Shattered Sky: An Exploration in Rising Drama

A Major Qualifying Project Report:

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Abstract

Shattered Sky is a dialogue-based RPG that focuses on utilizing a goal-based NPC architecture along with a drama management algorithm in order to dynamically create an interactive story and role-playing experience. This is a departure from traditional branching-story style games, because in Shattered Sky the sequence of events is unscripted and determined programmatically. Each character autonomously determines what actions it should be taking. Through an initial design process that included face-to-face role play testing and progressing through a complete design cycle, we developed a ten to fifteen minute single-player game that takes place during a political summit. During design, we developed a detailed back story and heavily defined and characterized how each of the five NPC's in the game will behave. The player is free to move about the level and interact with the other NPC's, primarily through dialogue but later also through spying and violence. Shattered Sky features six next-generation models that were created using a combination of Maya, Photoshop, and ZBrush. We also developed an innovative testing system that could be utilized to evaluate how fun the narrative was, and thereby iteratively refine the story and make it more interesting to play.

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Introduction

Shattered Sky is a primarily dialogue-based RPG where the player are the leader of one of three factions vying for control over a set of powerful ruins. In the course of a short political summit, the player will have the opportunity to negotiate their way to a peaceful resolution or an all-out war.

The purpose of this Major Qualifying Project was to create a dynamic game narrative that takes into account all of the players actions as well as an ever changing environment and consistently creates a sense of rising drama for the player. It is an improvement on the current games that are in the market that take a player's choices and creates branching paths, which are much more like a choose your own adventure book, since it has a high potential to be different on every play through depending on how the NPCs choose to act. In this game, not only does the player have agency over the outcome, but so do the other characters.

The player assumes the role of Grace Carson, the president of a country named Galilee, who is attending this summit with the main goal of acquiring the contested ruins. How this is accomplished is left up to the player. Taking into account the ever shifting surroundings, namely the NPCs the player encounters, this goal can either be easy or difficult and the player even has the option of disregarding the goal entirely to form alliances, kill other political leaders, or pursue personal gain.

In the first chapter of this paper, we explore the inner workings of our game, Shattered Sky, from both the players' perspective and from a programmer's perspective. From the player's perspective, the game is a serious role playing game centered around a political summit where all of their choices matter and they may enjoy a different experience every time. In taking on the role of President Grace Carson, the player assumes her identity which includes her goals, former enemies, and former dealings with other nations. The player is introduced to all of these subtly throughout the course of the game, which creates a unique play through for each individual and produces a strong narrative with a sense of rising drama. From a programmer's perspective, we discuss how the Drama Manager that creates the narrative is made and maintained as new goals are added to enhance the player's experience.

In the second chapter, we outline the various design choices that went into not only the story but the character design. Here, we give the reader an in-depth look at how each of the factions and individual characters were created, for what purpose, and how they serve the ultimate over-arching story. We also detail the factions and the background of the world that creates Shattered Sky and the current situation that the player finds themselves in. The design choices detailed in this section are important as they directly relate to the overall experience of the player and dictate the games ultimate look and feel.

In the third chapter, we cover the play testing experience that we designed specifically for Shattered Sky. Here, we explain how the game challenges traditional testing methods and detail the new method we developed to evaluate Shattered Sky's fusion of narrative and play. In addition, we highlight the most important feedback we received from our playtests and how we used this feedback to improve the game experience.

Finally, in our postmortem, we discuss what worked for our group during this MQP experience, what did not work, and what we learned. In a meeting held at the end of the term, our group got together to talk in detail about the challenges we were presented with during this project as well as how we did, or did not, handle them. It was an important reflection for us not only on the entire experience but also on the group as a whole.

Game Play

One of the key goals of Shattered Sky was to create an immersive, interactive gaming and story experience that was at the same time completely dynamic and created a unique narrative each time. Unlike a traditional branching story RPG, the story in Shattered Sky is determined algorithmically based on what has occurred in the game, and the actions that both the player and the NPC's take. To that end, our game features a goal-based architecture that controls all of the NPC's and causes them to act autonomously throughout the game. The entire game is very open ended and the player has many options

to talk with other NPC's throughout the game; although there are some other actions the player can take, such as murder and spying, Shattered Sky is primarily a dialogue-based RPG.

In the following pages we will cover the high level concepts behind our game and how they were achieved through writing and technical work. We will provide and in depth look at the Goal Engine that we used, the Drama Manager that we created, how early testing helped shaped out game, the Character Opinion system, our Dialogue, the Dialogue Engine that we used, and finally our Basic Level Design and the Camera work that was used in our final game.

How the Game Works

The narrative premise of Shattered Sky is that a set of powerful ruins have been uncovered in no-man's land between three contentious nations. The game takes place at a diplomatic summit to discuss how to handle these new ruins. There are many ways the game can end and multiple ways to reach each ending, so every play through should feel special to the player. The player can choose to be a kind diplomat who makes friends and works out a peaceful resolution, or a bully who blackmails her adversaries into submission. It's up to the player to choose their own strategy.

Characters & Factions

	Galilee	Thaywell	Council of Magi
Major	Grace Carson (player)	Gaius Zurio	Arch Mage Khylor
Minor	Byron Ashcroft	Cordelia Verinelli	Mia Renaldi

In the game, there are five characters that the player can interact with as well as the one that they play as. Three are the leaders of their respective countries, which we consider 'Major' characters. Each major character also has an assisting diplomat, or a 'Minor' character supporting them. Grace, who is controlled by the player, is one of the three major characters along with Gaius Zurio of Thaywell and the Arch Mage Khylor of the Council of Magi. While

most of Grace's interactions will be with the other Major characters, there are still many valuable reasons to interact with the three minor characters.

The summit starts with a meeting in the common area of an airship. On your way to the table, your Minister of Foreign Affairs, Byron Ashcroft, informs you of the current state of the summit to get the player up to speed. Then the initial meeting happens where all of the factions state where they stand and what they want. After the meeting, Grace is free to explore rooms to uncover blackmail, befriend other factions to form alliances, or threaten rivals and start a war. Whatever path Grace takes, the game ends with a second meeting where all the cards are laid on the table and the fate of the ruins is decided. This meeting attempts to take into account most of the players important choices they have or have not made during their play through experience.

One of the most important aspects of Shattered Sky is that each of the NPC's is acting completely autonomously throughout the game. Every action taken by either an NPC or the player affects how each character considers one another, but even if the player does nothing, the game continues and will reach some conclusion. The NPC's in our game are controlled through the use of a goal engine architecture, which we discuss in the following sections.

Goal Engine

All of the characters in Shattered Sky are controlled by a goal engine, based on the goal engine architecture outlined in Mat Buckland's book *Programming Game AI by Example.* The central idea of the goal engine is that each NPC has high level goals that they want to accomplish, and one of those high level goals is active at any given time. Every goal can be broken down in to sub-goals, and the sub-goals continue to break down until they get to simple, atomic actions that can be performed.

This process of breaking down goals in to sub-goals and actions is called goal decomposition, and is central to implementing goals in the goal architecture. In order to properly utilize our goal-based architecture, it is imperative to understand goal decomposition. The below figure demonstrates the goal decomposition for one sample goal, blackmail. The top-level goal is to blackmail another character; this goal could be broken down in to two sub-goals, such as get dirt to blackmail the other character and then leverage that dirt in a threat against the character. And then each of those goals could be further broken down, and the developer continues to decompose the goals until he arrives at very basic actions, such as getting a path or traveling on that path.

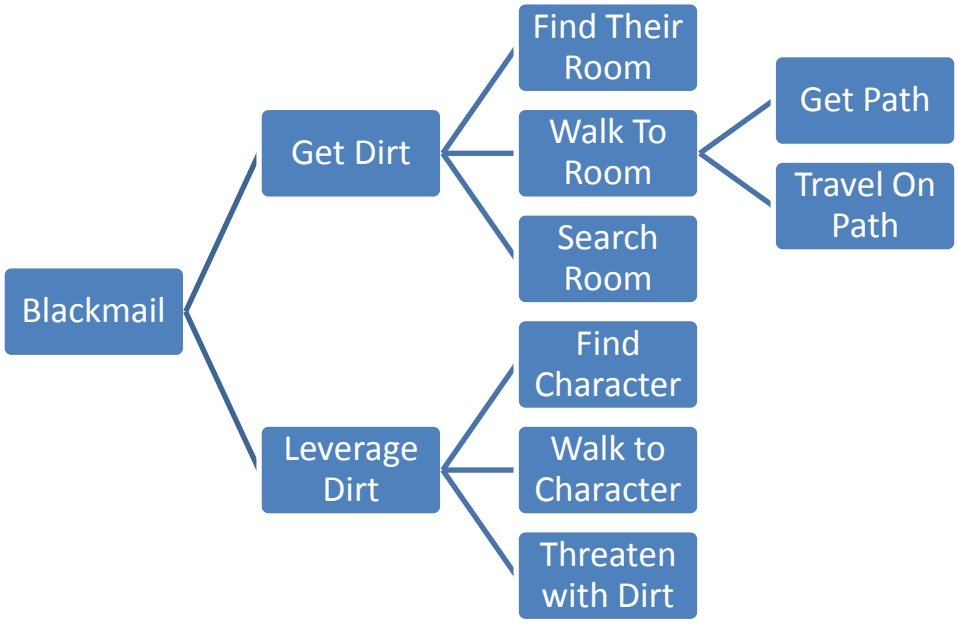


Figure 1: Goal Decomposition for Blackmail

Another important aspect of goal decomposition is that it can occur in various ways based on the situation. The previous diagram is showing just one possible decomposition for the blackmail goal. For example, if the character wants to blackmail another character, it is possible that he has already acquired dirt on that character, in which case only the second sub-goal,

leverage dirt, will occur. Each goal is capable of determining, based on the game state, how it should be decomposed so that the character can best achieve their goal.

Utilizing a goal engine to control the NPC's is advantageous to us for several reasons. The first is that when characters are goal-driven, they can simulate realistic behavior. They can also handle complex tasks relatively easily as long as the goals have been properly programmed in advance. The goal engine also allows for re-planning in the event that part of a goal fails, and it allows characters to go about achieving their goals in multiple ways based on the situation. However, while the goal engine works very effectively for controlling how an NPC should accomplish their goal, it does not handle what the NPC's goal should be or script what the NPC will do at any given point in time.

Figure 2: Debugger Save-Load Functionality

We also created a debugger to view each character's current goal while checking for bugs. As seen above in figure 2, we have the ability to save at any point in the game and reload

from that point if we are testing how certain goals react with new information. We can also view what drama level, explained in the following section, the game is currently at as well as how many seconds until the next drama level occurs. Finally, it displays each characters current high level goal and each of the sub-goals that it has to complete beneath it, in order of how they will complete it. This particular example is one where Zurio has chosen the goal "insult" and the target is "Khylor". In order to accomplish this, Zurio will move to where Khylor is, initiate a conversation with him, and then wait till the conversation finishes at which point the goal is satisfied. If Zurio was moving to insult the player he would wait till the conversation was actually over instead of a set amount of time like he will do with other NPCs.

Drama Manager

While each NPC has a certain goal that they are executing at any given moment in time, they need to be told which goal that is. Shattered Sky uses a drama management algorithm in order to control the high-level goals that are assigned to each NPC. Whereas the goal engine determines how each character will accomplish its goal, the drama manager determines what that goal is. Our drama manager builds on the work started in the *Wind's End* MQP from 2011(Fugere, 2010). One of the key concepts for the drama manager is that all of the high-level goals are divided in to five different drama levels.

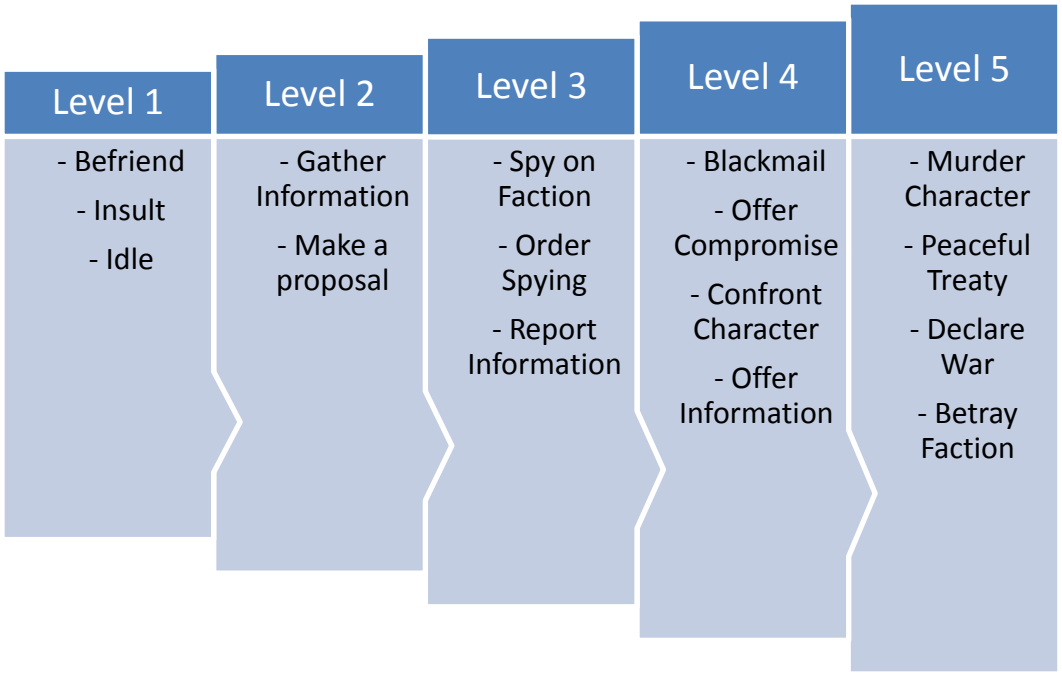


Figure 3: Drama Levels

As time progresses in the game, the drama level increases which leads to more dramatic goals being available to the NPCs. When the game starts it is at the lowest drama level so only very low level goals will be available for the NPC to pick from, such as befriend and insult, but as time increases so does the number of options that they have to create more dramatic situations. The drama manager will only assign goals to each character that fall within the current drama level. As the game progresses, the drama level increases after a set amount of time. After the time elapses at level five, the game ends. By using this strategy, we can ensure that the action will constantly be on the rise and that the game will end in a fixed amount of time, while at the same time keeping the game play interesting and dynamic.

In addition to assigning goals based on the current drama level, our drama manager also considers the past and current state of the game when making decisions. In this sense the algorithm again ties back in to the goal-based architecture. Each high-level goal has an arbitrator

class associated with it. The arbitrator class for each goal contains an algorithm that evaluates the current game state, and then returns a value. At any given drama level, the drama manager loops through all of the goals at that level and calls the arbitrator for each goal. Then whichever goal returns the highest value is assigned as the active goal. Below is a diagram of which goals appear at which drama level.

Although our drama manager is based on the work done by the *Wind's End* MQP group, we ultimately implemented a slightly simplified version of the drama manager. One key concept in their game was that the drama manager took proximity in to account when assigning goals, so characters closer to the player would be assigned with more dramatic goals. However, we designed our game to occur in a very confined environment where all of the characters are immediately accessible to the player. Because of this our drama manager does not take proximity in to account.

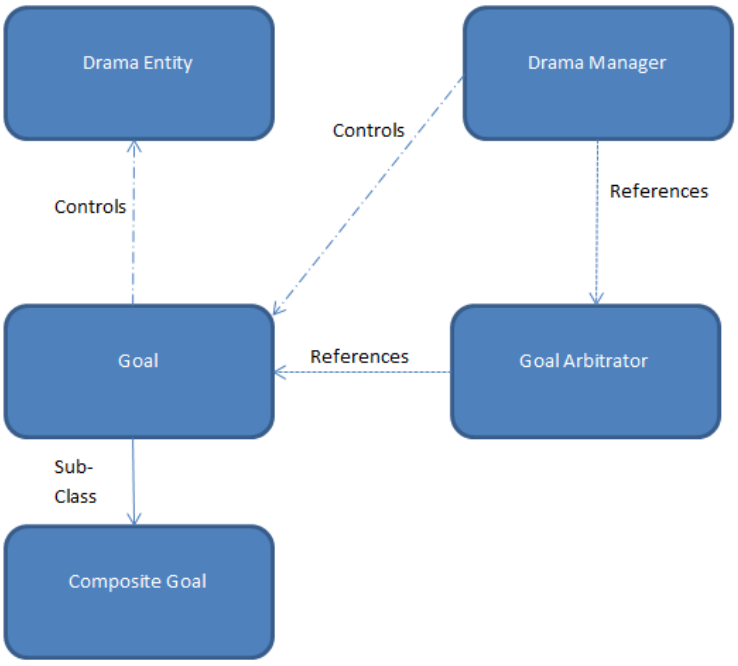


Figure 4: Architecture Diagram

The above diagram shows the high-level code architecture for Shattered Sky. In the top left, Drama Entity is the class that represents each character in the game. Each drama entity is controlled by our goal engine. The high-level goal class also has a sub-class, a composite goal. Composite goals are the types of goals which contain sub-goals, and there are many concrete classes that have been written that extend either goal or sub-goal. Each high-level goal has a corresponding goal arbitrator which references it. The goal arbitrator is a function which calculates, for a particular character, how appealing it is to have that goal. In turn, the drama manager looks at the results of all the goal arbitrators and chooses the best one. It then controls the goal of each drama entity, and that is how the artificial intelligence is accomplished in Shattered Sky (Buckland, 2004 & Fugere, 2010).

This approach allows us to heavily customize how likely each goal is to be chosen. It also allows us to add different personalities for different characters because we can simply multiply the end result of any arbitrator function by a constant that indicates a bias towards that particular goal. For example, every character has the two high level goals of murder or make peace. If we want one character to be very aggressive and violent, we can always multiply the end result of the murder arbitrator by two, and multiply the make peace arbitrator by one half. In this way, the character will more often choose violence over peace; however, in the proper circumstances, this same character will still choose peace.

In the preceding game play section of the design document, we discuss the delineation between major and minor characters. In terms of technical implementation, the difference is that the major characters are driven by drama management, whereas the minor characters are not. So periodically, the major characters query the drama manager and are assigned a goal; the minor characters simply stand by. All of the NPC's are controlled by the goal engine, but the minor

characters can only be assigned goals based on stimulus from the major characters. Given enough time, we would further develop the game and add independent goals for the minor characters as well; however, in order to limit the scope of the game, the minor characters can only react to the major characters; they cannot act on their own accord.

Overall, much of the concept and design of Shattered Sky was centered on the goal of creating an immersive, interactive story experience with constantly rising tension that was created algorithmically. Towards that goal, we chose to use this combination of a goal engine and a drama management algorithm. In the end, we were very pleased with the utility of both these choices. The goal engine proved to be very useable and extensible and was incredibly effective at allowing us to program our NPC behaviors. We believe that the drama manager was an interesting twist that did help guide the NPC's to have realistic behavior; but to be truly effective, we would have needed further tweaking and playtesting of both the drama manager and the goal arbitrators.

Information Gained from Roleplaying

During the process of designing Shattered Sky, we were facing a great deal of ambiguity in how exactly the game play would work. In order to resolve these questions, and also to refine the concept of Shattered Sky, we held pen-and-paper role playing sessions with several testers. Without programming anything, we sat testers down and gave them the opportunity to role play as Grace Carson in the setting of this political summit. The role playing was conducted by a member of our team who would take the role of the other characters at the summit. By conducting these very open-ended, free form role plays, we were able to see what players found to be compelling game play.

After running several completely free-form play-throughs, we modified the test slightly and used new volunteers. Instead of giving them a completely open environment and letting them act as they chose, we presented them with choices to pick from that were similar to actions commonly taken by our earlier round of testers. The idea behind this was to simulate the experience that a player would get playing Shattered Sky, but without all of the overhead associated with implementing the game. In this way we could much better define how our game would play, quickly and cheaply. Taking note of what a variety of players wanted to do and asked if they could do, we determined actions that people were not interested in and kept the ones that made the experience dramatic.

Although some players did come up with very creative actions, not all of them were appealing to other players or viable for the scope of our game. We did, however, take note of some of the more interesting ones, such as murder, seduction and asking minor characters for updates, and added them to a list of potential options if we had the time. Through this exercise we generated a significant amount of potential game content.

The most consistent choice from the verbal playthroughs was that almost every player ended up connecting through the characters and feeling animosity towards certain other NPCs. All testers either made an attempt at getting the most peaceful resolution possible, or wanted to kill a major NPC. With that being the overwhelming response, we added a murder option to our game with unique endings.

One advantage that these RP's had over the programmed game was that the developer running the role playing could easily control how each character felt about the other characters. To simulate this in the final game, we implemented a basic opinion system.

Character Opinion System

Our characters feature a very primitive opinion system in order to keep track of how they regard each other. Each NPC has a simple floating point value between negative one and one to represent their like or dislike for every other character. Negative one means they despise the other character, where one means that they love the other character. These opinion values will change during the game based on events and actions taken by other characters, but are always set to the same initial values. The opinions of each character will be considered when forming dialogue, as well as when choosing goals using the drama manager.

For example, if the player is given five choices on how to respond to an NPC, each one will change that NPCs opinion of the player depending on what they pick. If the player is very nice and flattering to Khylor his opinion will increase more than being nice but blunt, where the opposite is true for Zurio who is wary of people who suck up to him. These changes influence the later interactions in the game depending on if an NPCs opinion is higher or lower than a certain threshold, such as them deciding to keep true to an alliance or betray you.

The other part of Shattered Sky that was easily simulated in role playing form was the actual conversations and dialogue between the player and NPC's. In order to accomplish the dialogue in-game, we used a modified dialogue system found online.

Dialogue Engine

Although there are other actions that the player can take during the game, the primary method of game play is through dialogue between the player and other characters. In order to allow players to intuitively converse with other characters, we chose an open source dialogue engine written for Unity in JavaScript by Royce Kimmons. Because the rest of our game was developed in C# and we needed the dialogue engine to be able to interact with other scripts in the

game, such as the drama manager, we converted the dialogue engine in to C# and then made several extensions to it. Figure 3 in the camera management section shows how the dialogue system is displayed to the player: NPC speech is shown on the top, and the player is given their response choices on the bottom.

There was a significant amount of dialogue that needed to be written for our game, and we needed a clean, effective way to be able to develop dialogue so that it could easily be written and also edited later. The original dialogue engine was not conducive to this form of dialogue development, and so we created an API with which to develop dialogue trees. There were several other extensions to this API as well, such as the implementation of behaviors. We wanted the characters to react and behave according to the dialogue options that the player chose, and so we wrote dialogue behaviors that could be attached to options in a dialogue tree. When that particular option is chosen, any amount of code can be executed to accomplish any task in the game. Below is one sample dialogue tree written in our API.

```
public static void KhylorDeclineFriendly(){
    DialogueBuilder b = new DialogueBuilder();
    b.clearDialogue();
    b.setNametag("Khylor");

    b.npc("Oh, I'm busy at the moment but please seek me out later.");
}

public static void KhylorDeclineUnfriendly(){
    DialogueBuilder b = new DialogueBuilder();
    b.clearDialogue();
    b.setNametag("Khylor");

    b.npc("I simply don't have time right now to talk.  Perhaps I will later.  Excuse me.");
}
```

Figure 5: Example of dialogue code

We also wanted the dialogue trees to be able to change dynamically in the game based on the game state. For example, if the player has acquired information that they can use to blackmail another character than that option should be available to them. However, if the player does not

have any information to blackmail them with, then those options should not be available. In order to accomplish this we added the ability to evaluate Boolean expressions inside a dialogue tree so that it will be built dynamically and can be affected based on the game state.

This modified dialogue engine was ultimately effective at allowing us to build dialogue trees that made up the majority of the content in Shattered Sky. However, even with our new API, large dialogue trees could become very cumbersome and difficult to understand when put in to code. One way we could possibly improve this would be by adding another layer of abstraction and interpreting a plain text file intelligently to convert it in to a dialogue tree, but that was outside the scope of this project.

Dialogue Design

For a game centered on conversations, the dialogue and its design was very central to the game and a player's experience.

While the player is in control of Grace Carson and may choose how to play her, the other characters in the game come with their own personalities and biases. To this end, we created character sheets that dictated what each one would act and verbally sound like. These can be found in Appendix 7. Using these character sheets we were able to give each character their own unique speech patterns and verbal ticks so the player could easily keep track mentally of which character they were talking to and how best to approach them.

Initially, the dialogue was written in a plain text editor but after the Dialogue Engine's API was finished it was easier and faster to switch over to creating it there instead of transferring it over. From there, it was a matter of creating the appropriate dialogue trees to match the goals that not only the NPCs would be trying to achieve throughout the game, but also the ones that we were allowing the player to take, such as approaching the NPCs with a compromise or threat. A

lot of thought, writing, editing, and re-writing was put into the dialogue's design to create the desired feel of not only the individual characters but the over-all game.

Basic Level Design

One of the key game design elements of Shattered Sky is the level design. The game takes place on an air ship owned by the Council of Magi, overlooking the ruins that are the

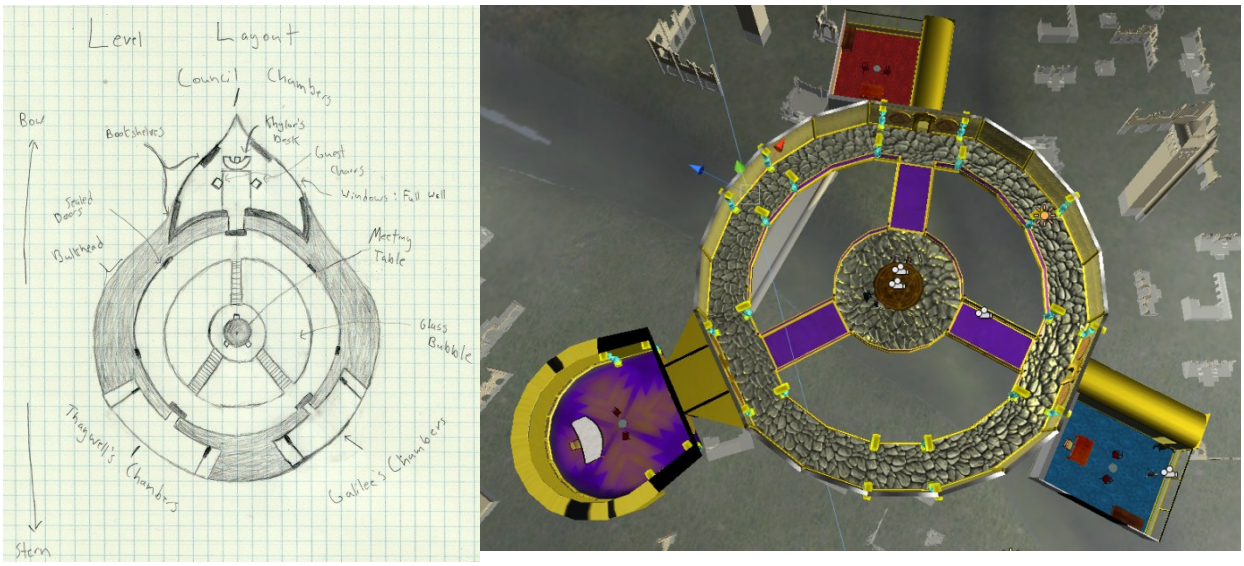


Figure 6: Level Concept and Implementation

diplomatic chamber and then three adjoining rooms, one for each of the three factions. Figure 6 shows an initial concept of the level layout and the final, in game version.

The entire environment is not very large, to enable all of the characters to be in close proximity with each other, this causes any action that occurs to be easily observed by everyone. The central room serves only as a meeting place. Each of the three private rooms also contains hidden information that can be found by any character or the player, and then used as leverage against other characters. In order to enhance the immersiveness of our game, we implemented a partially-scripted third person camera system.

Artistically, we designed the environment to reflect what the Magi would want to present to others, a rich, elaborate interior adored with arcane crystals and runes. Furthermore, several of these artistic details serve a minor gameplay function as well, highlighting important areas of the game. For instance, the large runes that flank the doors to each faction's room serve to highlight these passages, drawing the player to investigate the area and hopefully interact with the characters they find there. In addition, the large open area in the central room reveals the ruins below, constantly reminding the player of what they are fighting over.

Each faction's room serves as its base of operations, a room where the player can expect to find characters of the given faction. This prevents potential player frustration in tracking down characters they wish to speak to, as characters will always return to their rooms when unoccupied. In addition, each room represents the faction that occupies it, such as Thaywell's room sharing a red and gold color scheme similar to the faction's characters. Initial designs called for distinguishing cultural objects to be placed in each room, unfortunately, these had to be cut due to time constraints.

Camera Management

Because one of the goals of our game was to give the player an immersive, dramatic experience, we felt that creating the proper camera angles during the game would be an important part of creating a fun and compelling game. In order to accomplish this, we implemented a set of goals that would control the camera and smoothly change the camera angle based on the game state. Normally, the camera takes a third-person view looking over the shoulder of the main character, as seen in figure 7. In this way, the player sees what the main character would see from their point of view, and hopefully this makes it easier for the player to relate to the character he or she is controlling.

Figure 7: Camera angle while walking

When the player enters into a conversation with another character, the camera angle transitions to a profile view of the two characters talking, as scene in figure 3. The camera is then also zoomed in on the upper body and faces of the two characters, as shown in figure 3 below.

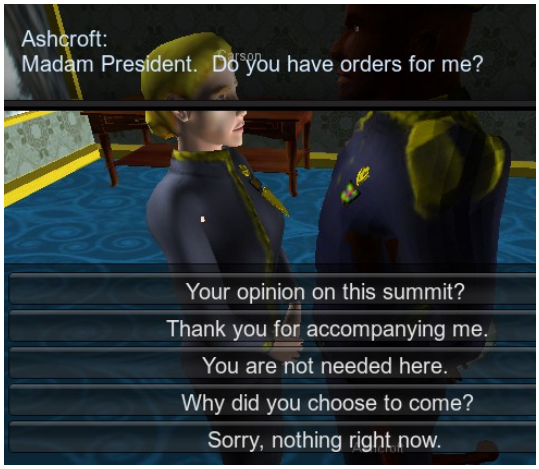


Figure 8: Camera angle while talking

In our initial design we had hoped to implement changing camera angles to more obviously show the player the shift in drama levels, starting with a higher vantage point to make the player feel superior and dropping down till you were looking up at the other characters to

make them seem more intimidating. We also discussed other possibilities such as changing the light intensity or color of light but neither made it into our final product.

Overall, Shattered Sky is a dialogue-based RPG set on a small air ship containing six characters. A number of technical features were developed in order to augment the game play experience of the player, and ultimately create a fun and engaging, while simultaneously free-form game.

Shattered Sky's Cast of Characters

Design

Our first goal in designing Shattered Sky's characters was to make each distinct in both visual style and personality. In such a short, dialogue-centric, game, it is imperative that players receive character information through both the character's words and the look of the character itself in order to maximize their understanding of the character in the minimum amount of time. Thus, we aimed for each faction's garb to reflect that faction's beliefs and culture while their words reflected their personal beliefs.

Furthermore, we attempted to make each character easily identifiable and distinguishable from each of the others. Not only does this help players remember the characters and their goals, but it facilitates gameplay as well. If characters are easily identifiable, there is little risk of players wasting time accidentally talking to characters they don't want to. With these goals in mind, we created the following designs for each faction and each character. Figure 9 provides an overview of these factions and characters.

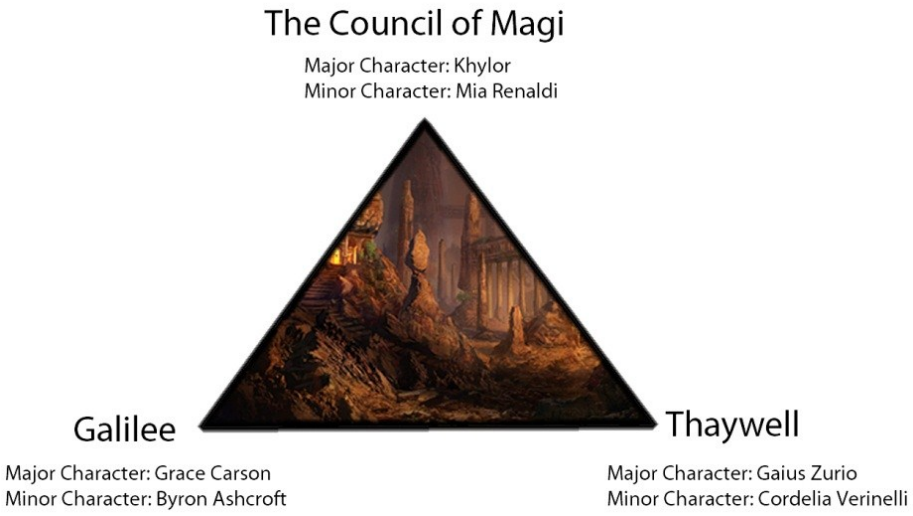


Figure 9: Overview of Factions and Characters

Galilee

The land of technological wonders, Galilee long ago outlawed the practice of magic within its borders. In the minds of Galinites, magic is a shortcut, an easy path to power in the short term, but a disastrous one in the long term. After all, it was magic that led to the past apocalypse, not technology.

As a technology-oriented nation in a steampunk world, we felt Galilee was a natural match for 18th century Victorian garb. However, we felt that in Shattered Sky's tense political environment, Galilee should emphasize its military aspect rather than its high culture. Therefore, instead of Victorian dresses and gentlemen's outfits, we based Galilee's clothing on that of Austrian officers such as that depicted in Figure 10. In doing so, we emphasized the player's role as commander in chief in addition to their role as President of Galilee.

Figure 10: The Development of Galilee from Reference Art to Implementation

The Austrian officer uniform served as our inspiration for Galilee's color scheme as well. Not only is the contrast between blue and gold a good one, but the feeling each color invokes matched what we wanted Galilee to visually convey. The gold of the uniform conveys a sense of wealth and power, while the blue expresses unity in thought and action.

Grace Carson (Player)

Child of a coal miner in Galilee's capital, Carson's rise to power is the result of her own determination, perseverance, and undimming belief in those around her. Elected 2 years ago, her administration is quickly learning the harsh realities of global politics, with several embarrassing faux-pas and failed negotiations. Carson's resolve has withstood much, but even now she begins to doubt herself. Success at the summit is paramount to the success of her presidency.

As the player character, we aimed to make Grace the most gender-neutral of Shattered Sky's cast. In order to do so, we applied Austrian styling to the modern American uniform for female officers. This uniform's design causes the wearer to appear slightly more masculine and authoritative, both qualities we wanted in Grace. Her hair is an extension of this semi-masculine attire, designed to present a strong authoritative figure while keeping some of her femininity.

Grace's animations were meant to combine own personality with the personality of her nation. Her movements are a little stiff and business like, but not nearly as much as her Byron's. Her idles were meant to show her professionalism while making her appear calm and relaxing. By giving her an idle that has her adjusting her clothing and brushing off her sleeves, as well as one that has her leaning to the side and itching one leg with her foot, we demonstrate she appears as more of a regular person and makes her more relatable to the player. We didn't want her to appear soft though, and in fact wanted her to surprise the player a little, so we gave Grace a kill

animation of her brutally snapping somebody's neck. The animation fits in well with Galilee's military background, and shows Grace can be as tough and aggressive as everybody else.

Byron Ashcroft

A former general in the Galilee Navy, Byron Ashcroft is well known for his hard line when dealing with Thaywell. He is quick to assume the worst in their actions, for history has proven him to be right time and time again. Stern and uncompromising, Ashcroft is the "bad cop" in Galinite foreign affairs; it is not unheard of for a nation to accept a relatively unfavorable deal to avoid dealing with Ashcroft.

Byron Ashcroft is meant to be the most physically intimidating of Shattered Sky's cast, and as such, he is the tallest character. In addition, his uniform is slightly more adorned than Grace, reflecting his strict adherence to traditional Galilee. As with most military personnel he is clean shaven, a physical representation of his discipline and previous military experience.

For Byron's animations, we wanted to portray the body movement of a soldier. His walk cycle is very stiff and looks almost like he is marching. He has only two idle animations that are more like poses. He will either stand at attention or at ease, but once in these poses, he does not move. This was to show his discipline as a soldier, much like the guards at Buckingham Palace.

Thaywell

Founded upon the religious teachings of Gaius Zurio, Thaywell has long promoted honor, integrity, and tolerance…so long as you do not oppose them in any way. Thayan belief states that magic is divine in origin, a remnant of The One left behind from the instant He existed in creation. It is a double-edged sword, for while using it may bring one closer to The One, it also brings one closer to one's true self. If this true self is tainted with sin, magic will only cause them

to fall into darkness. It was these fallen men, mad in their lust for power, that brought about the destruction of the world long ago.

With Galilee adopting the style of 18th century military garb, we felt Thaywell would best be represented by religious attire from that period. Specifically, we felt that papal attire best matched the zealous nation, for it stood nearly diametrically opposed to the form-fitting clothing of Galilee. Figure 11 highlights the development of Thaywell's look.

Figure 11: The Development of Thaywell from Reference Art to Implementation

For our color scheme, we felt white, red, and gold lent themselves best to our design goals, as these colors were both significantly different from Galilee and representative of Thaywell's culture. White represents their purity and life, red represents the blood spilled for their faith and their willingness to be martyred for their God, and gold represents the nation's wealth and power. Furthermore, these colors are typically associated with clergy in reality, making it far easier for players to recognize Thaywell as a religious faction.

Gaius Zurio

The founder and current ruler of Thaywell, Gaius Zurio claims to be the voice of The One on earth, a claim that may have some merit. A quiet man who appears to be in his late 30's,

Zurio is in fact over 200 years old. He seldom speaks, but when he does, it is with great wisdom and clarity.

As the leader of Thaywell, and supposed prophet of The One, we aimed to make Gaius Zurio appear extravagant and pious, regal yet tempered. His stole is an additional object of power that sets him above his second-in-command, while his bald head speaks to his abstention from worldly concerns. Zurio's hard features convey his harsh personality, and his olive toned skin further differentiates him from the lighter skin tones of Galilee.

Zurio is supposed to be a prophet of his nation. As such, his walk is slow to demonstrate that he is above everybody else and need to rush for nobody. His movements were meant to demonstrate a slight arrogance and show his confidence that The One is working in his favor. We decided that Zurio would kill his enemies by poisoning them and making their death look more accidental. This was a way for him to play dirty, but still keep his image as pious and holy.

Cordelia Verinelli

The youngest member of the Exalted Conclave, the ruling body of Thaywell, Cordelia is constantly trying to prove herself to her fellow Conclave members. While she often appears calm and collected, a whirlwind of emotions rage beneath the surface just waiting to get out. It is unknown why Gaius Zurio chose her to accompany him to the summit.

Zurio's second in command is far more humble and respectful than her superior, traits conveyed by her veiled head. While she has dark hair, this is restrained by the symbol of her religion. Furthermore, her features are much softer than Zurio's to convey her softer, accepting personality.

Cordelia's animations were designed to make her appear more friendly as well as unsure and timid. Her movements tend to be more soft and subtle than the other characters. From her

idles to her search animation, her movements are slow and unsure to demonstrate her inner turmoil.

Council of Magi

Home to the most powerful mages in the known world, the Council of Magi seldom directly involves itself in the affairs of other nations. Unlike Thaywell, mana holds no religious significance to mages of the Council, it is but another element to be studied and molded to their will. Little more is known of the Council, for they seldom deign to interact with the outside world, much less allow others to interact with them in Sigil. The Council has volunteered their flagship, the *Phoenix Rising*, to serve as a neutral ground for the summit.

The mystical Council of Magi was our most difficult faction to design artistically. Mages are typically associated with robes and staves, but we could use neither. Thaywell already used long, flowing robes, and giving one side more accessories might bias the player in their dealings with the faction. Thus, we chose to give the Magi a semi-eastern style, with skin-tight clothing complemented by short robes and cloaks. Figure 12 shows the artistic development of the faction.

Figure 12: The Development of The Council of Magi from Reference Art to Implementation

The color scheme for the Magi reflects their mystery; dark blues and purples highlight a mystical feel, while black makes the Magi appear somewhat shadowy. To further the mysterious feel of the faction, we chose to have their black underclothing cover every part of their body, excluding their faces and hands, and added a small glowing crystal hanging from their belts.

Archmage Khylor

One of the most powerful mages alive today, Khylor has led the Council of Magi for the past 50 years. While his early rule was marked by the isolation the Council is known for, he has pressed them for greater foreign involvement in recent years. Calm and logical, Khylor is a masterful manipulator; those he manipulates seldom realize they are being drive to accomplish any goals other than their own. Khylor takes great pains to ensure that it stays this way, maintaining his façade of an understanding and sympathetic leader.

As the more outgoing member of the Council of Magi, we decided that Khylor should be less covered by clothing than his second in command. To that end, his face is completely free of the black underclothing sported by Mia. Furthermore, to clearly identify him as leader of the Council of Magi, we made his cape more complex than Mia's.

To stick with the theme of Khylor being outgoing, his animations were designed to make him appear charismatic, flashy, and involved. His walk cycle is slow and large as a way to draw attention, and his idles are flowing and relaxed to show how comfortable he is with himself even in high-tension situations. To show how big Khylor is on being flashy; he was given a kill animation of him casting a spell with large, dramatic movements. Whereas the other characters aim for the stealthy kills, Khylor would much rather have that flashiness in his movement.

Mia Renaldi

Apprentice to the Archmage Khylor, Mia is originally from Thaywell. Threatened with execution for her public attacks on Gaius Zurio and The One, Khylor arranged for her exile to the Council of Magi in lieu of her death penalty. She has an intense hatred for Zurio, both for his attempted execution of her and what she believes to be the suppression of the Thayan people.

Mia's hotheaded nature is reflected in her fiery red hair, a color unique to her. While not as ostentatious in dress as Khylor, Mia's dress carries a similar sense of confidence and mystery. The fact that her skin is more similar to Zurio than Khylor is meant to raise curiosity in the player, prompting them to interact with Mia to learn more.

Though not as showy as Khylor, Mia was also made to have a walk that stood out and made her fit in with the Council. In this sense, her walk is slow, deliberate, and has a confident, feminine swagger to it. The rest of her animations carry over these qualities.

Art Pipeline

The art pipeline was meant to be a simple process. We planned for the process to follow what we thought was the traditional pipeline order of concept art, models, textures, animation, and then refining. Our actual pipeline was much different from that. Our knowledge of the art pipeline was incomplete and flawed in many areas. This causes some processes to happen out of order, some things to be repeated and redone, and required a lot of trouble shooting.

We started out the project by doing research into different artistic styles and different clothing fashion styles in order to determine what we wanted the characters from each faction to look like. We collected tons of pictures to use as references for the characters of the game as well as the environment.

After a week or two of doing this, we then moved onto concept art. Neither artist was particularly good at drawing, so this process was slow and painful. We never really got full concepts for our characters, and we only had a floor sketch of the environment. After a few weeks of struggling with this and not having much to go off of, we decided by the end of A-term to just move on to modeling the characters.

We started the modeling process by splitting up which characters each artist would create and got to work in ZBrush. With no actual concept art to go off of, we just went by the verbal descriptions. We spent three weeks creating for models with very little personality that were weak from an art standpoint. As it was obvious this wasn't working out for us, we went back and redesigned the characters with some actual concept art.

The new characters turned out much better and faster once we were given some direction. Once we started finishing characters, we attempted to drop their poly count using the Decimation Master tool and bring them over to Maya using Go-Z. Though this worked in bringing the characters to Maya, it was only their grey-scale versions as we could not figure out how to get the textures to follow along. We put that off however, because we wanted to be sure the models would transfer into Unity smoothly.

Bringing the characters from Maya to Unity as non-animated grey-scales worked out fairly nicely. We only ran into minor issues where the poly counts were too high, but that was easily fixed.

Nearing the end of B-term, we were finishing up the high poly models and getting ready to rig and animate the characters. We still had the issue of bringing the color and textures over to Unity. We eventually solved the texture issue when we realized ZBrush was saving the

textures in a temporary folder hidden in the computer. Once we found the textures and brought them into Maya, they transferred into Unity fairly easy.

Along with finishing the models, we began creating the environment towards the end of B-term. It was a slow process as the artist working on it did not quite have the knowledge on how level design worked. By the time the environment was finished, it was halfway through C-term and we found out that the way it was created prevented it from transferring into Unity. This was a major setback and caused the need for the environment to be completely redone in a much shorter amount of time.

At the same time the environment was being created, the characters were being touched up. We had the issue that the characters had vastly different art styles and weren't very cohesive. Over winter break, they were touched up to make them more cohesive. This delayed the process of rigging and animating, which didn't actually start until the week before C-term.

C-term started with one artist working on the environment, and the other rigging and animating the characters that were completely finished being modeled. We started with the basics. Characters were given walk cycles and idles. As the game developed and changed, so did character animations.

Though the rigging and animating part went fairly smooth, it created whole new issues with the transfer from Maya to Unity. We had issues where characters textures would become distorted or disappear entirely. UV's would not match up with their textures, and body parts were disappearing. Much of C-term and D-term was spent trouble shooting these issues, as a lot appeared to be fairly unique problems that professors and online forums couldn't explain.

Through trial and error, and a little innovation, these problems were eventually solved, but not without losing a lot of valuable time on them. In fact, it was about three weeks into D-term before everything was working smooth and solutions to all the major problems were found.

D-term also came with a new artist to join our group. With his help, we were able to finish all the animations by the end of D-term. With him working on the animations for the remaining three characters, our other artist was freed up a little to work on all the issues that we were coming across.

The Player's Story

Of course, these detailed characters serve little purpose without a story that exposes their depth. The story of Shattered Sky is meant to do just that, interweaving the developing story of the player with the established backstories of the surrounding characters. This section will detail the story stages the player progresses through over the course of the game, highlighting how details from each character's backstory are revealed through gameplay.

Act 1: Introductions

The player's story begins in their ready room, being briefed by their second-in-command Byron Ashcroft. Here, they are introduced to Galilee and the situation they have been placed in; a diplomatic summit hosted on the Council of Magi's airship. Byron briefly describes the other two factions and their attitudes, all the while injecting his own feelings on the matter. Ideally, the player should finish the conversation with both a basic understanding of their surroundings and Byron's harsh military personality. If not, the initial meeting between the factions will clarify any basic questions the player might have on the subject. At the initial meeting, the player meets the factions they'll be interacting with for the rest of the game, forming their opinions about each and establishing initial faction relationships. By the time the meeting ends, the player will acclimate to the game's setting, understanding their place in the game.

Act 2: Character Exploration

After the meeting, the player is free to explore the summit, simultaneously learning more about each character and solidifying their attitude towards them. Characters openly share basic background information, particularly that which might sway the player towards siding with them. Mia, for instance, discusses the circumstances of her exile from Thaywell while at the same time

praising Khylor's actions in an attempt to garner the player's sympathies. At the same time, the player experiences consequences from the initial meeting, with faction leaders likely approaching them to either befriend or insult them. These interactions provide the player with a strong understanding of each character's personality, a foundation upon which they can base future decisions.

By the end of this stage of the game, players should have opinions on all of the characters they have interacted with, and a general idea of who they plan to ally with/make enemies of. With the plethora of background information during this stage, the player is very likely to identify with at least one of the characters, forming a natural bias that can be either reinforced through positive actions on that character's behalf, or dispelled by that character's hostile actions.

Act 3: Wheeling and Dealing

As the drama level rises, the player must act on their previous interactions, deciding who is a threat, who can be exploited, and who they should align themselves with. The player can now learn of character's darker secrets and decide what they should do with the information. Some information may shake the player's understanding of each character, such as the revelation that Gauis Zurio is a false prophet. Faced with this new information, the player must re-evaluate their positions and plans before the final summit meeting. At the same time, they must adapt to the actions of the other factions and new information regarding their own character and faction. The actions the player takes during this stage build the game's potential conclusions, narrowing them from a massive array of options to a select few.

Act 4: Conclusion

Shattered Sky's conclusion sees the choices of the player and the non-player characters come to a head, culminating in the final summit meeting that signals the end of the game. Allies may turn on one another, enemies become friends, and well-laid plans dashed to pieces. With the drama at its peak, the player is free to take whatever action they deem necessary to reach an agreement, including the murder of other characters. The story at this point is that of the player, their actions build the game's conclusion from the elements laid before them. At the final summit, the player must decide their country's course of action, with no further room for political maneuvering. As the final meeting concludes, the curtain of intrigue is drawn back, revealing each character's true motives and plans. The player can see the results of their actions, summaries of future events they had a hand in causing. With this final stage finished, Shattered Sky concludes, leaving the player to wonder what they might've done differently, and hopefully, prompting them to play again.

Developing a Testing Method for Shattered Sky

Shattered Sky's focus on dynamic narrative generation necessitates a new approach to playtesting and general game evaluation, as traditional, usability-derived methods do not adequately cover the massive range of possible situations generated by the game's goal-based characters. Existing game evaluation models are based on the assumption that the game has a set series of events, each of which can be concretely evaluated. The events in Shattered Sky however, are not set, or at least, are not set in a manner that can be realistically evaluated on a case by case basis. The number of possible narratives in Shattered Sky is simply so large that such an analysis is impractical to say the least.

Furthermore, Shattered Sky's design goal; develop a game capable of procedurally producing interesting, engaging, and ultimately fun stories; requires specific testing criteria seldom found in typical playtesting methods. First, the evaluation method must be objective and quantified, as subjective testing across such a wide variety of cases is inaccurate due to differences in interpretation of test results. Second, the evaluation method must be concise, as it must be run on a large number of tests in a relatively short time. Third, it must determine if a given narrative is both interesting and engaging, in essence, if it is a good story. Since no set of existing playtesting methods meets these criteria, one must be created in order to properly test Shattered Sky.

What is Narrative?

In order to design an evaluation system capable to classifying narrative as good or bad, one must first create a definition of narrative. According to Barry Ip (2011), it is important to draw a clear distinction between stories, plots, and narratives, as these are often incorrectly

bundled together. This study will use Heath (1996) and Abbot (2002)'s definitions of the three terms, definitions reinforced by Ip. They state that stories are "a sequence of events" (Abbot, 2002, p. 195), plots are "the organization of events" (Heath, 1996, p. 11), and narratives are "the representation of an event or a series of events" (Abbot, 2002, p. 13). Ip puts these definitions in the context of media, claiming "…the story is the information about an event or sequence of events (typically linear), the plot being the causation and links between events, whereas the narrative is the unique way in which story is being presented to the audience" (p. 6).

In the context of Shattered Sky, it is thus narrative that is the most important to evaluate, for it encompasses story, plot, and how well these two game elements are presented to the player. All of these elements are critical to the success of the game.

What Makes an Enjoyable Narrative?

Evaluating whether a given narrative is enjoyable or not is no easy task, each person has their own preferences for what they find to be gratifying. According to Allyssa McCane and Carole Peterson (1980), the variance in opinion over what is or is not an enjoyable story prevents proper classification of any story being tested in such a manner, for there can be no 'enjoyability standard' to test the narrative against. To institute such a standard is to privilege one specific definition of enjoyable above all others, greatly reducing the effectiveness and usefulness of any resultant evaluation. Thus, the enjoyment of a given narrative cannot be directly calculated without heavily biasing any results.

There are methods by which one can indirectly evaluate enjoyment of a narrative however; gathering information on the factors that viewers subconsciously use in determining their levels of satisfaction. Narrative engagement, the ability of the work to occupy the mind of the viewer, is by and large the most influential of these factors, and can be directly linked to

story enjoyment. Rick Busselle and Helena Bilandzic (2009) claim "narrative experiences that are more engaging… result in greater enjoyment and greater effects" (p. 328). This is a statement echoed by many, such as Green, Brock, and Kaufman (2004), Sherry (2004), and Douglas and Hargadon (2000). Unlike enjoyment, engagement is a quantifiable concept according to Green and Brock (2000), and therefore can be evaluated numerically. By framing enjoyment as a derivative of engagement, one can measure an audience's enjoyment of a narrative without many of the problems raised by a direct assessment.

In order to document viewers' engagement with a given piece of narrative, one must break the idea of engagement down into its component parts. Various studies have been conducted on this topic, resulting in the creation of the three interwoven aspects of narrative engagement shown in Figure 13; transportation (Green & Brock, 2000), identification (Cohen, 2001), and flow (Csikszentmihalyi, 1997). Each of these influences the construction of mental models of meaning, the methods by which audience members understand narrative described by Graesser, Olde, & Klettke (2002), and thus dictates their level of engagement. By understanding each of these terms and how to evaluate them, one can begin to construct a model to gauge general narrative engagement, and thereby narrative enjoyment.

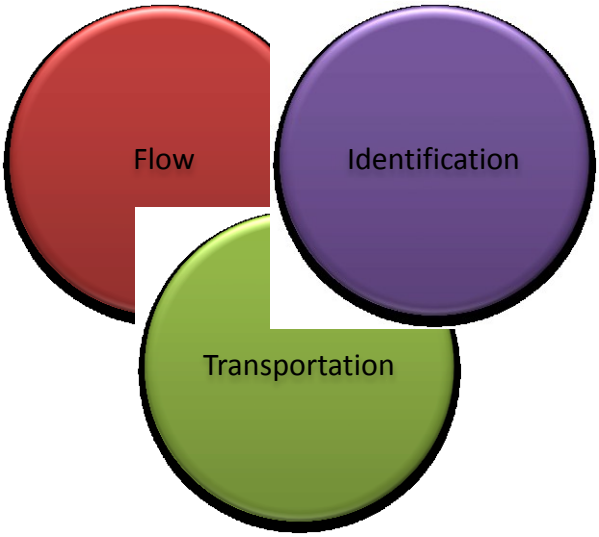


Figure 13: Three Components of Engaging Narrative

The first step in a good narrative is to seize the audience's attention, to induce such focus on the story that they lose track of their surroundings, time's passage, and ultimately themselves. This process of focus shift, called 'flow' by Csikszentmihalyi (1997) occurs as the audience becomes completely entranced with a given narrative, to the point that all they wish to do is continue experiencing it. While flow can occur in non-narrative situations, such as playing sports, it is particularly important for immersion in narrative. Gerrig (1993) claims that unlike sports or other such activities, stories provide alternatives to the audience's immediate reality. Thus, the hyperfocusing that defines flow wipes clean the canvas of the mind, the loss of environmental and self-awareness allowing for alternative worlds, characters, and situations to fill in, immersing the viewer.

With no sense of surroundings or self, the audience is open to the alternate realities presented in the narrative. The truths of the presented narrative's world take the place of real-world-facts within the mind of the audience, a process dubbed 'transportation' by Green and Brock (2000). Gerrig and Rapp (2004), claim that this effect is so strong that it requires conscious effort by the audience to disbelieve the realities presented in an experienced narrative,

a reaction they term *the willing construction of disbelief*. Psychological research by Daniel Gilbert (1991) supports this theory, suggesting that the very act of comprehension leads to acceptance. Nonetheless, the *degree* to which a given narrative immerses an audience, and thus the engagement it offers, varies greatly from story to story.

One of the major factors in the intensity of a story's transportation effect is the temporal framing of the tale. Tal-Or and Cohen (2010) observe that the timing of narrative actions alters audience transportation; audience members are transported more after receiving information regarding the future than after receiving information regarding the past. This is due to the fact that future information creates suspense, described as an "illusion of being there" by Zillmann (1991), and thereby reduces willing disbelief in audience members. Conversely, Tal-Or and Cohen's work shows that actions in the past reduce such suspense and therefore reduce audience transportation. However, this does not mean that the most transporting stories are all set in the future, for timing is not the only variable that shapes a narrative's transportation.

In addition to narrative temporality, the magnitude of the transportation effect also depends on the focus of the audience, the story's resonance with audience belief structures, and the quality of the tale's presentation. According to Green (2006), transportation requires a fusion of attention, imagery, and feelings in order to succeed, a combination supported by Gerrig (1993)'s discussions on focus, alternate realities, and audience-experienced emotions and motivations. These aspects of transportation develop linearly; the audience must focus on the media to expose them to the imagery of the alternate world, and must experience the imagery of the alternate world to experience emotions in that world. Disrupting any one of these will disrupt transportation, Green claims, snapping the audience back into their initial reality and forcing them to begin the process anew.

While transportation places the viewer within the alternate reality of the story, further components are necessary to maintain this immersion. Identification is one such factor, wherein the viewer strong identifies with a character or assumes their position. Cohen (2001) describes identification as when a viewer ceases "to be aware of his or her social role as an audience member and temporarily (but usually repeatedly) adopts the perspective of the character" (p. 251). In terms of Segal (1995)'s Deictic Shift Theory, the audience members switch to the time and location of the narrative, effectively re-iterating Green and Brock's transportation process and keeping them within the subjective world of the story's characters. A well-known example of this can be found in George Lucas' original Star Wars trilogy, in the opening scenes of Episode IV: A New Hope. While the opening scenes of space combat bombard the viewer with vivid imagery of an alien existence, thus transporting them in a visual sense, these visuals alone are not enough to prevent willful disbelief among the audience. To prevent this, Lucas introduces the characters of C3PO and R2-D2 to the chaotic scene. These characters' antics allow the audience to immediately identify with them in this otherwise foreign environment, keeping them engaged long enough for the rest of the world to become familiar and enabling identification with characters once deemed strange or incomprehensible.

The relationship between flow, transportation, and identification, is one of extreme synergy, a complex fusion of cognitive events that result in narrative engagement. Together, Bilandzic and Busselle (2008) claim, these aspects of narrative engagement siphon cognitive and emotional resources away from their previous uses and invest them in an observed story. If even one were to falter, the audience's engagement with the story would suffer greatly for it. Distractions resulting in the loss of flow force real world facts back into the audience's mind,

facts that often clash with the truths of the story world. The sense of realism within the narrative vanishes, which in turn decreases narrative engagement according to Hall (2003). Furthermore, since the audience's sense of "being there" is decreased; the degree to which they are transported by the narrative and identify with its characters suffers as well. Thus, anything that detracts from one of these important narrative aspects detracts from all of them.

In addition to these content-based elements, structure is very important to successful narrative. According to McCane and Peterson, people are sensitive to structure, not merely to content, when judging a narrative to be good. Therefore, the aspects of structure that contribute to story engagement must be identified and evaluated alongside narrative content. Bilandzic and Busselle (2009) imply that narrative consistency, be it in plot, character motivation, or conformity to genre conventions, is paramount to maintaining engagement. Such consistency, described as relative realism by Hall, provides the audience building blocks from which to construct the mental models of meaning they use to interpret the alternate world presented in the tale. The comprehension of the alternate world leads to acceptance of the alternate world, greatly facilitating audience transportation and character understanding, which in turn, increase their engagement with the story.

Unfortunately, while the narratives found in video game share many similarities with those found in novels, plays and films, they must contend with one additional narrative influence; that of play. Play fundamentally alters the nature of narratives within its mental space, propagating certain narrative elements while discarding others. The fusion of narrative and play must be treated as a separate entity rather than the sum of its parts, and thus requires new models for evaluating the stories it contains.

What is Play?

As with narrative, it is important that one define the concept of 'play' before one undertakes an exploration of its complex relationship with stories. Far too often, claims Klabbers (2009), the term 'play' is treated as analogous to games or simulations, when in fact it should be treated as an umbrella term for all human activities that fit its unique definition. While not all agree on what that definition is, this paper uses that created by Johan Huizinga in his book Homo Ludens: A Study of the Play-Element in Culture:

> Play is a voluntary activity or occupation executed within certain fixed limits of time and place, according to rules freely accepted but absolutely binding, having its aim in itself and accompanied by a feeling of tension, joy and the consciousness that it is "different" from "ordinary life". (p. 28)

According to Huizinga, play does not have a singular definition; rather, it possesses traits that identify it as such. In the context of Huizinga's definition of play, these traits are:

- A fixed temporal and spatial location
- A set of governing rules
- A distinct division between play and ordinary life

Through careful measurement of Huizinga's play-traits, the otherwise abstract concept of play can be given qualitative and quantitative form within a specific medium, in this case, that of games.

Play-Space and the Magic Circle

All games, be they digital or otherwise, possess their own distinct spaces in which they are conducted. According to Michael J. Apter (1991), these special play-spaces do more than facilitate the game; they construct "a protective frame which stands between you and the "real"

world and its problems, creating an enchanted zone in which, in the end, you are confident that no harm can come" (15). Apter's description of play space echoes Huizinga's own words, his belief that:

> "All play moves and has its being within a play-ground marked off beforehand either materially or ideally, deliberately or as a matter of course… The arena, the card-table, the magic circle, the temple, the stage, the screen, the tennis court, the court of justice, etc. are all in form and function play-grounds, i.e., forbidden spots, isolated, hedged round, hallowed, within which special rules obtain. All are temporary worlds within the ordinary world, dedicated to the performance of an art apart." (p. 10)

This spatial and psychological separation is critical to the creation of play, as per Huizinga's definition, not only because it divides play from reality, but because it establishes when the rules of play govern the participants and when they do not. Salen and Zimmerman (2005) dub this "the magic circle", the enclosed game space that differentiates between play and non-play. In the context of a digital game such as Shattered Sky, Apter's protective frame, Huizinga's playground, and Salen and Zimmerman's magic circle all take the form of the game window and user interface, the gateway through which players transport themselves into and out of the game. Within the play-containing space, new worlds are free to take form around the players and game objects, creating special meanings that only apply within the specified space.

Rules of Play

Play is, in many ways, its own distinct reality, complete with its own boundaries and rules. Within the magic circle of play, claim Salen and Zimmerman (2005), "special meanings accrue and cluster around objects and behaviors, [creating new realities] defined by the rules of the game and inhabited by its players" (96). A twenty sided die, for instance, is an oddity in the

ordinary world; however, within the reality of Dungeons and Dragons, it represents fate itself. The rules of Dungeons and Dragons give this otherwise ordinary object extraordinary presence by virtue of its critical role in the laws of the game's reality.

The role of rules in play is not limited to the framework of play-realities; rules also serve as opposition to play, a rigid constraint that simultaneously restricts and enables play. Salen and Zimmerman (2005) go so far as to define play in terms of this concordant opposition, claiming that "play is free movement within a more rigid structure" (304). Thus, play is created by rules, but at the same time opposes them, using the structure created by the rules to rebel against them. In so doing, play becomes an organic entity composed of in-organic parts, a concept that cannot be broken down into sub-components without losing the essence of the whole.

Ultimately, the traits of play do not exist in a vacuum, particularly in a story-driven game such as Shattered Sky. Instead, they are intertwined with the game's narrative elements, inseparable in the mind of the player. Therefore, to evaluate play in Shattered Sky, one must evaluate more than play itself, they must evaluate the relationship between the elements of narrative and the elements of play.

The Relationship between Play and Narrative

At first glance, the relationship between the characteristics of play and narrative seems to be a purely synergistic one, with various aspects of play assisting in, narrative processes. For instance, play's differences from ordinary life imply that some level of narrative transportation is occurring among the players, facilitating engagement with their activity. Similarly, the voluntary nature of play implies a focus on the activity at hand, focus akin to that required for narrative flow. Yet these synergies are the exception, not the rule when it comes to play-narrative interactions. According to Jesper Juul (2005), the relationship between play and narrative is best

described as complementary, not symmetrical, with play both assisting and detracting from narrative engagement. Within video games, a small subset of play, this effect is even more pronounced, for they provide the illusion of interactive narrative, a fallacy, Gonzalo Frasca (2003) claims, that is born out of games' promise of simultaneously providing player freedom and maintaining narrative coherence. The trouble with games is ultimately their interactive nature, the ability of the player to change the narrative space he or she engages with. This ability is unique to games, and has been argued as both a help and a hindrance to engaging storytelling.

On one hand, the interactivity provided by video games gives the player the ability to bond with characters on an unparalleled level. The presence of a physical representation of the player, or a representation that the player claims ownership of, serves as a site of continuous identification for the audience. Silverman et al. (2003) claims that the on-screen avatar allows fictional characters to 'stand in' for viewers, causing them to slowly accept the avatar as a representation of themselves. Thus players *become* their avatars rather than simply identifying with them, enabling narrative transportation on a grand scale. According to Bob Rehak (2003), identification in video games differs from that in literature and film due to the fact that its view is a "present one", one where the audience does not say "That's what I *see*", but rather, "That's what I *do*". This participatory aspect of identification, unique to video games, promotes greater levels of engagement than is possible in other mediums.

Video games complement narratives on a structural level as well, reinforcing narrative structures with gameplay mechanics. The very nature of games is such that their software structure and gameplay necessitate quest structures similar to those found in traditional

narratives, argues Jasper Juul. His words echo those of Barry Ip (2011), whose study of narrative structures in games revealed that most adhere to The Hero's Journey, a framework found in narratives across the globe. According to its Joseph Cambell (1949), this structure can be summarized as:

> A hero ventures forth from the world of common day into a region of supernatural wonder: fabulous forces are there encountered and a decisive victory is won: the hero comes back from this mysterious adventure with the power to bestow boons on his fellow man.

The Hero's Journey is particularly prevalent in games due to its usefulness as a gameplay structure in addition to a narrative one. Adams and Rolling (2007), support this synergy between narrative and gameplay frameworks, noting that many game designers find the Hero's Journey's mix of challenges and travel particularly well suited to single player games. The drama levels of the narrative structure mirror the difficulty and complexity of the game, in a sense, the player grows into the game mechanics much as the character grows into their role as protagonist of the story. This synergy not only eases gameplay pacing concerns, but heightens narrative identification as well, fusing play and narrative into an experience stronger than the sum of its parts.

However, the relationship between games and narrative is not entirely complementary; there are many aspects of games that inherently harm the stories they try to tell. Juul (1998) believes that the rules aspect of play, embodied in video games as the game mechanics, is ultimately incongruent with narrative representation in games. Systems within games often break those game's narratives, producing elements that constantly remind players that they are just

that, players of a game. UI elements are an excellent example of this, for they provide data the player would not see if they were truly acting as characters within the presented world. This discrepancy, Rehak (2003) admits, forces players to constantly flip between the role of participant and observer, making them simultaneously aware of themselves and their avatar. While this raises interesting philosophical opportunities, it disrupts narrative transportation and identification by forcing the player to exist in a world that is both real and false at the same time, which in turn reduces narrative engagement. Given the importance of engagement to the overall enjoyment of a narrative-based game such as Shattered Sky, this is a major issue.

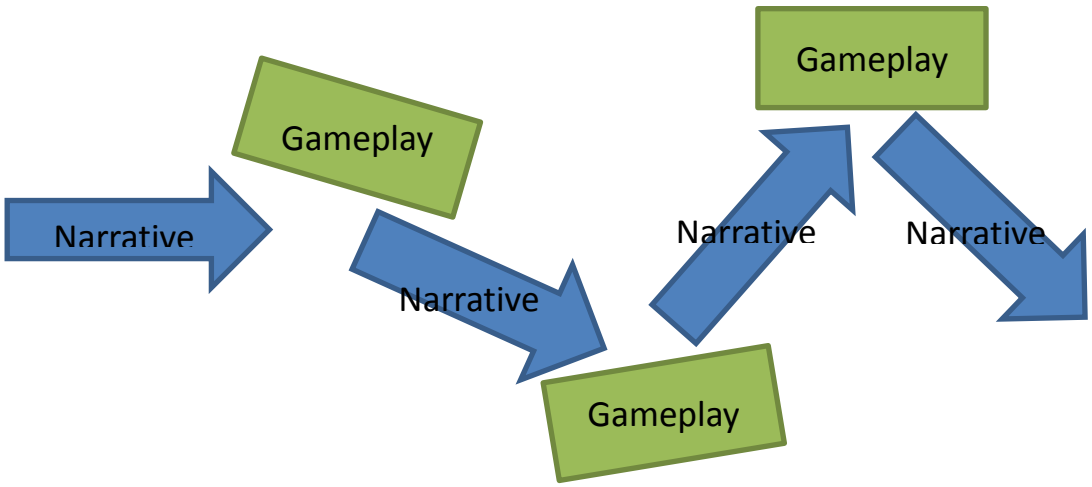


Figure 14: Gameplay as Narrative Roadblocks

Unfortunately, this is not the most deep-rooted conflict between play in video games and narrative, for the mechanics of games do far more than dispel the illusion of presence in an alternate world. Games treat time and story flow in an entirely different manner than narratives, claims Juul (2005), creating periods of 'dead time' where the player does nothing to advance the embedded tale or is forced to repeat the same section of the story several times. Bosses must be beaten, puzzles must be solved to progress; these objects serve as temporal roadblocks to story

development. Jane McGonigal (2011) describes these as the useless challenges, placed between players and narrative advancement as shown in Figure 14. Due to these obstacles, the potential emotional response of the player to events in the story cannot be choreographed; there is simply no way to determine when the player progresses to certain narrative points. The intense emotions evoked by the death of a well-liked character, for instance, may wear off by the time the player defeats the boss that follows the scene, causing the high drama of the events to ultimately fall flat. The interactive element of games introduces an unknown variable into all potential stories crafted within that narrative space; the actions of the player. These actions, Andrew Glassner (2004) claims, are typically uninformed compared to the professional wisdom of the story creators, resulting in players choosing the blandest, most indistinct middle ground for fear they might disrupt what is to come. In doing so, the player becomes responsible for breaking their own engagement, a risk that cannot be mitigated without the removal of the interactivity that makes game narratives unique.

Complications of Testing

While the interaction between narrative and play in games such as Shattered Sky is a complicated one, introducing testing to the equation makes it even more so. According to Pagulayan and Steury (2004), many current approaches to video game testing fail to differentiate video games from other software products, and therefore test traditional usability rather than the goals of the designer. While these traditional usability standards are sufficient for certain aspects of the game, such as the interface and peripherals, they fail to take into account the emotional responses evoked by gameplay. Patrick Jordan (2004) claims that such testing relegates players to users, and games to tools; one simply to be used by the other to achieve a very defined, concrete goal. This completely neglects the enjoyment of the user in reach that goal, the

experiences they have along the way. In a sense, traditional usability cares only about the destination, whereas games focus on the journey. The mismatch between these two necessitates new approaches to Shattered Sky's testing, particularly in light of the game's internal conflict between narrative and play.

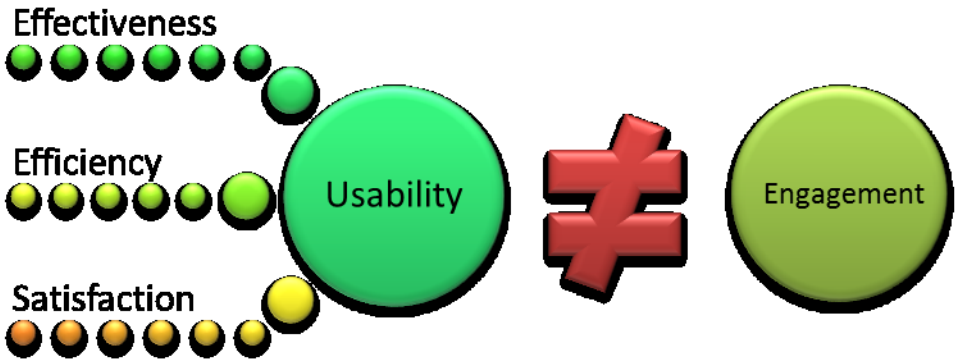


Figure 15: The Flawed Assumption of Traditional Usability Tests

The origins of the dichotomy between current testing methods and those required for Shattered Sky lie in the usability studies many game testing procedures are derived from. Designed for use on task oriented software such as word processors and account managers, usability is defined by the ISO 9241-11 standard as the "extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use". It reflects the goals of the task-oriented software designer, to create a product such that a user can use it without hindrance, hesitation, questions, or frustration. Each usability criteria (effectiveness, efficiency, and satisfaction) can be evaluated quantitatively; effectiveness can be measured in completion rates and errors, efficiency from time on task, and satisfaction using any of a number of standardized satisfaction questionnaires. As Dr. Lennart Nacke, a PhD in Digital Game Development and Affective Computing, describes it, usability has

concrete, measurable aspects and therefore has a foundation based on numbers. However, when introduced to the idea of flow, engagement, play, and other such difficult to quantify concepts, usability alone is an inadequate tool for testing, for it cannot gauge enjoyment as Figure 15 shows. Such a complex and abstract concept cannot be diluted into a single statistic, nor evaluated by a single variable with any semblance of accuracy. Unfortunately, this has not stopped many game designers from subjecting their products to a testing method not tailored to it.

The Incompatibility of Narrative, Play, and Effectiveness

When applied to video games as a whole, rather than just their interfaces, the usability criteria of effectiveness stands in direct opposition to several tenants of both narrative and play. Defined by Jeff Rubin and Dana Chisnell (2005) as "the extent to which the product behaves in the way that users expect it to and the ease with which users can use it to do what they intend" (p. 4), it makes several assumptions about the nature of the evaluated product that are inappropriate for narrative and play as a whole. First, it assumes that user's external goals are their primary purpose for interacting with the product, and that this will remain true throughout their experience with it. Yet, if their goal is to enter a state of play or narrative transportation, as is the case in a video game, this assumption quickly falls through, for once these begins the goal of the players is simply to continue within the magic circle of the product. This is similar to Hassenzahl (2005)'s description of 'action mode', where goals are determined on the fly and the product becomes an end unto itself. In such situations, blanket assessment of user goals is impossible, for few users share the same goal at any point in time.

Second, the rubric of effectiveness implies a level of definition that seldom exists within the realms of play, narrative, and other enjoyable activities. According to Brandtzeg et al. (2003),

such pursuits are "not seen as the engagement in … series of well-defined tasks, achieving well-defined goals. Rather, [they] consist of an interwoven complexity of activities in dynamic environments with several actors and conflicting interests" (p. 56). For instance, the narrative terms of flow, transportation, and identification cannot exist within a vacuum, each concept relies on the others to function in some capacity. To try and evaluate the efficiency of identification, flow and transportation would also need to be evaluated, which would render the evaluation useless since its entire goal is to single out variables in the user experience. Due to this contradiction and that discussed above, the usability criteria of effectiveness is unsuitable for use in evaluating play and narrative, particularly within the context of a video game.

The Incompatibility of Narrative, Play, and Efficiency

The usability criteria of efficiency suffers from many of the same problems effectiveness does when evaluating narrative and play, largely due to the fact it makes similar assumptions. Rubin and Chisnell describe it as "the quickness with which the user's goal can be accomplished accurately and completely" (p. 4). Once again, it incorrectly assumes that the user's external goals are the primary purpose for using the product, and that these goals are clearly defined. In addition, efficiency assumes that hasty completion of goals correlates to positive experiences in the user, a claim that is seldom true within the context of narrative and play. According to Adams and Rollings (2007), such emphasis on quick completion discourages complex planning in favor of brute force solutions, a trait particularly harmful in an intrigue based game such as Shattered Sky. It is important to remember that play is a means unto itself, by Huizinga's definition it does not have a goal of the sort efficiency can evaluate. Thus, efficiency is ultimately a poor criteria in the testing of narrative and play, ill-suited for use with Shattered Sky.

The Incompatibility of Narrative, Play, and Satisfaction

While the human-centric nature of the usability criteria of satisfaction allays much of tension between usability, narrative, and play, it cannot escape its work-based origins. Defined by Rubin and Chisnell as the "user's perceptions, feelings, and opinions of the product" (p. 4), satisfaction is the only aspect of usability that humanizes users, treating them as people rather than task-oriented machines. This is certainly an improvement over the concepts of effectiveness and efficiency, but not enough to overcome the work-bias inherent in usability standards. Usability's bias translates into skewed models of meaning, models rooted in the same flaws possessed by the ideas of effectiveness and efficiency. According to Blythe and Hassenzahl (2003), satisfaction's flaw is that it aims to prevent pain rather than promote enjoyment, making the fatal assumption that the absence of the former translates to the latter. In doing so, the vast fields of narrative, engagement, and play, are condensed into the single oversimplified concept of satisfaction, and even this is exists solely in terms of work. Ultimately satisfaction, and thereby usability as a whole, deals with the question "Does it work?" rather than the more important question: "Is it fun?"

Affective Usability & Playability

Although traditional usability is largely unsuitable for the evaluation of a narrative-based game such as Shattered Sky, the field of affective usability shows greater promise. Finucane et al (2000) claim that logic, the favored attribute of traditional usability, is seldom the sole factor in the decision making process. Instead, people use what the researchers deem an affective heuristic, the evaluation of an object's representation based upon positive and negative feelings associated with the object (3). Thus, while one path may be the logical choice, some might refuse to take it due to negative associations with objects along the way. In the context of a testing

environment, this can be disastrous, returning unfavorable results even when the product is sound. Affective usability testing not only helps alleviate tester bias, but, according to Hassenzahl, Burmester, and Beu (2001), also evaluates user enjoyment with the product. Consequently, it seeks to move away from the confines of the ISO 9241-11 standard, instead taking a more user-centric, holistic approach to usability. In so doing, affective usability reduces many of the incompatibilities between narrative, play, and itself.

When applied to games in particular, affective usability testing morphs into methodologies even farther removed from traditional usability concepts. Dubbed playability by Jarvinen et al. (2002), these new systems encompass "a collection of criteria with which to evaluate a product's gameplay or interaction". This definition is supported by Fabricatore et al. (2002)'s assertion that "playability is the instantiation of the general concept of usability…determined by…understanding and controlling gameplay", in essence, playability is usability tailored to games. The core approach of the method is the same; however, the specifics are altered to suit the interactive medium. For instance, in Jarvinen et al.'s model, playability replaces the rubrics of effectiveness, efficiency, and satisfaction with functional, structural, audiovisual, and social playability, while in Desuvire et al's it incorporates game play, game story, game mechanics and game usability. While these criteria are still subject to the same quantitative testing traditional usability components are, the focus is shifted away from the end goal in favor of the path to said end goal. In short, testing becomes less about the user's destination, and more about the user's journey.

However, playability criteria are far from the perfect method for testing a narrative based game such as Shattered Sky. Though each criteria covers an important aspect of the game, there are no measures to cover the game as a whole, the general experience as compared to the specific

component parts. Just as the combination of narrative and play is greater than the sum of its parts, so too is a game experience deeper than the combination of its individual components. Neither affective usability testing nor playability testing adequately covers this overall experience. This is where playtesting comes in.

Playtesting

Playtesting is the overall evaluation of a video game's fun factor, the overall enjoyment of the game. According to former IGDA Chairman Jesse Schell (2008), playtesting deals with overarching issues in game mechanics, pacing, narrative and gameplay, allowing designers to test their implementation of the design document, to see if their designs on paper match their designs in practice. While this may seem similar to playability testing, playtesting's scope is quite different; it focuses on the overall game rather than its components. In essence, playtesting deals with a game on a macro level, whereas playability testing deals with a game on the micro level. Of course, given the non-standard nature of most playtesting methods, this is not always the case.

Ultimately, playtesting is primarily a subjective form of testing, utilizing a wide variety of methods to gain valuable insight into the strengths and weaknesses of one's game. There are numerous ways one can conduct playtesting, some of which are informal and qualitative, and others which tend to be more structured and quantitative. According to Fullerton et al (2004), one thing all forms of playtesting have in common is the end goal: how to gain useful feedback from players in order to improve one's game. The methods used to do so should be tailored to the game being tested rather than to a standardized methodology.

Conclusion

Any system developed to test Shattered Sky must evaluate several critical areas while avoiding the computer science bias of tradition usability testing. First, the testing method must evaluate the flow, transportation, and identification of the tester, for these factors are crucial to an engaging story. Second, the tests must check for tension between gameplay and narrative, for Shattered Sky's emphasis on dynamic storytelling requires a level of immersion not possible with such conflict. Finally, the evaluation method must integrate the concepts of playability and playtesting to minimize the influence of results-oriented usability testing.

Method

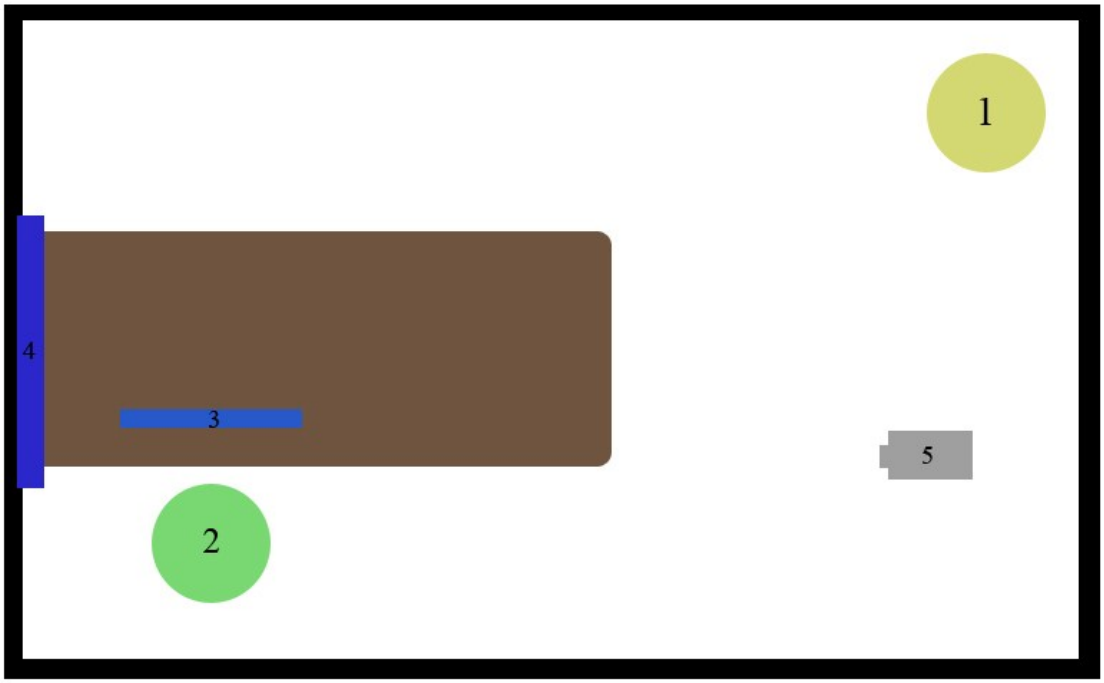
In order to test Shattered Sky, our testing methods were customized to match our story driven gameplay, specifically evaluating narrative engagement and how well our gameplay synergizes with story. With these factors in mind, we designed the following evaluation method for Shattered Sky.

Preparation

The Shattered Sky playtest sessions should be conducted in a WPI tech suite. These are small reserved rooms with closed doors and a large flatscreen television hooked up to their computers. Two test administrators will conduct the playtest in the reserved tech suite.

Prior to the playtesting session, test administrators must setup the testing area according the diagram below prior to the arrival of the first test subject. Under ideal circumstances, the testing area should remain the same between testing iterations, however, it may be moved so long as the setup remains consistent with the diagram.

Shattered Sky Testing Setup



1. Test Administrator's Chair
2. Test Subject's Chair
3. PC loaded with Shattered Sky
4. Flat Screen TV attached to PC via HDMI cable. It's screen should match that of the PC
5. Video Camera on tripod

The test adminstrators must load Shattered Sky onto the tech suite computer before the tests begin. To do so, simply open an internet browser and navigate to the following web address <Insert Web Address here>. When prompted to install the Unity plugin, click ok to load Shattered Sky into the browser window. Finally, right-click on the game window and select full-screen from the options menu.

Once these steps are completed and the testing area is set up correctly, wait patiently until the test subject arrives.

Introduction & Pre-test

When the test subject arrives, greet them at the door and bid them to sit in the designated test subject chair (2). Once they are settled, read the following introduction.

> Hello, and welcome to the Shattered Sky playtest. My name is <insert name here>, and this is <insert other name here>. We'll be administering your playtest today. We greatly look forward to your feedback on the experience we've created, and want to thank you for taking time out of your busy day to help out.
>
> Now, before we begin, I'd like to ask you a few questions about your gaming habits. This will help us put your comments in context, providing more accurate data and ultimately, a better game.

At this point, ask the test subject the following questions, in the following order:

Both administrators must record their responses on the response sheet, Appendix 3.

1. What are your favorite genres of games? List the top three in descending order.
2. For you, how important is a game's story?
3. For you, how important is a game's gameplay?
4. For you, how important is the challenge of the game?

These questions are designed to paint a profile of the playtester, in order to frame their later feedback on Shattered Sky. For instance, feedback from a player that feels story is unimportant is treated differently than one that feels that story is the most important aspect of the game. According to Tom Miegs (2003), such profiling is an excellent way to categorize and prioritize player feedback (pg. 179). Without such measures, it is quite difficult to find the feedback worth acting on given the design goals of the game.

When the test subject has answered all four questions to their satisfaction, proceed to the next section of the test.

The Playtest

Note to Test Administrators:

The playtest will be run twice, with a post-test evaluation after each play-through. During the play-through, it is imperative that both test administrators remain silent and straight faced. Communication via facial expressions can be just a damaging to results as verbal communication during the test. If the playtester gets stuck, only speak if they explicitly state that they are stuck. In this situation, give a simple hint as to how to proceed, or, in the case of a bug, how to fix it.

The one exception to this is if a game-breaking bug occurs. If this happens, ask the player exactly what they were doing when the bug occurred; write this and your own observations on the form in Appendix 4.

Now, read the following:

Thank you. Let me explain the playtest to you now. As you play, <Insert first Test Administrator name here> and < Insert second Test Administrator name here> will sit and silently observe, noting any places that you have trouble or places that are particularly enjoyable.

Furthermore, we will use this camera to record the playtest. This will not only provide us with a detailed record of the playtest, but also allows us to carefully review any bugs you might encounter.

If at any time you feel stuck, let us know and we will attempt to point you in the right direction, or, in the case of a truly game breaking error, abort the test.

We will repeat the playtest two times. After each test, you will fill out an evaluation form based on your game experience.

Now, on the computer screen in front of you is the game you'll be testing, Shattered Sky. Before you begin playing, let me give you a brief summary of the game and its controls.

Now sit back and observe the test subject as they play the game. If they ask questions of you, inform them that you are merely an observer at this stage, unless they are stuck. Otherwise, do not offer assistance of any kind to the test subject, even if they are becoming frustrated.

If no such bugs occur, continue observing until the test subject completes the game. Be sure to note any non-game-breaking bugs that you observe, but to do not stop the test for such errors.

When the test subject completes their first play-through, proceed to the post-test.

Post-Test & Second Playthrough

Read the following:

> Thank you. Now, I have a brief questionnaire I'd like you to fill out detailing your thoughts on specific areas of the game.

Hand the test subject the Shattered Sky Evaluation Sheet (Appendix 5) and a pencil. Stop the video camera recording. Wait until they are finished with the sheet to continue.

The Evaluation Sheet focuses the playtester's examination of the game on 12 statements, detailed below. The tester assigns each of these statements a value between one and six depending on how much they agree or disagree with the statement. 1 = Strongly Disagree. 6 = Strongly Agree

The game controls and interface were straightforward and easy to use.

This criteria is based on Rehak's (2003) claim that intrusive UI forces the player out of their narrative immersion, forcing them to jump back and forth between reality and the fictional world. In a narrative-based game such as Shattered Sky, this is particularly unwelcome, as it prevents transportation and reduces engagement. Thus, we must assess our current UI and controls to ensure that the interface and control scheme are as unobtrusive as possible.

The game held my focus.

Focus, according to Csikszentmihalyi (1997) and Hall (2003), is essential for maintaining narrative engagement. Any of Shattered Sky's players must maintain focus on the game in order to be transported to the narrative world within it. Should focus be lost, real world facts re-enter the mind of the player, breaking engagement and therefore decreasing enjoyment. We must ensure that Shattered Sky holds the focus of the player such that this does not occur.

I felt immersed in the game world and story.

This statement aims to gauge the player's transportation into the narrative world. Such reality shift, according to Gilbert (1991), causes players to immerse themselves in the game universe in a manner that requires a conscious effort to break. Not only does this increase engagement, and thereby enjoyment, but it causes players to overlook small errors in game that would otherwise be obvious.

I identified with the character I played.

Ideally, the player will identify with his or her avatar, the character he or she plays in the game. Cohen (2001) claims that this transports the player into the place of the character, keeping them immersed in the story. This reinforces both transportation and focus, resulting in greatly increased engagement on the part of the player.

I identified with at least one of the non-player characters.

If the players do not identify with their character, they may still gain the benefits of Cohen's identification if they identify with one of the NPCs. Much like R2D2 and C3PO, identifying with minor characters can act as a stabilizer for transportation and focus.

I thought the characters were well-developed, with their own histories, personalities, and goals.

One of the goals of our MQP is to create characters that act more like people than AI's, as such, we aimed to make each character unique. This statement directly addresses the success or failure of this attempt.

I understood the role of my actions on the development of the story.

There are two purposes to this question; one, it examines whether the playtester understood the story or not, and two, it evaluates the player's feeling of control over the story. Glassner (2004), claims that enjoyable choices are informed choices, that the player should understand the implications of their choices when presented with them. Otherwise, the player feels betrayed by the designer, greatly decreasing their enjoyment of the game.

I felt the tension and drama constantly rising as the game progressed.

Another goal of our MQP was to create a game in which the drama level constantly rose, indeed, this was arguably our primary focus. This statement directly evaluates our success or failure at achieving this goal.

I had a clear goal the entire game.

It is critical that the player have a clear goal to guide their decision making as they play through the game. Adams and Rollings (2007) state that players should always have some overarching goal, otherwise they will become distracted and irritable. This statement evaluates whether Shattered Sky successfully provides such a goal to the player.

I felt the conclusion I reached reflected my decisions in the game.

One of our concerns with Shattered Sky is that the non-player characters may decide the fate of the player without sufficient input from said player, making decisions that dictate end-game conditions behind the player's back. Adams and Rollings (2007) claim that the player should be aware of the position they are in as they play the game, as this allows them to make informed decisions about their future choices.

I did not feel constrained by the game.

Running into artificial constraints can easily break narrative transportation, snapping the player back into the reality that they are simply playing a game. Shattered Sky's gameplay must

take care to avoid this clash between narrative and play, and this statement evaluates our success or failure at achieving this.

Draw an x where you think Shattered Sky falls on the following continuum.

Book Game

Jane McGonigal (2011) describes games as a series of useless challenges, placed between players and narrative advancement. Shattered Sky has no such obstacles, all actions the player takes are advancement towards a narrative goal. Thus, this statement is to evaluate if Shattered Sky is even considered a game by those that play it.

Once the test subject has completed the evaluation form, resume recording from the video camera. Read the following:

> Thank you. Now I have a few broad questions to ask you, be as detailed in your response as you like. Remember, the more detail you give, the better we can make Shattered Sky.

Ask the test subject the following questions, recording any particularly interesting comments in the sections in Appendix 4.

1. What did you like best about the game? Why?
2. What did you like least about the game? What would you have liked to seen instead?
3. Were there any additional actions you wish you could have done? What were they?
4. Would you play the game again? Why or Why not?
5. Any additional comments?

These questions allow the playtester to give additional feedback on the game, a catch-all for any aspects not covered in the evaluation sheet or revealed through the playtest. They exists to catch the corrective and consolidating playtester responses, responses deemed critical by Chris Crawford (1982), and weed out suggestions of outlandish new features and unwanted embellishments of gameplay.

When the test subject is finished with the questions, read the following:

> Thank you. However, you're not done just yet. Shattered Sky is meant to be a highly replayable game, with dozens of different outcomes and paths to follow. As such, I'd like you to play through the game one more time. Allow me to reset the game, and then you may begin again.

Follow the same procedure as the first play-through. Pay special attention to any perceived differences in the test subject's behavior from the first play-through when making observations. At the end of the second playthrough, administer a second post-test just as you did the first.

Once the test subject completes the second and final post-test, read the following:

> The playtest is now complete. On behalf of the Shattered Sky design team, I'd like to thank you for taking time out of your busy day to help us. Your feedback is critical to making Shattered Sky the best game it can possibly be. If you enjoyed the game, or know someone that you think would, let us know by sending an email to rd2012@wpi.edu. We're always looking to share our game with new people. Once again, thank you for your time.

Hand the playtester a piece of paper with the email address on it, then lead the test subject out of the testing area. Once they are gone, turn off the video camera and clean up the testing area.

Discussion of Results

While additional research is certainly needed, Shattered Sky's testing method shows promise as a story-focused playtesting rubric. Each section of the test performed as expected; the pre-test weighed the importance of tester responses, the quantitative evaluation provided standardized data on important aspects of the game, and the follow up interview questions put this data in context of player enjoyment and replayability. However, with only 15 playtests across 3 builds, sample sizes were not large enough to conclusively prove the success of Shattered Sky's playtesting method. Furthermore, given the unpolished nature of the builds tested, most responses to evaluations of story engagement were biased by technical issues. Yet even with these complications, several patterns emerged in playtester responses that speak to the validity of the playtesting method.

Negative Effects of Interface on Narrative Engagement

The first pattern to emerge from Shattered Sky's playtesting was just how severely a clunky interface could disrupt narrative engagement and general game enjoyment. These results are in line with Rehak's (2003) claim that intrusive UI breaks the connection between player and avatar. Initial playtests of Shattered Sky, which used an unwieldy point-and-click interface, showed this to be true, demonstrated by Figure 16.

Build	Interface Rating	Flow Rating	Transportation Rating	Identification Rating
Alpha v1	1	4	1	2
Alpha v1	2	6	2	2
Alpha v1	1	5	1	2

Figure 16:Initial Interface Rating vs. Narrative Engagement Ratings

Analysis of this data revealed that while the playtesters were focused on the game, something prevented them from being transported into the gameworld and identifying with the characters. The team felt the poor user interface responsible for these issues, as playtesters reported they were "too busy fighting the controls to care about the story". As a result of this feedback, the controls were changed from the clunky point-and-click mechanic to a much smoother WASD control scheme. Figure 17 displays the dramatic shift in narrative engagement resulting from this simple change.

Build	Interface Rating	Flow Rating	Transportation Rating	Identification Rating
Alpha v2	4	5	3	3
Alpha v2	5	5	4	2.5
Alpha v2	3	4	3	2.5
Alpha v2	4	5	2	3

Figure 17:Interface Rating vs. Engagement Ratings after change to WASD controls

The increase in both transportation and identification correlated directly to the rise in interface scores. Given that the shift from point-and-click to WASD was the only change between builds Alpha v1 and Alpha v2, it is very likely that the more intuitive interface was responsible for the change, thus confirming Rehak's claim.

Importance of Plot Clarity to Narrative Engagement

The second major pattern to emerge from Shattered Sky's playtesting was the importance of clear, understandable plot and characters to player's narrative engagement. McCane and Peterson are indeed correct when they claim "People are sensitive to structure, not merely to content, when judging a narrative to be good". Prior to Alpha v3, Shattered Sky lacked a proper introduction, thrusting players into the maneuvering of the summit with only a brief explanation from their second-in-command. Figure 18 shows the results of such poor exposition.

Build	Plot Clarity	Flow Rating	Transportation Rating	Identification Rating
Alpha v2	1.5	5	3	3
Alpha v2	2	5	4	2.5
Alpha v2	2.5	4	3	2.5
Alpha v2	1	5	2	3

Figure 18: Initial Plot Clarity vs. Engagement Ratings

Alpha v3 added the introductory meeting, intended to set initial NPC attitudes and further introduce the player to each character. In addition, it made the earlier drama levels last longer, providing additional time for the player to explore and talk to each character. Figure 19 shows the playtesters' response to these changes.

Build	Plot Clarity	Flow Rating	Transportation Rating	Identification Rating
Alpha v3	4	6	4	5
Alpha v3	2	3	2	1.5
Alpha v3	5	5	4	3
Alpha v3	3.5	4	3	4

Alpha v3	4.5	4	4	3.5

Figure 19: Plot Clarity vs. Engagement Ratings after addition of introductory meeting

Increasing the narrative clarity provided to the players through the introductory meeting and longer initial drama levels greatly increased their transportation and identification. Not only did this increase their enjoyment of the game, but they reported they were much more likely to replay the game as well, stating that they "understood the start of the story, and wanted to see how it ended". Through adding additional structure, Shattered Sky manged to strike the elusive balance between narrative coherence and interactivity described by Frasca (2003). However, this did not completely eliminate the tension between play and narrative within the game, merely relegated it to specific areas of gameplay.

Continued Tension Between Play and Narrative

Unfortunately, the third pattern that playtesting uncovered proved to be an unsolvable one so late in the game's development; the game's narrative was being impinged upon by gameplay mechanics. Specifically, players felt that time spent moving through the game space would have been better spent talking to other characters and furthering the story. While initially this sentiment seemed to stem from the difficulty of movement due to poor UI, further testing found this to not be the case. Even in later versions of the game, players professed that they felt the majority of their time was spent hunting down characters to talk to rather than the conversations themselves. They believed that "the game would be much better if you could just teleport to the character you wanted to talk to". Several testers correctly identified that these breaks in conversation reduced drama in the game, resulting in moments of high drama punctuated by periods of in-activity as the player navigated the environment. In a game that hinges on a sense of constant, rising drama, this is detrimental indeed, and represented a problem

that had to be dealt with at the design level. Fortunately, while there was insufficient time to properly address the continued tension between Shattered Sky's gameplay and narrative, the negative effect it had on players was overshadowed by their desire to narratively explore the game.

High Replayability

In spite of the bugs, frustrating controls, and unfinished artwork, not a single player reported that they would not play the game again. Even the most critical playtesters, people who openly ridiculed the game while playing, felt drawn to play again. When asked why they would play the game again, most replied that they were curious to see what would happen if they acted differently, as shown by Figure 20.

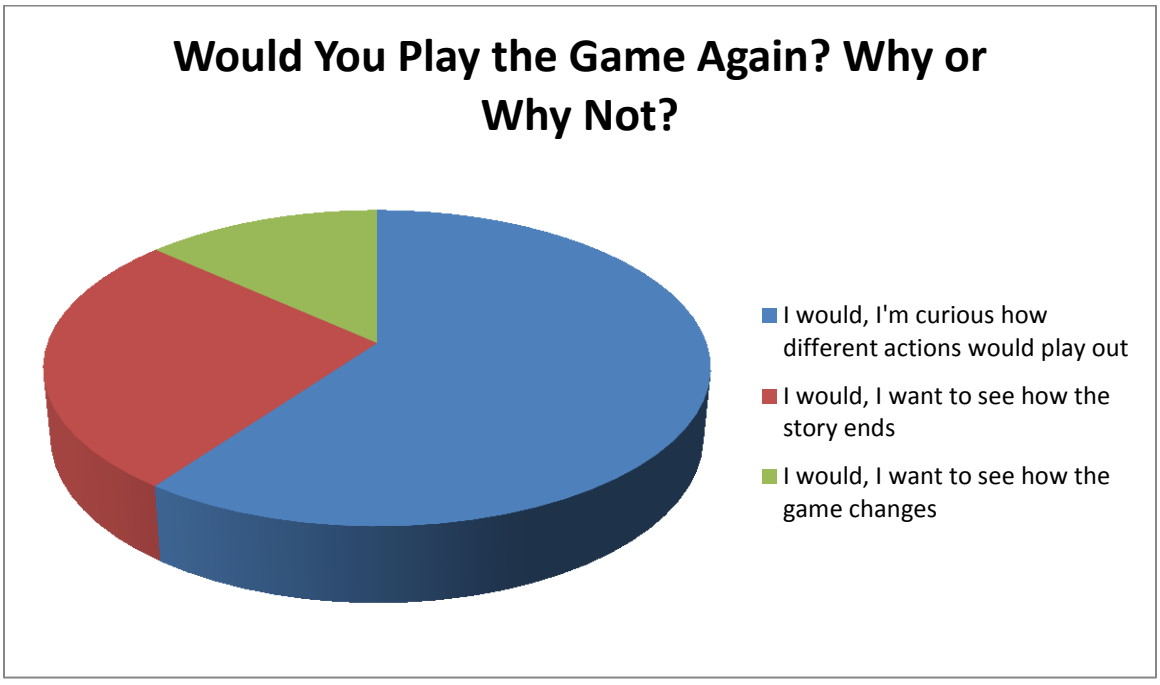


Figure 20: Replayability Results

It is important to note that several of our playtesters played before endings were implemented; resulting in the answer "I want to see how the story ends". However, the majority of players reported at least some sense of curiosity in discovering just how many ways the game could play out. Based on this, it would appear that Shattered Sky avoids the problem that Glassner (2004) claims is responsible for bland narrative in games; there is no simple, middle ground. Unlike many games, players in Shattered Sky lack a basic, neutral path through the game; they are forced into making choices, either of their own volition, or by the goals of non-player characters. Choices that, by their very nature, inspire curiosity once made. Players could not help but wonder about what might have been, and sought to return to the game to sate this desire.

Post-Mortem

After completing development of Shattered Sky, our team sat down for an hour and a half meeting and held an in-depth post-mortem on how our development process went. We started by discussing our successes and what went well in the game. Then we moved on to what went poorly or could've been done better, and how those things could have been averted. Finally, we discussed the lessons that we will take away from this experience moving forward.

The Good

When looking at what went well in Shattered Sky, we identified a few key areas. The first was that our design process during the first two terms went very smoothly and was effective at limiting the scope of our game. Initially we were considering building a much larger game, and through the design process we cut that down to six characters in a small environment, where the game would be designed to run about ten to fifteen minutes long. These key game design choices greatly aided in developing Shattered Sky.

Another very effective exercise was the early use of role playing in order to test our design and game concept. Using this role playing system allowed us to much better define how our game would actually play, and it was incredibly useful for generating ideas for future game content. Without doing this role play testing, our team would've moved forward with a much vaguer idea of the type of game we were actually trying to design and the end result would have been much less coherent.

One major area of Shattered Sky that we consider to be very effective is the story and character development. A very significant amount of time, thought, and effort was put in to designing the environment and back story, as well as charactering each of the NPC's in the game. All of this information was then also carefully applied to the in-game dialogue with the end result of crafting an engaging story. Based on feedback from play testers, we feel confident that the story was interesting and kept players wanting to progress further in the game.

Finally, one of the initial goals of Shattered Sky was to create a game with a naturally rising arc of drama that was created programmatically. We believe that we did a good job of creating a basic game that utilizes the principle of drama management to craft an unplanned but still interesting story experience. Due to time constraints and limited manpower, a large amount of content we would've liked to implement in the game had to be left out, but at its core we were successful in creating a system where autonomous NPC's behave logically and escalate the story in a believable manner.

The Bad

After discussing the successes in our game, we moved on to what could have been performed better. One of the key problem areas that we identified was a lack of consistent communication between our group members. Throughout the year, our team attempted to meet as a group two to three times per week. However, meetings often fell through due to people becoming unexpectedly busy. Also, the majority of the meetings tended to fall at the end of the week. Rather than meeting consistently throughout the week, we would often have a cluster of meetings towards the end.

In addition to inconsistent in-person meetings, we did not utilize good electronic communications. Although we frequently corresponded over email, responses would typically come late or never, and generally be vague in their content. If one group member had a question, it could go a few days without being answered. We also did not always communicate effectively via phone calls and text messages.

The end result of this lack of communication was that there were many periods throughout our development process where we were not all on the same page. Group members would not always be aware of what other members of the team were working on, or what they had accomplished. We also sometimes had differing views on what needed to be accomplished during the week, or how to accomplish something. Overall, the communication break-down hindered us from working effectively as a unit even when we were working effectively as individuals. Had we been in better and more frequent

contact with each other, we could have made more progress more quickly, and reduced the amount of wasted effort invested in certain tasks.

Going along with our communication problems, we found that there was generally a lack of detailed inter-disciplinary knowledge on our team. While each of us was heavily involved in what we were working on, in general we did not have any sense of ownership over other aspects of the game. The biggest place where this manifested was the fact that no one on the team had definitive knowledge of our exact game design. While our general design was established in A and B term, during development individual group members would have more specific questions on implementation details, and have difficulty getting those questions answered because of a lack of communication.

One major area where our group struggled was in the development of our creative art assets. In particular we had difficulty meeting art deadlines and in general our art assets would be late. One of the key reasons for this problem was a lack of knowledge on the part of our art team. Our artists did not have complete knowledge of the art pipeline and had to learn through a combination of trial and error, and classes that they took towards the end of Shattered Sky development. Because they had incomplete knowledge, a great amount of time and effort was invested in to art assets that were ultimately developed wrong and had to be heavily modified or re-done. Because of this we struggled with the art in Shattered Sky, and were only able to integrate the majority of the art in D-term.

Another issue we encountered was the sheer scope of the game content that was required for Shattered Sky, particularly in terms of dialogue. At the beginning of the year, we severely underestimated the amount of dialogue that we would need for the game, and how long it would take to write and edit it all. We were able to design a tech API that was very effective for developing dialogue to put in the game, but due to the nature of Shattered Sky a very large number of potential dialogue trees were required in order to make the game really come to life. Because of this, one of our group members was tied up writing dialogue for the majority of the project.

The problem of dialogue also tied in to an issue we discovered where the technical development of the game was impeded by the lack of written dialogue. It became very difficult to continue developing

the game from a technical point of view without have the necessary dialogue trees to put in to the game. However, since there was so much dialogue and it took so long to write, the technical side of the team ended up being stalled while waiting for dialogue to be finished.

What We Learned

Coming away from the experience of developing Shattered Sky, we feel that we have learned a number of valuable lessons that we will be able to take forward in our future projects. Certainly the largest lesson is the huge importance of strong communication skills in developing a successful game. During the post-mortem, at least twenty minutes were spent discussing our communication break downs and how we could have solved them. We have learned that it is absolutely vital to meet in person on a consistent basis, at a minimum three times a week. This gives an opportunity, at the least, for everyone to give status updates on their progress and to ask each other questions.

It is also vitally important to have strong electronic communication skills, via email, texting, and phone calls. Responding to emails promptly and in-detail is incredibly important, especially considering that generally another team member would be waiting for a response before moving forward. In the future, we will all place much more emphasis on strong group communication because it leads to the development of a much better product.

Going along with this, during the post-mortem it occurred to us that the exercise of discussing the strengths and weaknesses of our team was, in itself, incredibly valuable. If we had conducted a miniature post-mortem after every term of the project, we likely would have solved many of our problems by the end of A or B term instead of carrying them through the entire project. Moving forward, we have learned to take time out at regular intervals to perform a self-evaluation, and consider how our work process could be improved.

In terms of technical lessons, our artists learned a great deal about developing next-gen models, and more importantly about developing them the right way. Many mistakes were made throughout the

course of the project, but those turned in to valuable lessons learned for our artists. They also learned a good deal about the correct artistic pipeline for creating models.

From the programming side of things, they gained a great experience in developing a large software system that had to be frequently extended and refactored as requirements changed. Working on the same system for an entire year was a new experience for them, and has been useful in teaching sound software engineering principles. The value of good naming conventions, documentation, and writing readable code became very clear when a different member of the team had to go in and modify code, or even when returning to a portion of the project that had been untouched for several months.

Another project management lesson that we learned was the value in setting schedules, tracking tasks, and sticking with what you say you will do. Throughout the course of the project we created multiple schedules, and in the beginning the deadlines we set were frequently missed for one reason or another. It became clear by the end that we needed to get better at planning ahead and estimating the amount of work associated with a task. The value of tracking tasks in some sort of chart, excel sheet, or Google doc also became very apparent when it was sometimes unclear which task was the priority to be working on next.

In terms of game design, we learned some valuable lessons on how to make a game interesting, how to make it fun, and how hard it is to achieve various effects in a game. One thing we learned very quickly when we started testing was that players would always do something you don't expect; for example, nearly every tester chose to kill other characters in the game at the first opportunity presented, even if it didn't make sense in the context of the story. Also, at the beginning of our design process we decided that we wanted a serious, realistic tone to our game. In retrospect, we feel that that sort of tone can be very difficult to accomplish and convey effectively to the player. It may have been simpler and more fun to go with a more comic, light-hearted tone to the game while still striving for the effect of rising drama.

We also learned the value of play-testing our game early and often. We feel that testing can be divided in to two broad categories, at least for Shattered Sky: functionality testing and fun testing. A great

amount of time was spent developing a plan to test how fun and engaging our story was. However, our team held off on doing the majority of our functionality testing until that plan was fully made, and tried to do all the testing simultaneously. The end result was that there were initially major functionality gaps that we had not noticed that needed to be addressed. It took several weeks to fix the major problems we encountered, and before we could really get in to any sort of fun testing. By that point, the year was over and we were out of time. In the future, we would put more effort in to functionality testing even before we were ready to begin testing for fun.

Overall, the development of Shattered Sky was a long process that we invested a great deal of work and effort in to. We were attempting to develop a relatively unused concept, and we feel that overall we created a good basic game based on the idea of drama management. Given more time, we have many more plans and content that we would love to include in the game, and we believe that we could build it in to a really interesting concept game. We had many pitfalls and problems along the way, but in the end we feel that we were able to overcome most of them. We have learned a great deal from this game design experience, about how to program a game and make art for a game, but probably even more about how to work together in a group, communicate effectively, and manage a project efficiently. Going forward from Shattered Sky, we believe that every member of our group will be stronger in their future endeavors as a result of this experience.

Acknowledgments

At this point in time we just wanted to acknowledge a number of people who have greatly helped us in our efforts to develop Shattered Sky. We want to thank Professors Charles Rich and Jennifer deWinter for advising our project and helping to guide us through the game development process. We also wanted to thank Nick Konstantino, who came on as an ISP student and helped us to develop art assets, in particular animations. In addition, we wanted to acknowledge Michal Talmor who assisted us with developing art as well.

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Appendix 1: Pre-Test Form

1. What are your favorite genres of games? List the top three in descending order.
    1. _____
    2. _____
    3. _____

2. For you, how important is a game's story?

    _____
    _____
    _____
    _____
    _____

3. For you, how important is a game's gameplay?

    _____
    _____
    _____
    _____
    _____

4. For you, how important is the challenge of the game?

    _____
    _____
    _____
    _____
    _____

Appendix 2: Bug Report

Playtest Bug Report

Type of Bug:

- ☐ Pathing
- ☐ Dialogue
- ☐ Collision
- ☐ Graphical
- ☐ Other: _____

Description:

_____
_____
_____
_____
_____

Playtest Bug Report

Type of Bug:

- ☐ Pathing
- ☐ Dialogue
- ☐ Collision
- ☐ Graphical
- ☐ Other: _____

Description:

_____
_____
_____
_____
_____

Appendix 3: Playtester Evaluation Form

Shattered Sky Tester Evaluation

Please read each statement and circle the number that best represents your thoughts on it.

1 = Strongly Disagree, and 6 = Strongly Agree

If you have additional comments, please write them in the comments section.

Overall

The game controls and interface were straightforward and easy to use.

1 2 3 4 5 6

Comments:

_____
_____
_____
_____

The game held my focus.

1 2 3 4 5 6

Comments:

_____
_____
_____
_____

I felt immersed in the game world and story.

1 2 3 4 5 6

Comments:

_____
_____
_____
_____

Characters

I identified with the character I played.

1 2 3 4 5 6

Comments:

_____
_____
_____
_____

I identified with at least one of the non-player characters.

1 2 3 4 5 6

Which character: _____

Comments:

_____
_____
_____
_____

I thought the characters were well-developed, with their own histories, personalities, and goals.

1 2 3 4 5 6

Comments:

_____
_____

Story Development

I understood the role of my actions on the development of the story.

1 2 3 4 5 6

Comments:

I felt the tension and drama constantly rising as the game progressed.

1 2 3 4 5 6

Comments:

I had a clear goal the entire game.

1 2 3 4 5 6

Comments:

I felt the conclusion I reached reflected my decisions in the game.

1 2 3 4 5 6

Comments:

Gameplay

I did not feel constrained by the game.

1 2 3 4 5 6

Comments:

Draw an x where you think Shattered Sky falls on the following continuum.

Book Game

Appendix 4: Post-test interview questions

What did you like best about the game? Why?

_____
_____
_____
_____
_____
_____

What did you like least about the game? Why?

_____
_____
_____
_____
_____
_____

Were there any additional actions you wish you could have done? What were they?

_____
_____
_____
_____
_____
_____

Would you play the game again? Why or Why not?

_____
_____

_____

_____

_____

_____

Any additional comments?

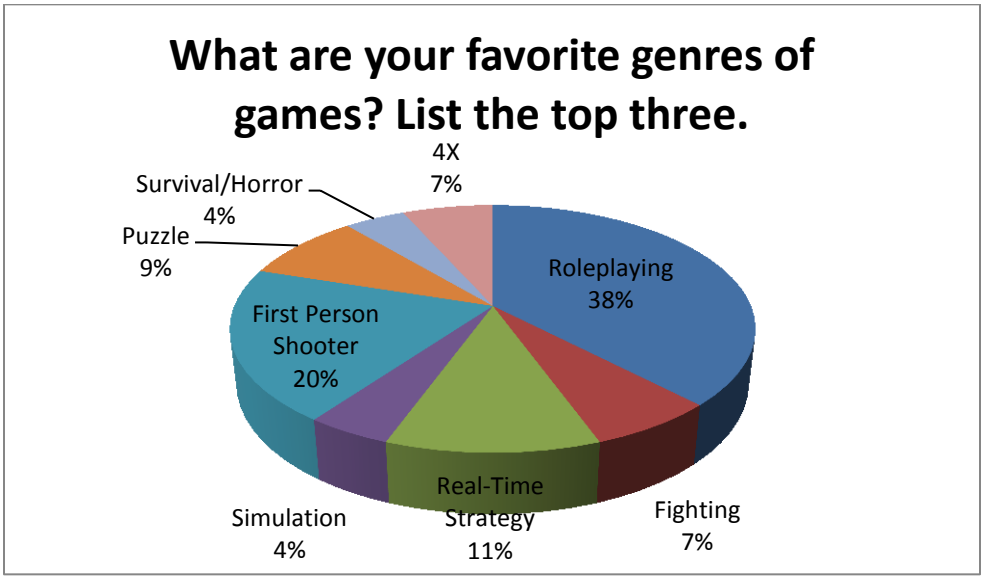
_____

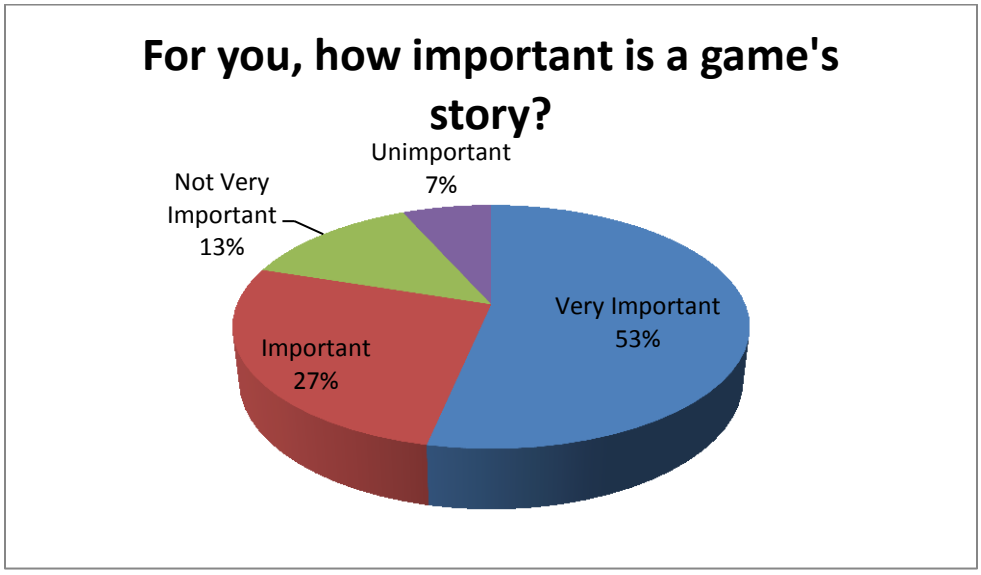
_____

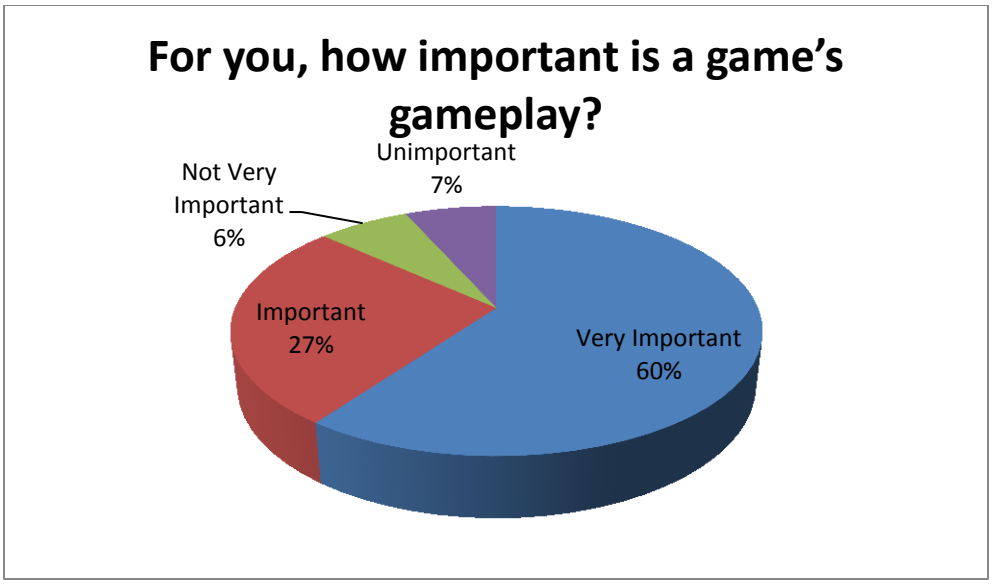
_____

_____

Appendix 5: Playtesting Results







The game controls and interface were straightforward and easy to use.

Build	Tester Rating
Alpha v1	**1**
Alpha v1	**2**
Alpha v1	**1**
Alpha v2	**4**
Alpha v2	**5**
Alpha v2	**3**
Alpha v2	**4**
Alpha v3	**6**
Alpha v3	**3**
Alpha v3	**4**

Alpha v3	**2**
Alpha v3	**4**
Alpha v4	**5**
Alpha v4	**5**
Beta v1	**4**
Beta v1	**6**
Beta v1	**3**

The game held my focus.

Build	Tester Rating
Alpha v1	**4**
Alpha v1	**6**
Alpha v1	**5**
Alpha v2	**5**
Alpha v2	**5**
Alpha v2	**4**
Alpha v2	**5**
Alpha v3	**6**
Alpha v3	**3**
Alpha v3	**5**
Alpha v3	**4**
Alpha v3	**4**
Alpha v4	**5**
Alpha v4	**5**
Beta v1	**5**
Beta v1	**4**
Beta v1	**6**

I felt immersed in the game world and story.

Build	Tester Rating
Alpha v1	**1**
Alpha v1	**2**
Alpha v1	**1**
Alpha v2	**3**
Alpha v2	**4**
Alpha v2	**3**
Alpha v2	**2**
Alpha v3	**4**
Alpha v3	**2**
Alpha v3	**4**
Alpha v3	**3**

Alpha v3	**4**
Alpha v4	**3**
Alpha v4	**5**
Beta v1	**4**
Beta v1	**6**
Beta v1	**5**

I identified with the character I played.

Build	Tester Rating
Alpha v1	**2**
Alpha v1	**2**
Alpha v1	**2**
Alpha v2	**3**
Alpha v2	**2**
Alpha v2	**2**
Alpha v2	**3**
Alpha v3	**5**
Alpha v3	**1**
Alpha v3	**3**
Alpha v3	**4**
Alpha v3	**3**
Alpha v4	**3**
Alpha v4	**4**
Beta v1	**2**
Beta v1	**5**
Beta v1	**3**

I identified with at least one of the non-player characters.

Build	Tester Rating
Alpha v1	**2**
Alpha v1	**2**
Alpha v1	**2**
Alpha v2	**3**
Alpha v2	**3**
Alpha v2	**3**
Alpha v2	**3**
Alpha v3	**5**
Alpha v3	**2**
Alpha v3	**3**
Alpha v3	**4**
Alpha v3	**4**

Alpha v4	**3**
Alpha v4	**4**
Beta v1	**1**
Beta v1	**5**
Beta v1	**3**

I thought the characters were well-developed, with their own histories, personalities, and goals.

Build	Tester Rating
Alpha v1	**1**
Alpha v1	**1**
Alpha v1	**2**
Alpha v2	**3**
Alpha v2	**3**
Alpha v2	**4**
Alpha v2	**3**
Alpha v3	**4**
Alpha v3	**2**
Alpha v3	**3**
Alpha v3	**5**
Alpha v3	**4**
Alpha v4	**3**
Alpha v4	**6**
Beta v1	**4**
Beta v1	**3**
Beta v1	**5**

I understood the role of my actions on the development of the story.

Build	Tester Rating
Alpha v1	**1**
Alpha v1	**2**
Alpha v1	**1**
Alpha v2	**1**
Alpha v2	**2**
Alpha v2	**2**
Alpha v2	**1**
Alpha v3	**4**
Alpha v3	**2**
Alpha v3	**5**
Alpha v3	**3**
Alpha v3	**4**

Alpha v4	**5**
Alpha v4	**4**
Beta v1	**4**
Beta v1	**6**
Beta v1	**5**

I felt the tension and drama constantly rising as the game progressed.

Build	Tester Rating
Alpha v1	**1**
Alpha v1	**1**
Alpha v1	**2**
Alpha v2	**2**
Alpha v2	**3**
Alpha v2	**2**
Alpha v2	**2**
Alpha v3	**4**
Alpha v3	**2**
Alpha v3	**5**
Alpha v3	**4**
Alpha v3	**5**
Alpha v4	**4**
Alpha v4	**4**
Beta v1	**4**
Beta v1	**3**
Beta v1	**4**

I had a clear goal the entire game.

Build	Tester Rating
Alpha v1	**1**
Alpha v1	**2**
Alpha v1	**1**
Alpha v2	**2**
Alpha v2	**2**
Alpha v2	**3**
Alpha v2	**1**
Alpha v3	**4**
Alpha v3	**2**
Alpha v3	**5**
Alpha v3	**4**
Alpha v3	**5**
Alpha v4	**4**
Alpha v4	**6**
Beta v1	**5**

Beta v1	**2**
Beta v1	**3**

I felt the conclusion I reached reflected my decisions in the game.

Build	Tester Rating
Alpha v1	**1**
Alpha v1	**1**
Alpha v1	**1**
Alpha v2	**1**
Alpha v2	**1**
Alpha v2	**1**
Alpha v2	**1**
Alpha v3	**3**
Alpha v3	**2**
Alpha v3	**3**
Alpha v3	**4**
Alpha v3	**3**
Alpha v4	**4**
Alpha v4	**4**
Beta v1	**3**
Beta v1	**5**
Beta v1	**4**

I did not feel constrained by the game.

Build	Tester Rating
Alpha v1	**2**
Alpha v1	**5**
Alpha v1	**4**
Alpha v2	**5**
Alpha v2	**4**
Alpha v2	**6**
Alpha v2	**5**
Alpha v3	**5**
Alpha v3	**4**
Alpha v3	**4**
Alpha v3	**6**
Alpha v3	**5**
Alpha v4	**5**
Alpha v4	**4**
Beta v1	**4**
Beta v1	**6**

Beta v1	**5**

Draw an x where you think Shattered Sky falls on the following continuum.

Book Game

Appendix 6: List of Goals

ApproachAndKillCharacter
AwaitPlayerDialogue
Befriend
BefriendCharacter
BeginConvoWithNPC
BeginConvoWithPlayer
Blackmail
Busy
CommandToMurder
CommandToSpy
Confront
ConfrontCharacter
Deactivate
DieByStabbing
DieDramatically
EndConvoWithPlayer
FinishDialogueWithPlayer
FinishDialogueWrapper
GetDirt
GreetPlayer
InitiateConversation
Insult
InsultCharacter
Intro
MoveToCharacter
MoveToPoint
OpenLastMeeting
OpenMeeting
OrderMurder
OrderSpying
Outro
Random
RandomCharacter
ReportBack
SearchRoom
ShareInfo
SpeakWords
Spy
StabCharacter
Standby
TalkToNPC
Tattle
TattleCharacter
ThreatenBlackmail
TransitionCameraIn
TransitionCameraOut
UseBlackmail

Appendix 7: Character Sheets

Overview

Character	Base Personality	Dialog "Ticks"					
Khylor	The master of Flatterey	Always uses "My Lady" and "My Lord"	Will always tend towards flattery right up until you become blatant enemies	Will even hide insults in flattery	If he gets blackmailed all other "Ticks" go away and he becomes harsh/aggressive	Does not like to talk about himself. Will lower his opinion of you if keep pressing issues he doesn't like.	
Zurio	An older man, wisened by time. Distrusts everyone and is VERY condescending.	Hard to tell when he likes you, easy to tell when he hates you	Even compliments will seem mostly backhanded	Continuously talks about "The One"	Inserts religion into at least 80% of his conversations	Holds himself on a pedestal	
Mia	A strong, independent woman. Assertive.	Turns harsh when Thaywell/Zurio is brought up	Generally flattering, like Khylor	Tends to mock "The One"			
Cordelia	More feminine. Generally friendly but can be more serious at higher drama levels	Considers her words carefully and tries to keep things down to earth	Far more receptive to outside views than Zurio	Speaks reverently of "The One" but not of Zurio	Becomes far more serious towards the end should you start trying to overthrow Zurio	Uses Mr. and Mrs. until a friendly level is reached then refers to people by their first name. Always refers to Zurio as "Zurio"	More taken aback when you insult hey, Thaywell or the One. Will tend to stutter.
Byron	Very formal. A serious military man who isn't afraid to get his hands dirty.	Always refers to Carson as "Madam President" (Even when he doesn't like her)	Uses Military terms to describe any and every situation	Does not respond well to humor	Loses his composure when discussing mages. His hate is blatant		

Khylor

Motivations	Likes	Dislikes	Verbal Char.	Psychological Traits	Relationships
Knowledge of the magic in the Ruins.	Manipulating people	People knowing personal things about him	Lots of Flattery and honorifics (My Lady/My Lord)	Narcissit	Doesn't have many. See's himself as "above" others
- Either taking the ruins for the Magi or being allowed access to them.	Winning, at all costs.	Bloodshed/War that directly involves him	Long winded most of the time. Lots of adjectives/adverbs.	Enjoys being a "puppet master"	"Befriends" people he sees as "useful"
	Reading.	Getting his own hands dirty	Switches to quick, choppy sentences when talking about things he doesn't like		Likes to see himself as a charmer, enjoys occasional flirting
	Learning, especially magic	Something not being "challenging" enough. Gets bored easily.	Will always try to make the person he's talking to think it was "their idea all along"		
	Getting his way		"insists" on a lot of things		
	Politics				
	Women				

Zurio

Motivations	Likes	Dislikes	Verbal Char.	Psychological Traits	Relationships
Coming out looking the best.	Being praised	Anyone who doesn't believe in The One	Talks down to others	Sees himself as a kind of God	Orphaned, Zurio sees most people as pawns in a game...not family.
Denying other factions from getting what he sees as an "unfair" advantage	his Religion	being left out of the loop	Refers to The One as much as possible		Does not have actual family.
Personal gain	expensive things	excess of anything (food, booze, talking, etc)	Condescending / Mocking tone		
			Very concise when not speaking about religion		
In Zurio's ideal world, he would rule as the voice of The One over the entire land.			Speaks of religion a lot		

Ashcroft

Motivations	Likes	Dislikes	Verbal Char.	Psychological Traits	Relationships
Galilee FIRST	Whiskey	Magic, in all forms	Sir/Ma'am	OCD	None. Attached to Galilee.
Can not see any other outcomes	Things being in the right place	Disorder	"orders"	Sees everything through a military lens	Loner.
War is not his ideal outcome from this summit, but he is by no means opposed it.	Order	idle chit-chat	"objectives"		
Would prefer War over Galilee getting nothing.	Straight forward speaking (Doesn't use metaphors, or innuendos. Shorter sentences)	Flying	"threat"		
	Strategy		military terms		
			reporting tone		
			Roget That = displeased/angry		

Mia

Motivations	Likes	Dislikes	Verbal Char.	Psychological Traits	Relationships
Seeing Thaywell fail.	Flowers	Zurio.	Flattering/Friendly tone	Paranoid (about certain things) due to almost being killed in Thaywell as a heretic	Married to a mage. 2 children. Both girls
Doesn't so much care about ruins.	Family	Religion.	Informal, tends to use first names after getting to know someone. Last names until then.	Deep hatred of Thaywell/Zurio.	Looks up to Khylor with a sort of hero worship for saving her life.
Wants to avoid war. Protect Family.	Logic	War (when the Magi are involved. Indifferent otherwise.)	Loses composure when discussing Thaywell/Zurio		Sees Cordelia as a poor lost soul that has been corrupted by Zurio
	Reading/Writing		Brings up her children often		Indifferent towards Byron. She respects his skills but not him.
			Bigger words, very little use of "like", "so", "uhh", etc		

Holly Fletcher, Zack Garbowitz
Thane Sanford, Alex Tilley

Cordelia

Motivations	Likes	Dislikes	Verbal Char.	Psychological Traits	Relationships
Best turnout possible for Thaywell	Looking at clouds	The way Zurio has been running Thaywell	Hard for her to propose controversial ideas, but will agree if they are brought up to her	Non-confrontational.	Has very proud parents and several siblings
- This could involve overthrowing Zurio.	The One	"Harsh" words	More "feminine" in speech. A lot of adverbs.	Overly friendly.	1 sibling is currently being investigated as a heretic and doesn't like how Zurio is handling it
	"Pretty" Things	Anything that goes against her religion	sometimes uses "so" and "like"	Will never outright disagree with something. Doesn't want people to dislike her.	
	Family. Especially her parents.	Feeling rushed	First names. Very friendly.		
	Sweet things, like candy.	Drinking and any other "sins"			