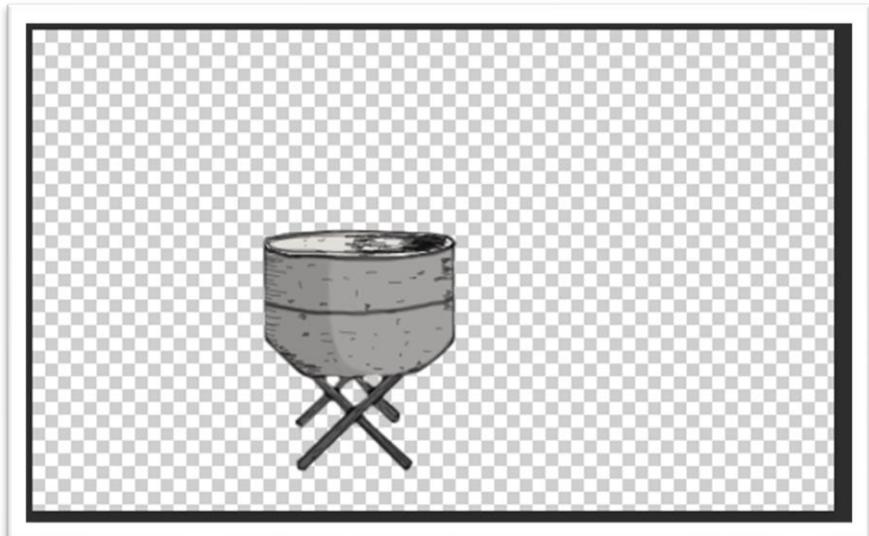


Figure 19: Cauldron



Figure 20: Rubble Animation Scene

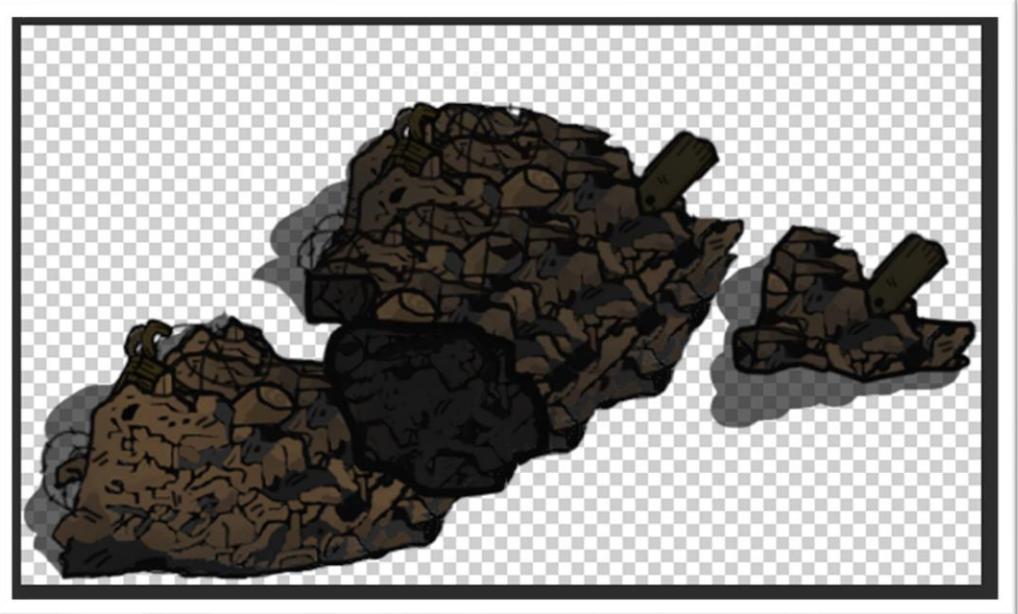


Figure 21: Rubble Animation Scene1



Figure 22: Rubble Animation Scene2



Figure 23: Red Tent



Figure 24: Red Tent Another View

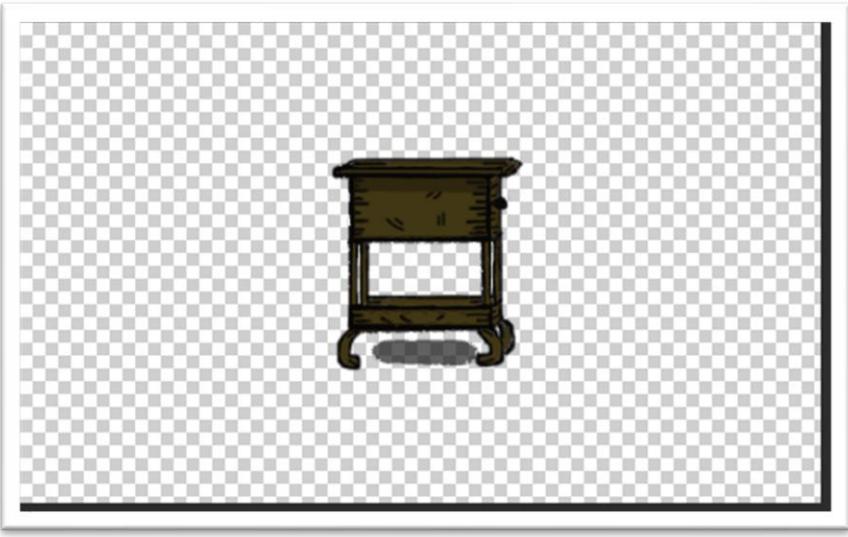


Figure 25: Small Nightstand



Figure 26: Commander

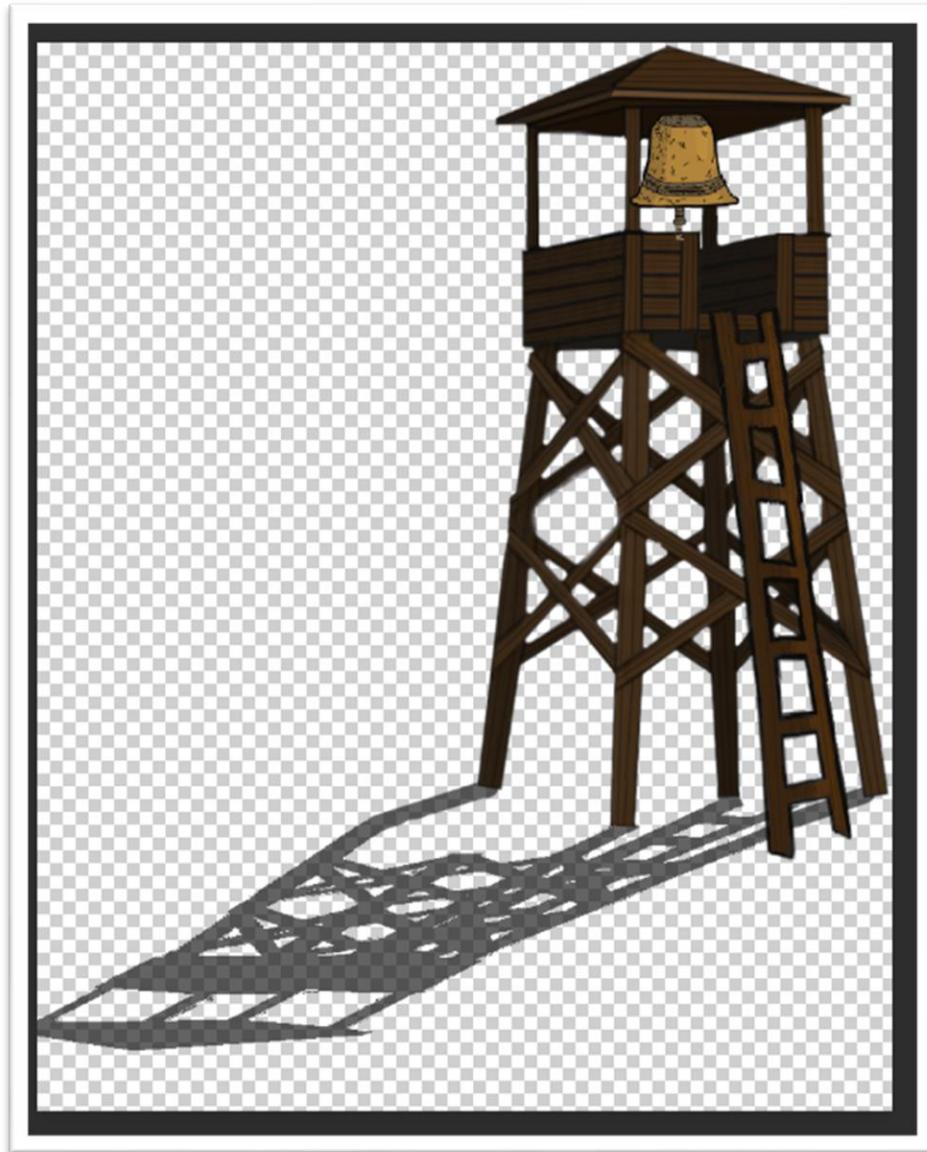


Figure 27: Tower

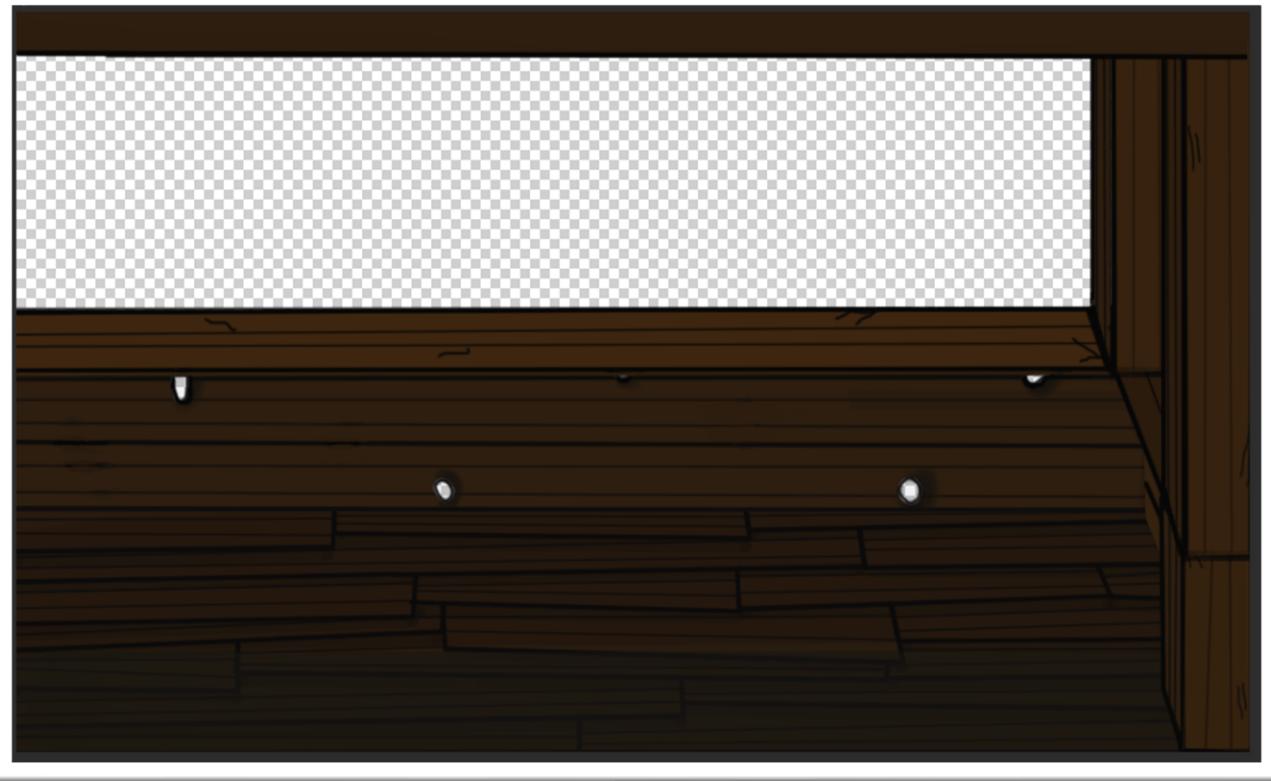


Figure 28: Inside of Tower

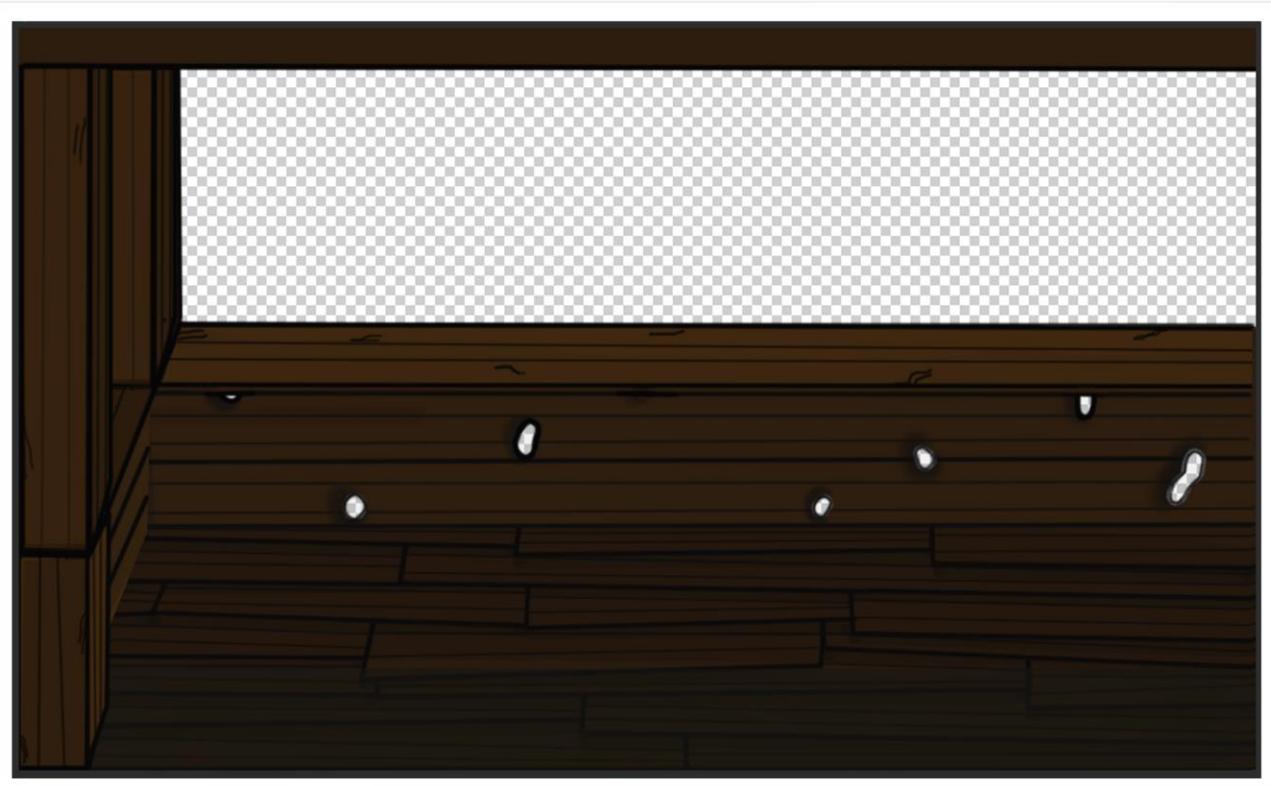


Figure 29: Inside of Tower2

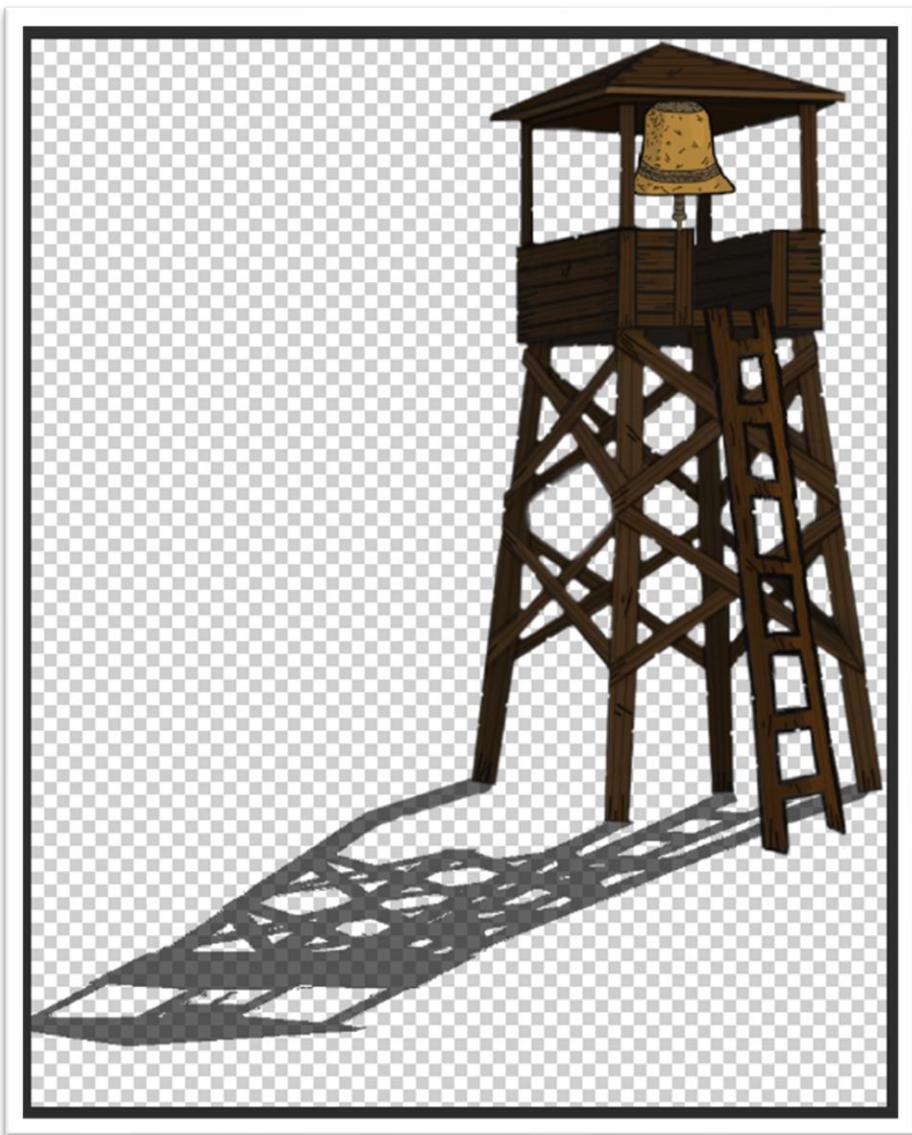


Figure 30: Tower2

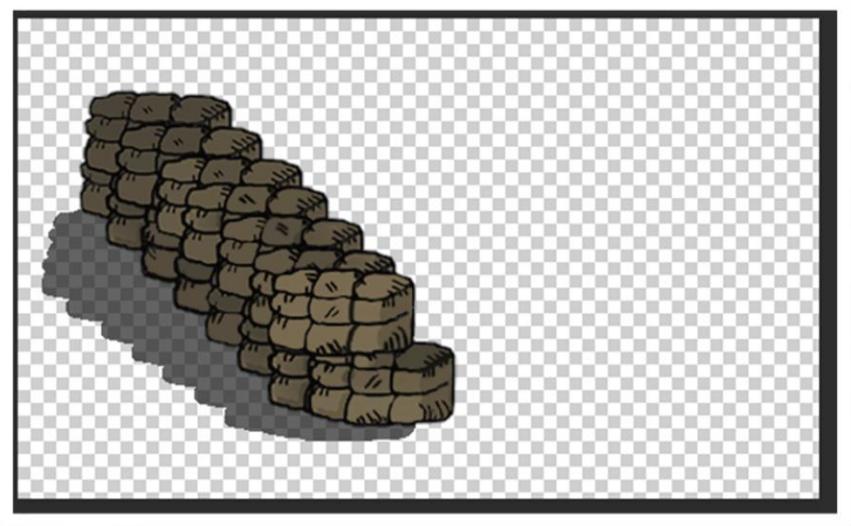


Figure 31: Sand Bags

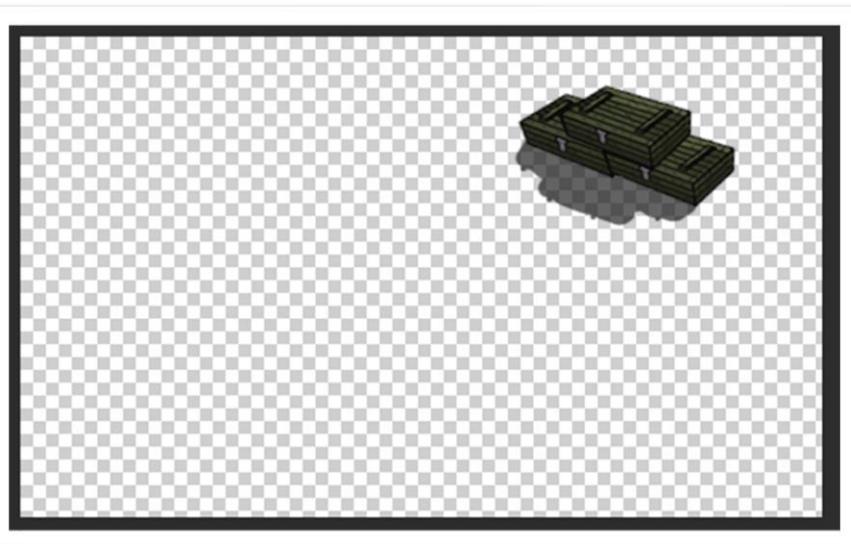


Figure 32: Boxes

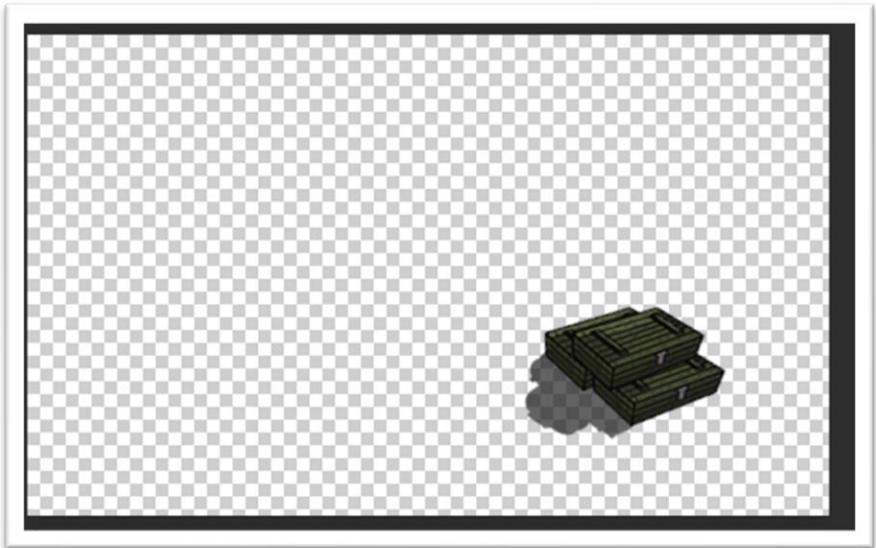


Figure 33: Boxes2



Figure 34: Boxes1

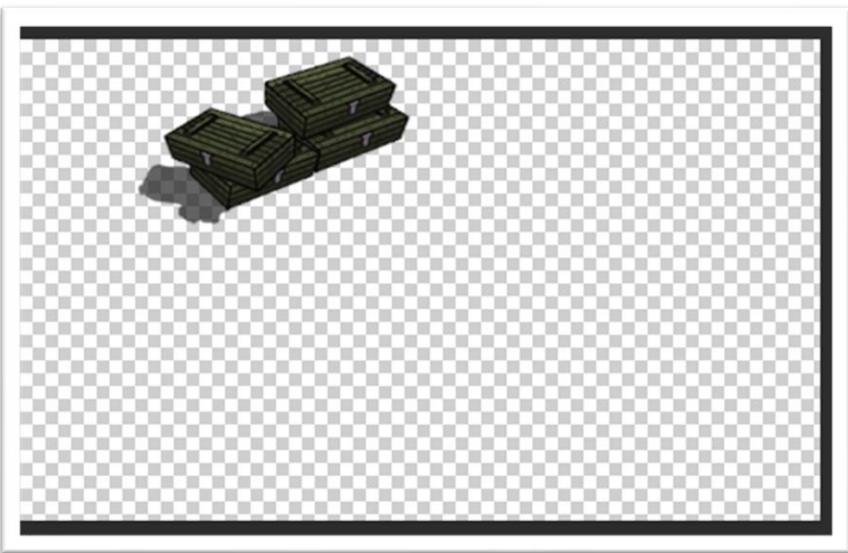


Figure 35: Boxes3

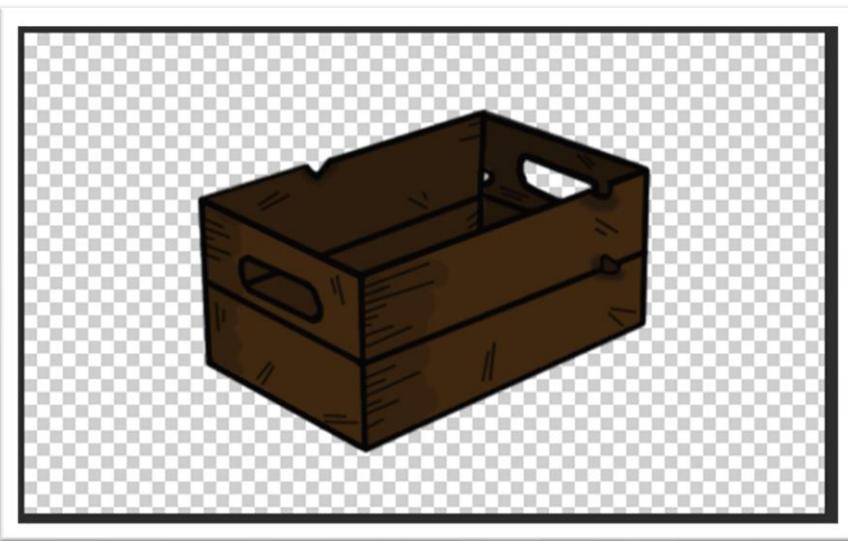


Figure 36: Crate

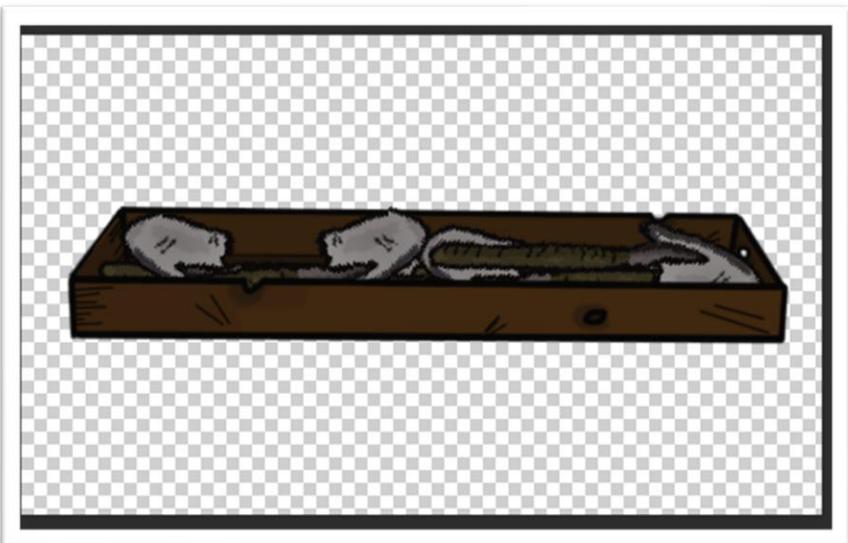


Figure 37: Crate With Shovels

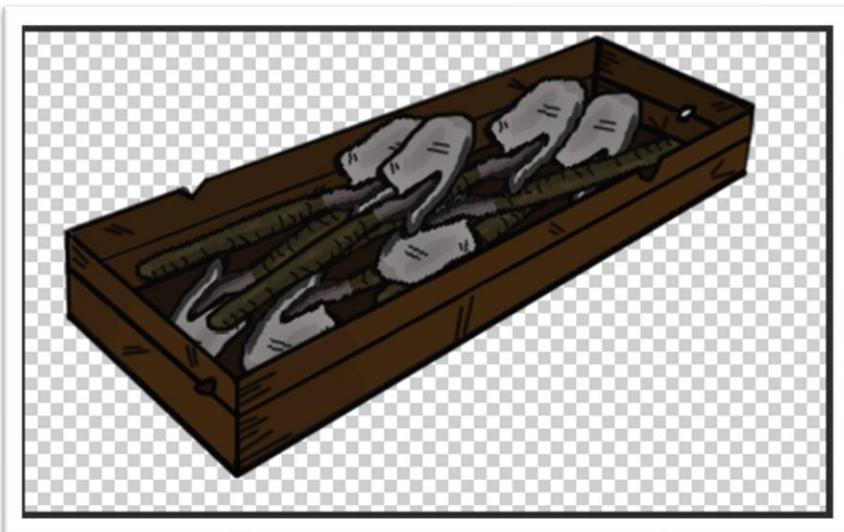


Figure 38: Crate With Shovels Another View

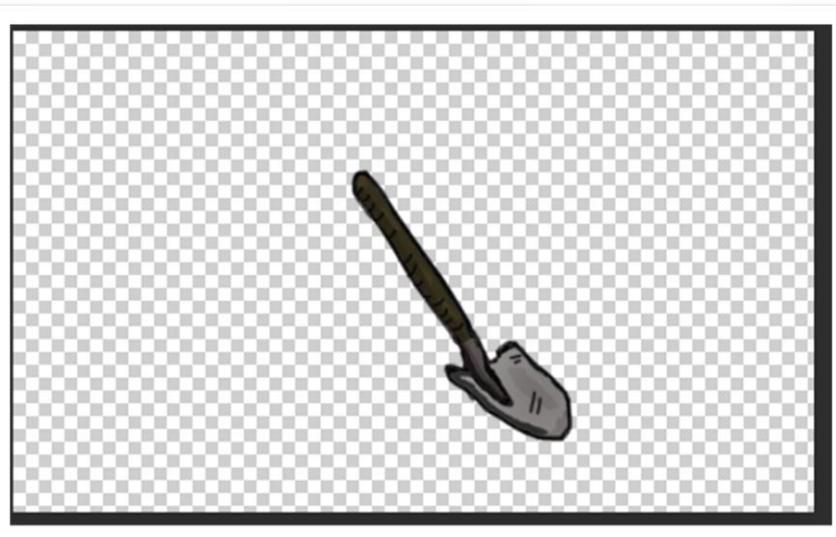


Figure 39: Shovel



Figure 40: Table

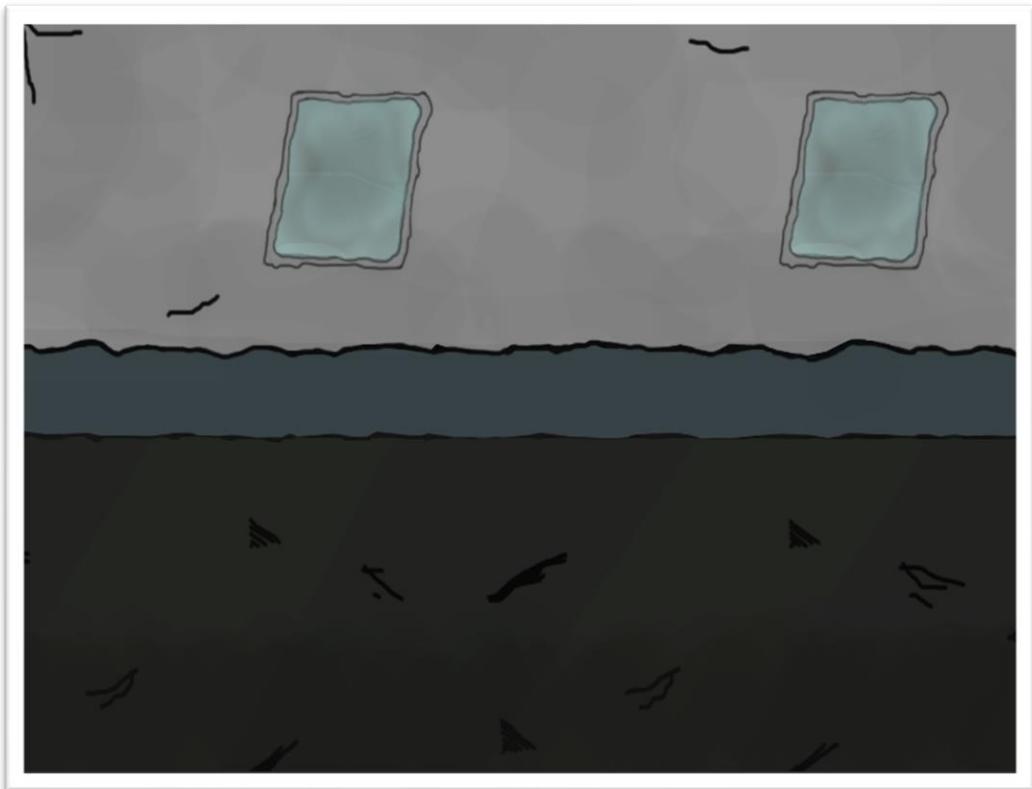


Figure 41: Begin of Medical Tent

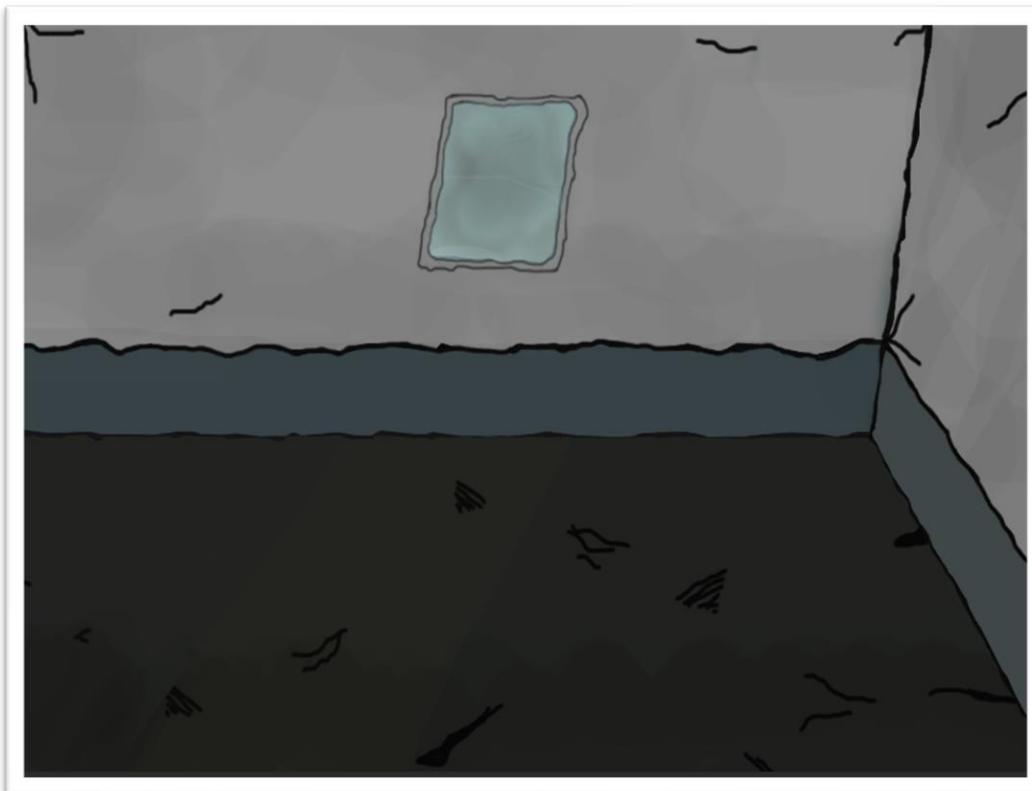


Figure 42: End of Medical Tent

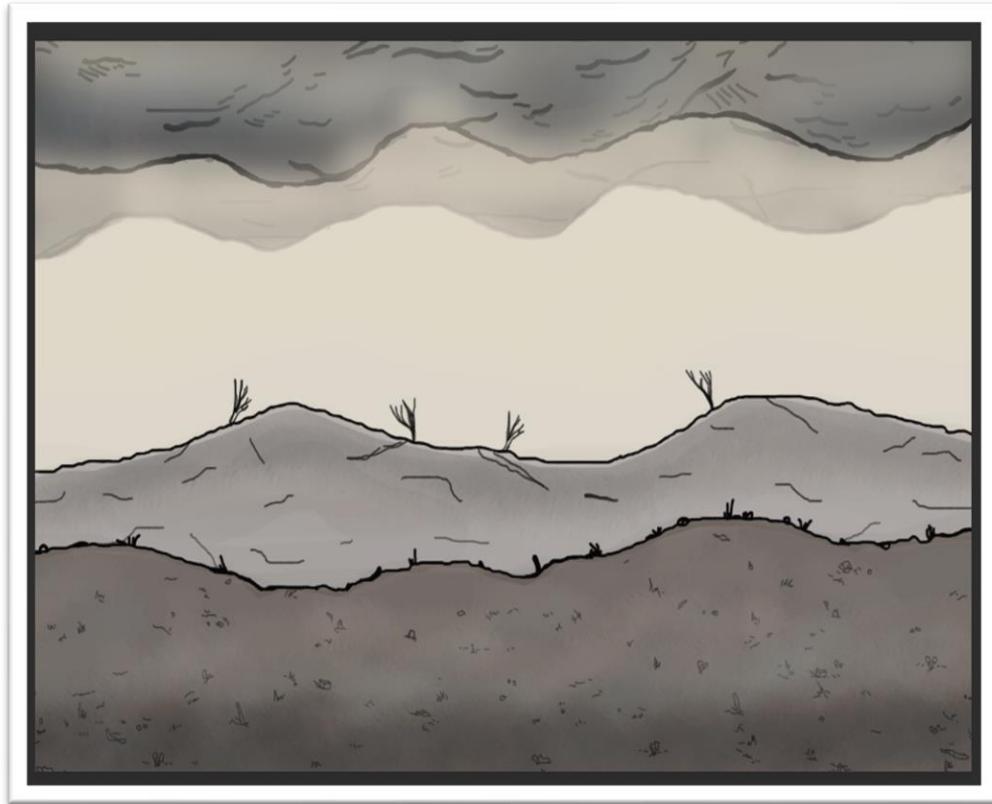


Figure 43: Background2



Figure 44: Rubble

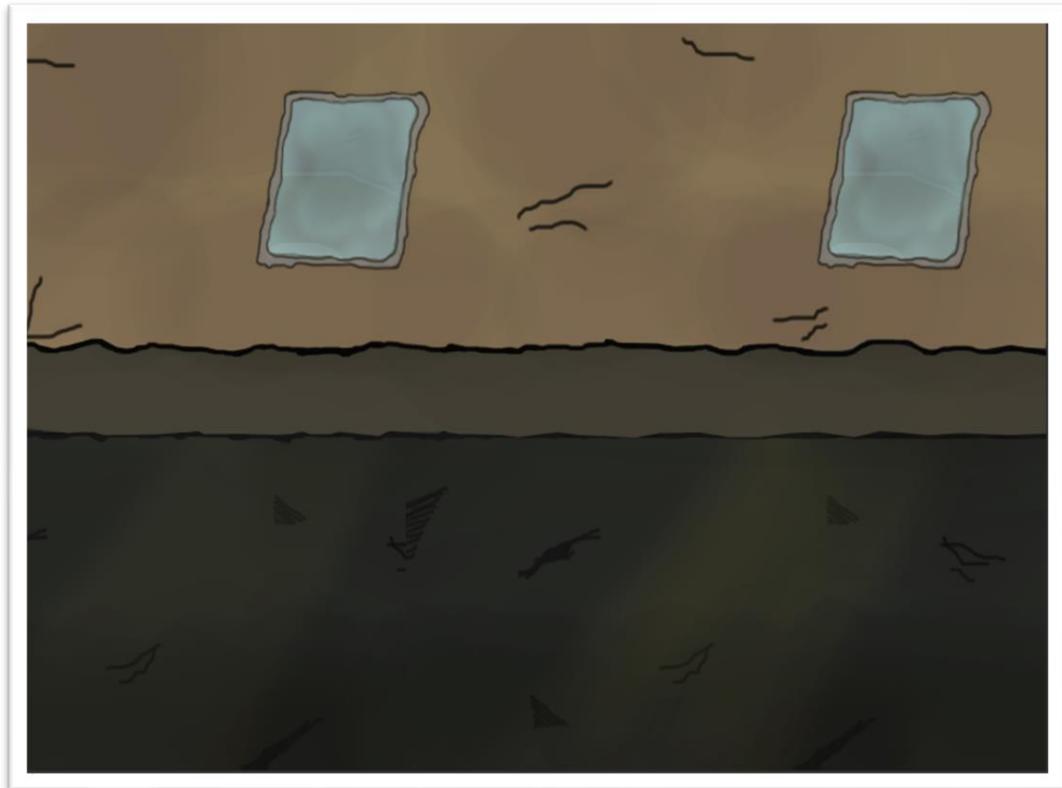


Figure 45: Begin of Ammo Tent



Figure 46: End of Ammo Tent

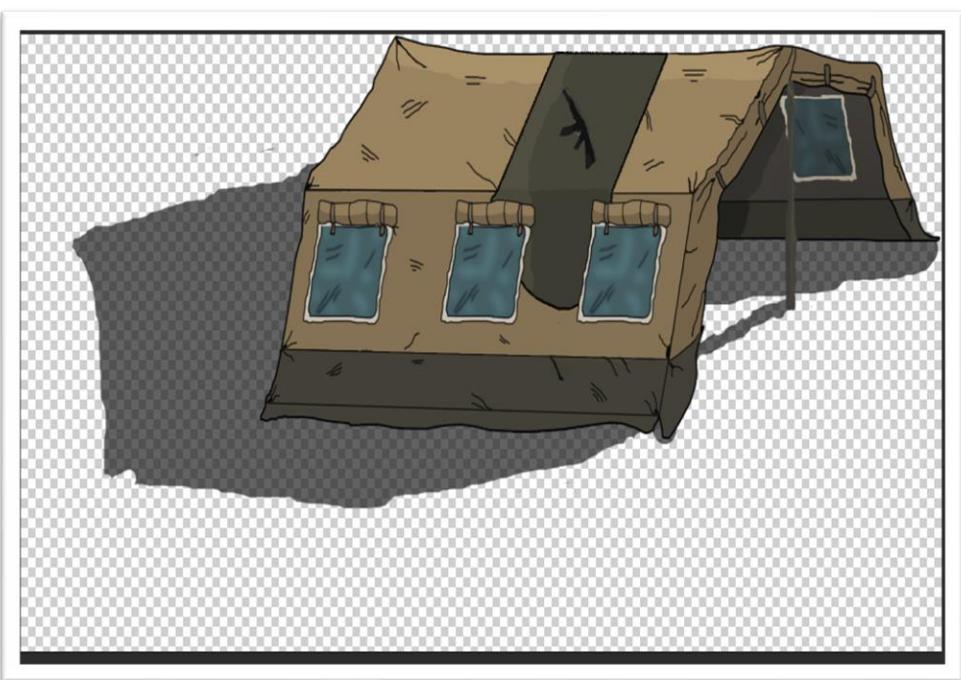


Figure 47: Another View of Ammo Tent

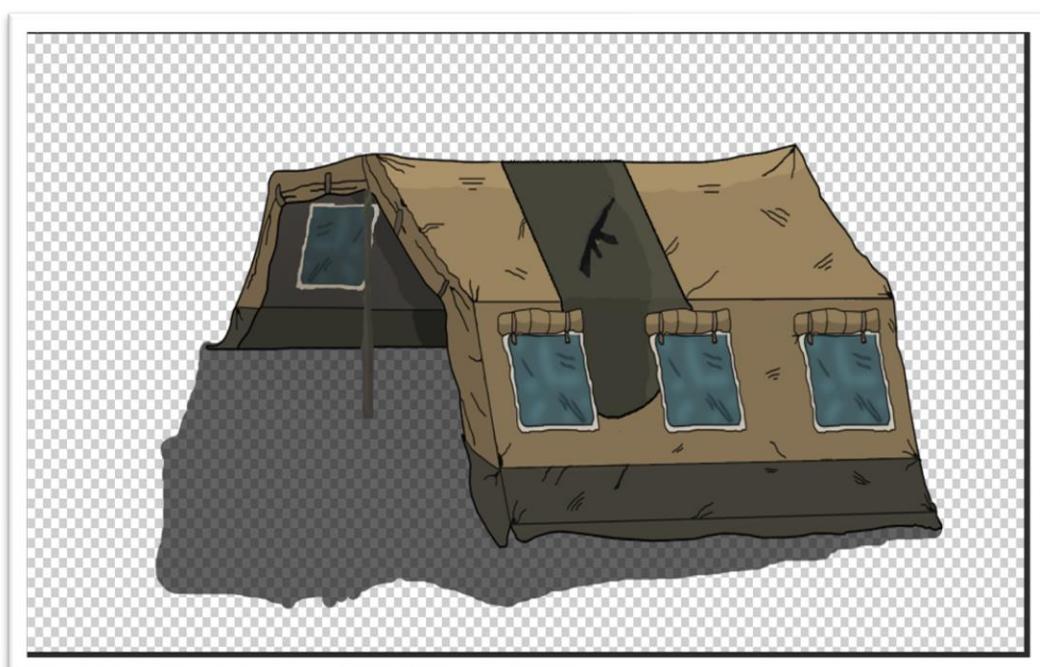


Figure 48: Ammo Tent

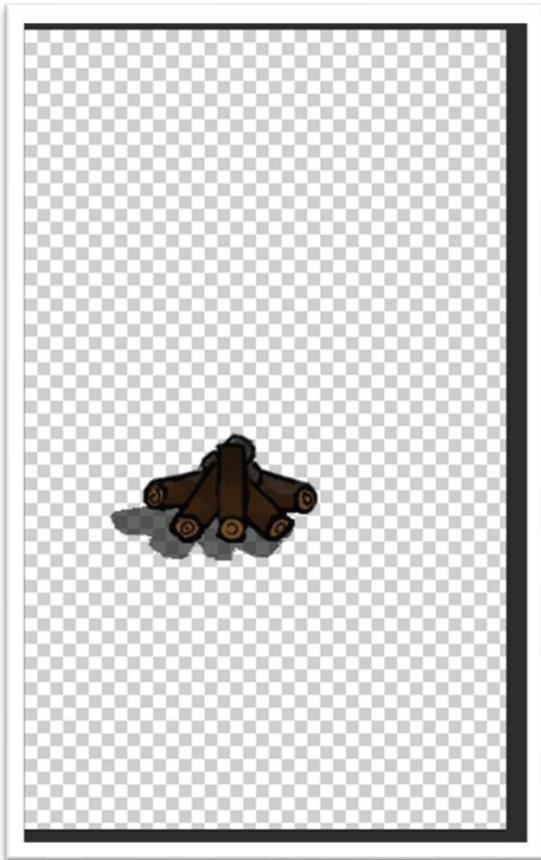


Figure 49: Woods

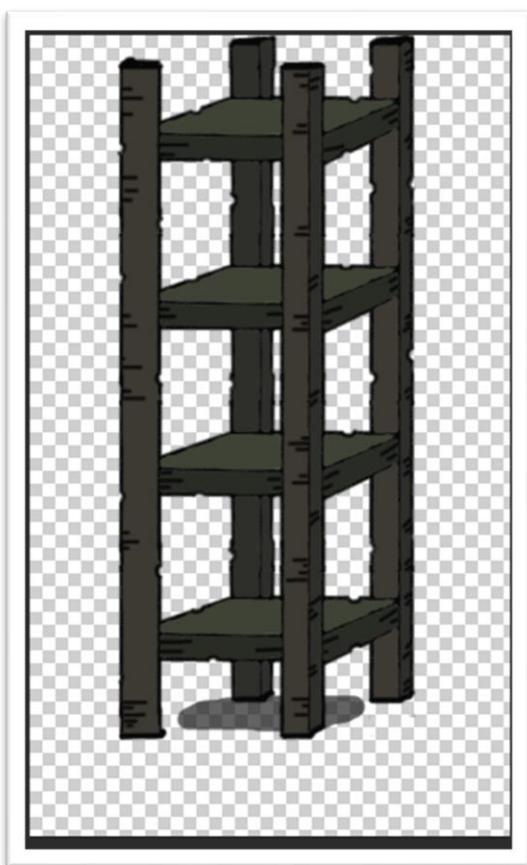


Figure 50: Shelves



Figure 51: Old Soldier

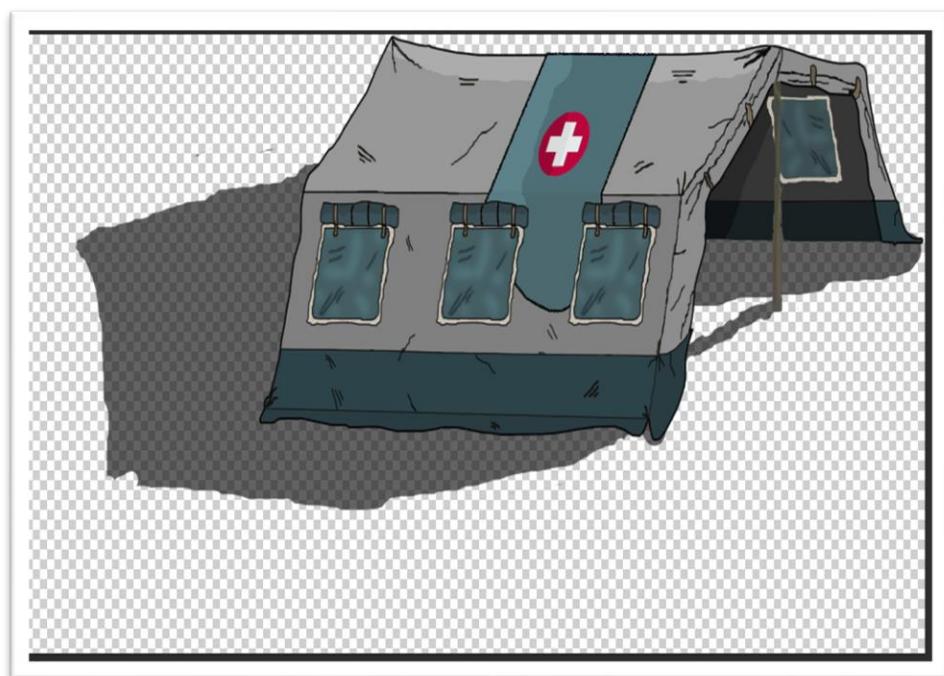


Figure 52: Another View of Medical Tent

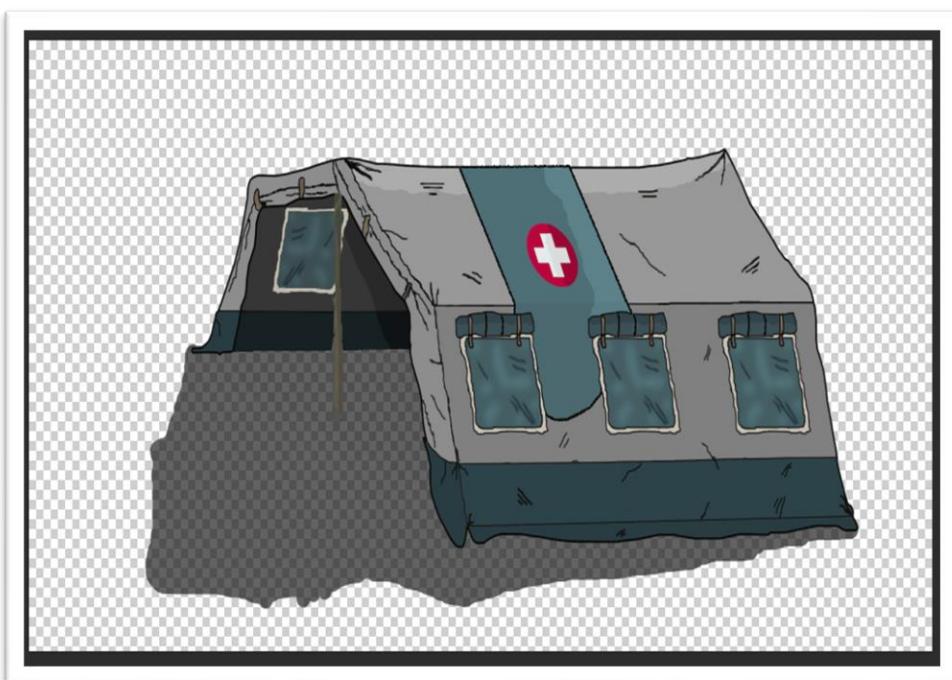


Figure 53: Medical Tent



Figure 54: Chair



Figure 55: Guns

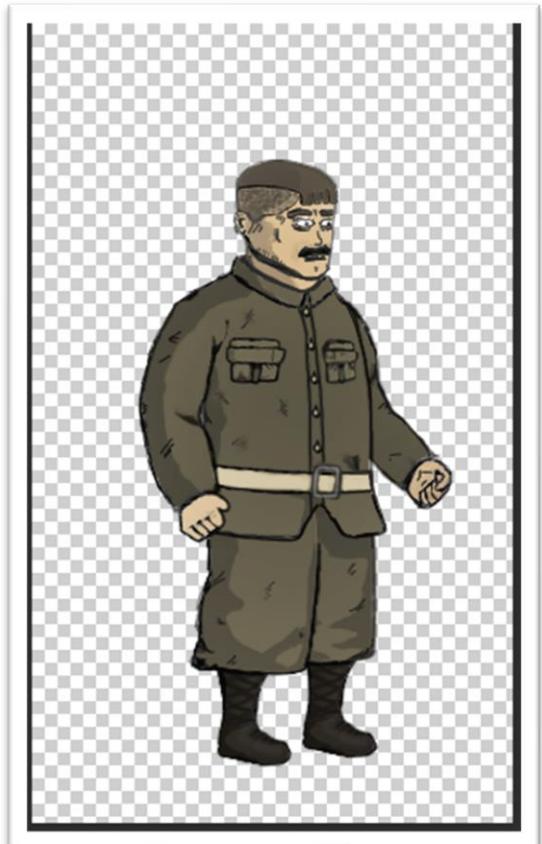


Figure 56: Young Soldier

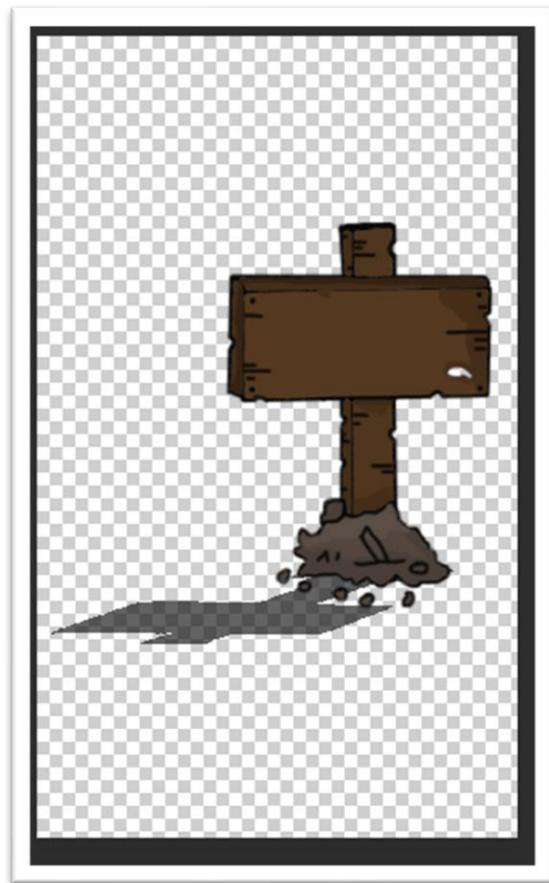


Figure 57: Sign



Figure 58: UI Board Small Parchment



Figure 59: Barrel

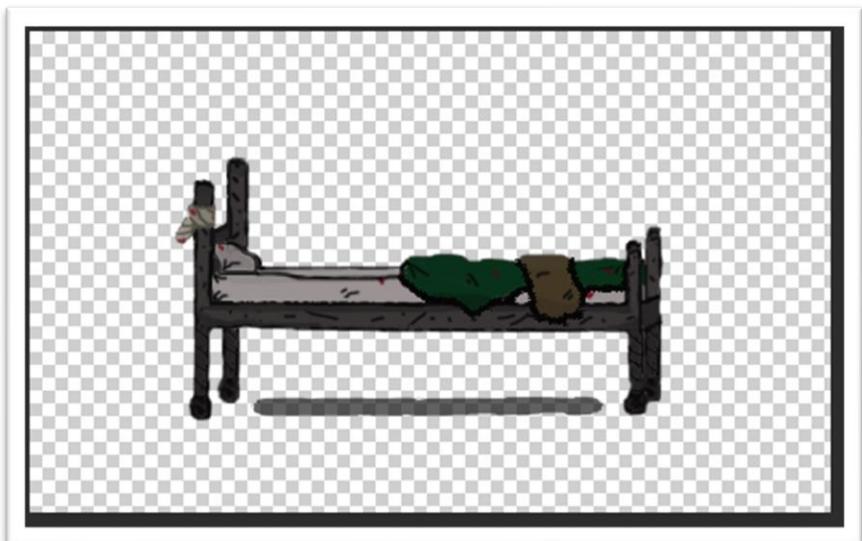


Figure 60: Bed

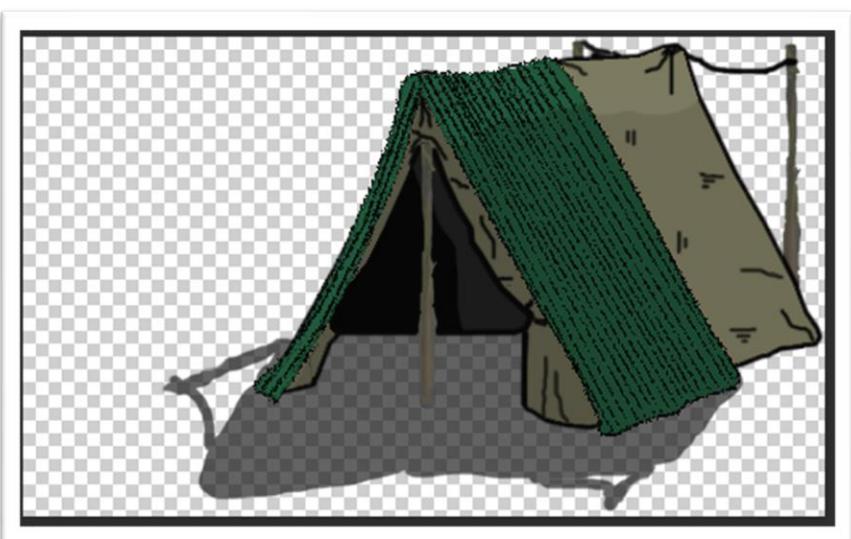


Figure 61: Green Tent



Figure 62: Another View of Green Tent



Figure 63: Big Nightstand

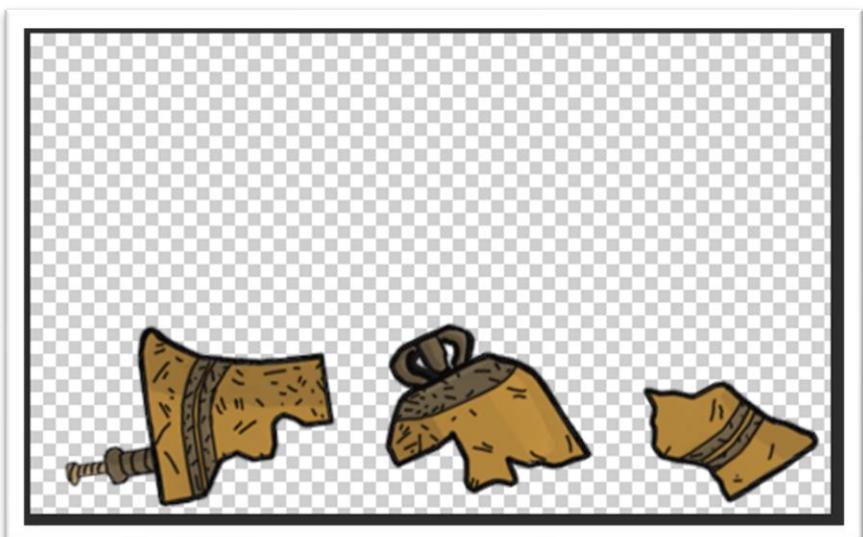


Figure 64: Bell Parts



Figure 65: Bell

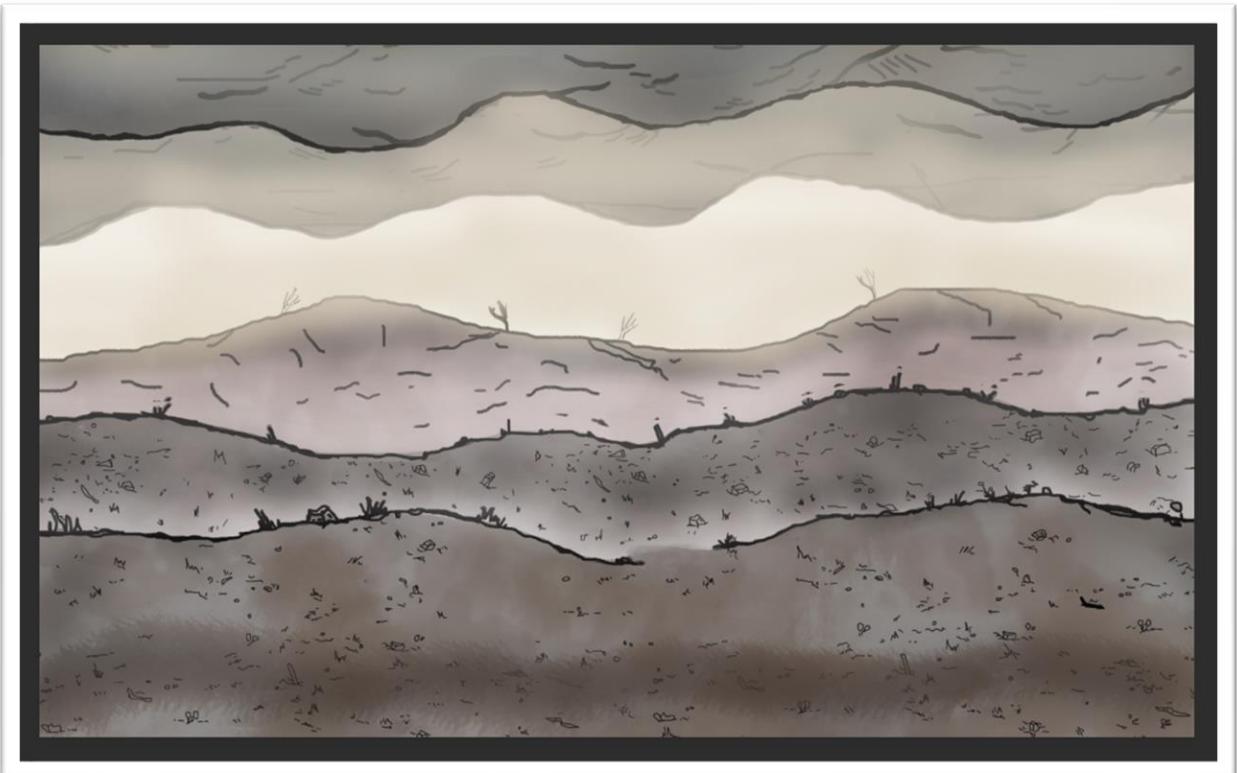


Figure 66: Background

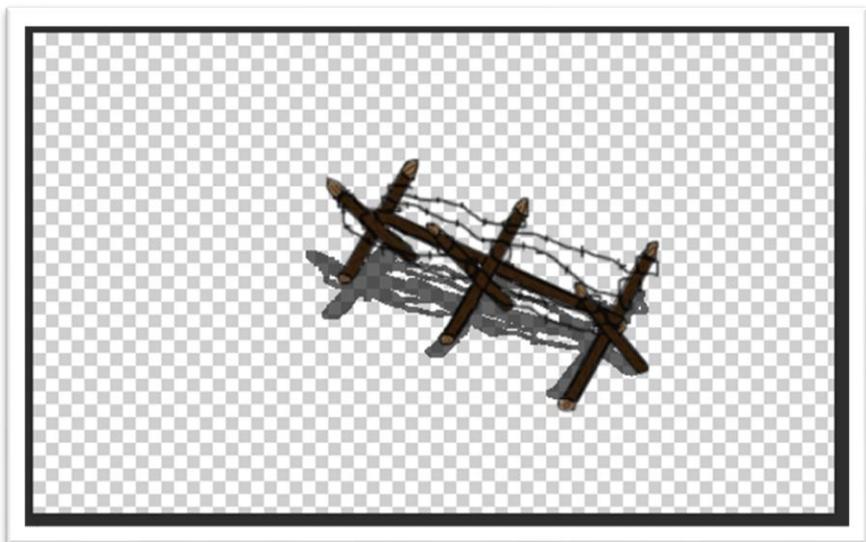


Figure 67: Barbed Wire

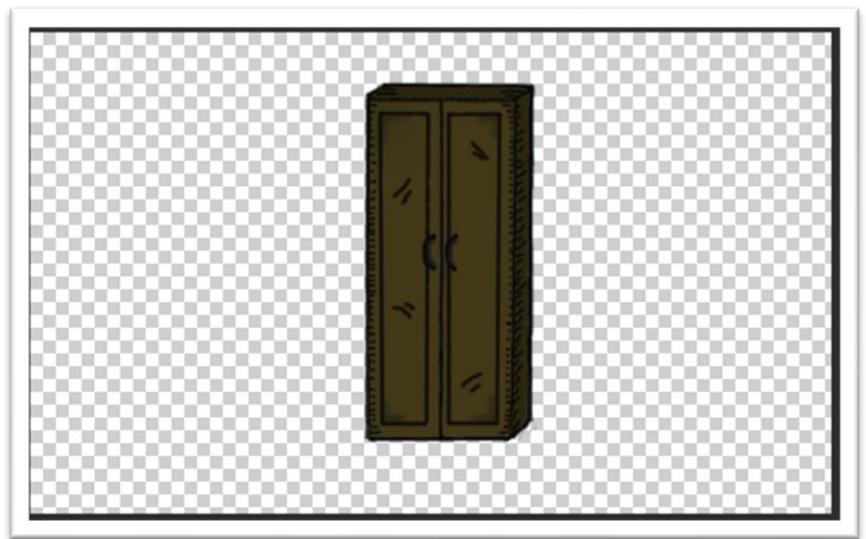


Figure 68: Cabinet