The Dupe

Jiaqing Qiang

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ABSTRACT

The story happens in the near future. Astronaut Patrick U7’s mission is to find members of a space team who have been lost for two months on a Planet M-6 expedition. He travels alone in a spacecraft headed for Planet M-6. Patrick U7 will confront his own fears and mortality when he discovers the truth about the space team’s fate and his real mission, which is linked to the deaths of the space team members.

I want to use science fiction as a mechanism for conveying a truth about the darker side human nature. Even though the main character is a clone, he is nonetheless a real human being, and he represents those people who have been exploited for scientific experimentation or moral ideology.

"The Dupe" is a thesis film with a total runtime of five minutes and fifteen seconds. It is a 3D animation that was produced primarily in Maya and After Effects.

This paper outlines the entire creation process of making this animated film. It details the very beginning of the story development to the final stage. It describes all my intentions, obstacles, challenges and successes, as well as the technical specifics of process.
Introduction

The making of the graduate thesis film "The Dupe" began in September 2012 and lasted until May 2014 as a final project within the MFA animation program at the School of Film & Animation of Rochester Institute of Technology. My work was done under the supervision of my thesis committee members, Atia Quadri, Mark Reisch and David Halbstein. The whole process consisted of pre-visualization: story development, concept design, storyboards and animatic; production: modeling, texturing, rigging, animation, shading, lighting and rendering; and postproduction: compositing, voice acting, music composing and sound FX.
Pre-visualization

Story development
Making a science fiction film has always been one of my dreams. My thesis presented the perfect opportunity to make my dream come true. At the recommendation of my thesis committee, I started to watch a lot of science fiction films such as Apollo 13, Abyss, 2001: A Space Odyssey, Top gun, Aliens and Independence day, etc which provided much inspiration. These films were extremely helpful to my narrative development and encouraged me to construct a deeper story that can truly reveal a dark, dangerous side of humanity. The story is written to slowly build suspense until the great reveal that the protagonist is a clone that has been exploited for scientific experimentation.

Concept Design
Concept design is a form of visual development used to convey an idea for use in our animation before it is put into the next stage. It is a visual representation of our character, background, sets and props that will define the final image style for the animation. I started creating concept designs in September 2012.

1) Character design
Due to the science fiction setting of my story, I wanted my characters to feel realistic. I needed to create 3D models of a lone astronaut character plus the dead bodies of six more. I believed it was important to portray the film in a realistic style for the audience to understand the deeper meaning of the plot. This created a big challenge when I was making the concept of my main character - astronaut U7. The process of making a realistic character in 3D is much more complicated and difficult than making a cartoony, or stylized one.
I did extensive research when I designed my character. I had to balance the visual impact that I desired for the character with the feasibility of achieving my goals during production. I found that the outer look of U7’s spacesuit and helmet is very important to tell the story and catch the eyes of the audience. I spent many hours changing and polishing them until I finally felt satisfied. The final design of U7 achieved most of my expectations and imaginings. I wanted to have a skintight spacesuit on him, which would greatly avoid the Uncanny Valley in the later character animation and fit with my dark story better rather than a super powerful, militaristic one.

For the six astronaut bodies, I used the same design of U7’s spacesuit but changed the texture and color for each, and made six skulls with different levels of decomposition.

2) Environment Design
My story mainly takes place in a damaged spaceship on an alien planet called M-6. I created a couple of different designs for the planet terrain surface and the spaceship. I wanted them to be a little scary and mysterious so that our audience could feel the isolated environment and immerse themselves into the dark story. As a result, the architecture of planet M-6 is very jagged. It has a very misty and dark atmosphere. The main character, U7, would land on this dead planet and start his journey.

For the design of the spaceship in my film, the concept in the movie Aliens actually influenced me a lot. I really like how the spaceship interior was constructed to create depth. So I used a lot of repeated shapes in my spaceship, trying to achieve a similar result. For the color and texture of the spaceship, I chose to use very a bright color (close to white color) for the dominant color to achieve a high contrast between the look of planet M-6 and the spaceship. This allowed me to create a damaged version of the spaceship in which we can see a lot of debris, broken equipment, oil spills and bloodstains clearly in a
dark lighting setup.

**Storyboarding**

Once I finalized the concept and script, I began working on the storyboards. A storyboard is a way of planning the story of the animation in drawn pictures before we make the animation itself.

There were couple a few questions that needed to be answered before I drew each storyboard.

- How to choose the camera angle and frame composition?
- How to make my main character move in the scene?
- How to establish different shots and make them consistent to convey the story?

I started storyboarding at the beginning of fall 2012. It gave me a rough idea of how I will represent the film. Those science fiction films that I watched before this stage helped me to better develop and clarify the story. The main business of these films such as Abyss and Aliens is the unbearable suspense. They made things eerie and uncomfortable around their heroes and then kept tossing new problems at them. This inspired me a lot during my storyboard process.

I drew the storyboard on paper rather than using Adobe Photoshop. The 2D images were very helpful for establishing timing, camera angles for each shot and transitions between them. After a draft version was done I reviewed and discussed it with my committee. Their very helpful feedback on camera angles and suggestions to add in-between shots and close-ups helped to make my film more clear and appealing.

**3D Animatic**

After the storyboards were completed, I started to build a 3D animatic. Making a 3D animatic creates a seamless production pipeline for a 3D animated film. In order to proceed, I first had to finish the character modeling
and rigging.
I finished my 3D animatic by the end of spring 2013. It was a long process. I was able to finish the modeling and rigging of the main character and create most of the environments and props in 3D. I also finished animation blocking in Maya and added sound effects and temporary voice acting in the animatic. The end result was a very rough version of my final film with all of the pieces in place for the first time. I received very helpful comments and advice from my committee. At three minutes and 39 seconds long, the animatic conveyed the story pretty well, but I anticipated that the final film would be longer because of the natural process of change during production.

Production

Character Modeling
Since realism was my goal for this film, I knew the modeling process would be highly complicated and involve many 3D techniques. Making a realistic character is always a big challenge to 3D artists. Based on my character design, I decided to start modeling directly in ZBrush. ZBrush is a digital sculpting and painting program that has redefined the 3D industry with its powerful features. With the ability to sculpt up to a billion polygons, I was limited only by my imagination. Using its Dynamesh feature, I was able to create my character in a very intuitive way. Unlike the old-school traditional modeling process in Maya, I didn't need to worry about any topology issues at this stage in ZBrush. All I needed to do was focusing on shaping my character and using my artistic skills to prevail.
My core modeling technique was to create a high poly model firstly then re-topologizing it to a low poly model. I mainly used Move brush, Clay brush, Polish brush and Standard brush to sculpt the high poly model in ZBrush.

The most important thing was to focus on the character's proportion, anatomy and silhouette. Using reference was very helpful for me to model correctly. I used the sculpting technique "primary form modeling to secondary form modeling", step by step to get all the final details on the character.

The look of a character's face is another critical factor of making a realistic character because that is the primary focus of audience attention and identification. It requires me to have a solid knowledge of human head structure and muscles. Taking reference at this stage was again extremely
important so that I could get the character to look highly realistic and lifelike.

3D character model in ZBrush

photo reference in three views

The helmet design in the film Abyss and 2001: A Space Odyssey impressed me a lot. I got great inspirations from those movies when I was making my own 3D design of U7's helmet. I wanted to make the helmet has both square and round shapes so it would look more interesting. I chose to use black paint color of the helmet shield, which would add more mystique to my character. After I finished my high poly models in ZBrush, I needed to make low poly models that would be used in Maya for later animation. Previously, re-topologizing used to be a stressful and time-consuming step in 3D production but luckily, we now have very powerful tools to help us accelerate this process. I chose to make my low poly model in ZBrush by creating a Zsphere, binding the high poly mesh and then started retopologizing.
I needed to pay attention here to make good topology on the character especially in the areas like the character's face, elbows, fingers and knees since they would have the most deformations in the animation.
Final character model in Maya is as shown below.

Lastly, I imported the low poly model into Maya. I grouped them and created
proper naming conventions. Teeth and gums were also added to the character.

**Environments and Props Modeling**

The world in my film is quite big. I needed to create a planet terrain, a small spaceship, and several interior scenes in a big damaged spaceship and some sci-fi equipment. It would cost me too much time if I just created them one by one in 3D. So I designed a specific modeling pipeline that helped me to create the 3D world in an efficient way. I came up with the idea to make several standard 3D modules at first, then duplicate them and make little changes in each to construct my entire 3D world. It worked pretty well, especially when I used them to create the interiors inside the big spaceship, an experience that left me feel like I was playing Lego in Maya.
UV Unwrapping and Texturing

I used Maya to finish UV unwrapping for all models. Cylindrical mapping was used for the character's head, body and limbs. Automatic mapping was also applied to get better results. It took me some time to cut and stitch UV back and forth during the process. I attached a checker board texture to the model when I did UV unwrapping. This informed me whether I had achieved an un-stretched UV map or not. For the unwrapping of my environment models,
I mainly used simple plane mapping.

Texturing was one of the most important and challenging steps in my film. I used the polypaint feature in ZBrush to paint color directly on my high poly model's surface. Polypainting allows painting on a model's surface without first assigning a texture map. A texture map can be created at a later time, and the painted surface can be transferred to the map. Polypainting offers significant advantages compared to standard workflow. With polypainting I put all of the painting details directly onto the model's polygons, and then transferred that detail to a texture map when the painting was complete.

Once I finished painting in ZBrush, I baked the color information from high poly model to low poly model. And I used Photoshop to add details to my baking textures and polished them to be the final one.

TopoGun

TopoGun is a treasure that I feel happy to have discovered during my thesis process. It is a resurfacing and map baking application. The map baking functions helped me bake various types of texture maps from my high-resolution 3D models and then allowed me to apply them to my newly
created low poly meshes. These texture maps contain information that would help me recover the appearance and features of the original high-resolution mesh. The ambient occlusion map baked in Topogun has the best quality I've ever seen. Normal maps were used to preserve the original mesh's small details on my low poly meshes in later rendering.
Rigging

After I finished the basic bone setup for my character in Maya, I used a rigging plug-in called "Advanced Skeleton". It made my character rigging creation a much more efficient process. It is a collection of Maya tools for creating a character setup. This useful plug-in helped me to create complex motion system from a simple joint chain. It is such a timesaving tool, it let me get my character up and running in no time. It helped me get general features such as stretchy bones, dynamic parenting, IK/FK setup, finger setup, spine IK and secondary controls to correct shapes for volume preservation.

I also used it to build a low geo rigging system, which I used for the animation blocking process and it allowed me to preview my animation without any lag.
For the facial rigging, I began by making blendshapes. But since U7 is a realistic style character in the film, I would have needed to create a huge number of blendshapes to get the subtlety of his expressions. I realized that making a joints based facial rig would be the best option. I had no experience making a joints-based on facial rigging setup, so I asked my classmate Tiru, who is a very experienced rigging artist, to help me with this. With Tiru’s help, I achieved a facial rig that could produce an extensive variety of expressions using a combination of joints and wire deformation.

**Animation**

I started working on animation at a very early stage, while the 3D Animatic was still in production. The core idea was to create the animation in such a way as to help add to the dark mood of the story. One of the great things I
learned from the movie Abyss and Aliens is its pacing. It takes its time, and waits to create silences and unease. I didn’t want to use very dramatic acting in the film, otherwise it would lose the tension. My main pursuit was to use camera movement to create a personal documentary-like feeling.

I used the long shots to show the entire character and intended to place U7 to his surroundings. A POV shot, also known as a subjective camera was used for a while in the film, which showed what U7 was looking at, and gave people a highly personal presence. It was mainly established by being positioned between a shot of U7 looking at something, and a close-up shot showing U7’s reaction, which helped build the tension. I feel like I could use more close-up shots in the film to better serve the story.

**Animation Reference**
Collecting reference was a very important first step to research the action that I need to animate. It helped to find good timing and key poses for animation blocking. As the 3D animatic was under production, I recorded video reference for the main character, based on the storyboards. Most of the references were shot to match camera angles to their digital twin, which helped make the whole process much more efficient and produced higher quality results.

**Animation Blocking**
I used animation blocking to get key poses that established timing and placement of characters and props in my scenes. Important in-betweens and breakdowns were then added in the blocking to further define the flow and timing of particular shots. The animation curves at this stage were set to stepped keys. These provided no interpolation between animation poses and allowed me to see each pose without any strange and unintentional interpolation and enabled me to adjust the timing very quickly.
I did animation blocking for my character in every shot. It greatly helped to establish all the animation in an efficient way. This process required many revisions, going back and forth on speed of transition, breakdowns, and extremes of motion.

**Animation Clean Up**
After I was satisfied with the blocking, I began to smooth the flow of the animation. I converted my stepped key frames to spline curves. Because the animation directly transferred from blocking, it always tends to look a little stiff. Deleting some keys in the curve transitions was necessary to smooth the animation. Playblasts were created to preview the animation. It allowed for adjustment of any issues, using fundamental principles of animation as my guide.

**Shading in Maya Viewport 2.0**
*Maya viewport 2.0* is a next-generation real-time renderer that allows the artist to work in a higher fidelity, high-performance interactive environment to edit assets and images in less time. I was happily surprised when I first saw the quality and render speed of the images it output, and decided to use it from the very beginning of my thesis film. *Viewport 2.0* supports additional effects, rendering, and texturing features such as particles, Maya nHair, Maya nCloth and Maya DX11 shader for real-time shader effects.
Because DX11 shader in *Maya viewport 2.0* limits the number of the lights in the scene, I chose to use "phongE shader". It worked well with Viewport 2.0. and gave me enough control to get a fairly realistic real-time shader.

As shown in the image above, I attached several textures to define different attributes in this shader. In the specular shading panel, I utilized additional controls to mimic realistic materials. One of the most powerful uses of the “phongE” shader is the ability to apply a normal map and reflection map for real-time preview purposes.
I used this as a base shader and applied it to the most of my models in the scenes.

**Lighting**

Lighting is a critical part of 3d animation. It is used to tell the story and set the mood of the shot. I employed many of the same methods a live-action lighting designer might but also utilized the power of 3D animation to achieve some lighting effects that would be very difficult to achieve in live-action.

1) **Three-Point Lighting**

I used three-point lighting for my character. It is often referred to as key, fill and rim lighting. The key light was my main light source and where my light was coming from. I was trying to get it to blend into my scenes smoothly. I spent time to determine where the light would be coming from in each shot
and picked an angle for my key light that could define the features of my character well. The fill light was usually placed at the opposite side of the key light and is used to better see the details in the shadows of the model. I increased the saturation of this fill light to accentuate the different mood of my character in each shot. The use of rim light is to break the image up from the background. In some shots, the rim light is really bright so that I could get a high contrast between the character and environment.

2) Environment Lighting

Spotlights were used extensively in the environment sets to make use of their fast and cheap rendering when compared with area lights. I attempted to utilize spotlights as often as possible to mimic all the light sources in the scene. Spotlights gave me enough controls to achieve most lighting scenarios.

There are two very important attributes in spot light settings - drop off values and penumbra angle. It was a matter of experimentation using these two features to find the right value to set different moods. Spot light array was also used in my film, which mimicked area light effects and achieved some special effects like turning lights on and off randomly or in a specific order.

Another benefit that spotlights brought me was it perfectly created the stage effect due to its nature. It gave me a high contrast between the illuminated areas and the darkest shadows in the film. It helped build my film in a dark mood overall and attracted the audiences eyes to the lit areas. Light purple and blue colors were used in the fill lights to enhance the dark mood and made things feel eerie in the space ship.

3) Bounce lighting

To achieve a more realistic interior illumination, I added bounce lights on the floors, on the walls and on the ceilings. By using this technique I had sufficient
available lights in the interior of buildings without turning on global illumination, which greatly reduced the rendering time of final images. Light blockers, also known as cookies or cucolorises, - a device for casting shadows or silhouettes to produce patterned illumination and creating a more natural look by breaking up the light form a man made source, were also used in the scenes to block the lights entirely or cut the shadows on the protagonist.

Rendering
Rendering is the final process of creating the actual animation in Maya scenes. Usually this is a very time consuming and computationally expensive process. Since I used Maya Viewport 2.0 as my rendering engine, it saved me a lot of time to render my film. It was calculated and displayed almost in real time at rates of approximately 20 to 120 frames per second. In Maya Viewport 2.0, the primary goal was to achieve an as high as possible degree of photorealism at an acceptable minimum rendering speed. It also has the power to simulate such visual effects like depth of field and motion blur. Lens flare was also achieved in Viewport 2.0 and polished in later compositing that greatly lent an element of realism to my film.

Integrated render passes and effects
In Maya Viewport 2.0 I got some very cool built-in effects and render pass presets which are usually very expensive to achieve, and need to be rendered out as separate render layers with generic software rendering. The settings I used in hardware renderer settings window are listed below.

- Screen-space ambient occlusion
- Motion blur
- Linear workflow - Gamma Correction
- Depth of field channel

Among these, motion blur was no doubt the most exciting one. It allowed for acceptably precise motion blur effects for most scenes in a very short amount
of time. This saved tremendous amounts of time of rendering and helped to make the animation look much more realistic.

Post-production

Compositing
Some of the compositing work was already done in Maya Viewport 2.0 during rendering. The most important output for this step was the depth of field pass and matte pass, which could be imported into AfterEffects or Nuke. A matte pass was actually an ID pass that I used to easily make selections in compositing for adjustments of the final image. It helped greatly, especially when I wanted to control and make changes on the lit objects. Camera vignetting and lens flare were both used in my compositing process. Vignetting is a decrease in brightness of a photograph around its edges, usually most apparent in the corners. The brightness and saturation of the image are compromised in these darkened spots. Adding this real-world effect to my film greatly helped enhance the mood of the dark story. But in most cases, this effect should be avoided because it is an artificial result in photography. Lens flares are the result of light scattered in-lens through unwanted image formation mechanisms. It is caused by a very bright light sources either in the image or shining into the lens but not in the image. This effect helped to add a sense of realism and invoke a sense of sci-fi drama.

Color correction was my last step of compositing. It gave me a great opportunity to drive the storytelling, enhance the mood, tell the audience about the character and add to the overall aesthetic. I used Hue/Saturation and Exposure effects in Affect Effects to make the final touches on the film.

Voice Acting / Recording
The realistic nature of the film and story required quality voice recording as well. I wrote the lines for the actors and actress based on the script before the recording. The first attempt at voice recording went well, presenting proper emotion for the characters. Upon review, my committee suggested that I should find native African-American actor to create the voice for U7 since the protagonist in the film is African-American. I realized that only a voice of an African-American person would make it sound real in the film. Thanks to the help of my friends, committee, and all the voice actors on the film, the lines and performance was greatly improved.

**Music composing and Sound FX**

The music in my film is composed by David Flowers. He has extensive experience composing for student film. I really liked his music in those films, so I sent him my animatic firstly and he agreed to write music for my sci-fi film.

There were a lot of discussions back and forth between us about the score. He hired an ensemble of student musicians to do the live orchestra recording after we both felt happy with the final score. The final music required the work of eighteen people at the recording, and fits the nature of my story and works very well in the film. It really enhanced the mood and built up the emotion for the main character.

I used Zoom Kit in the Foley room to record most of the sound effects. It was a great deal of work since Foley art is really crucial to enhance the audio quality in my film. I grabbed all the tools that I can imagine to mimic the sound. Zoom Kit was a very handy and powerful tool at this stage which I used to do the recording at 48 KHz, 24 bit in wav format. I set the microphone in the pole to ensure the least noise and the sound level did not exceed -6DB. Some sound effects from the SOFA sound library were also used in my film. I imported and edited music and sound in Adobe Premiere. They were timed at specific points during the film in order to enhance the dramatic narrative and the emotional
impact of the scene. With the accompaniment of music and the polished sound effects, my film became a more polished and solid product. They really helped to build the atmosphere in the way that I wanted.

Final Adjustments

Final adjustment is the last and important step in a film production. There are always some issues that remain until this last step and certain tweaks can make the film better. My final changes included lighting, camera angle adjustment to the ending, some texture and model fixes, sound volume adjustment for exaggerations, and inserting shots. I also made additional dirt, destruction and scratch textures in After Effects to enhance the look of the wreck in the final scene.

Appendix

Story Pitch

The Dupe (working title)

Patrick U7 receives a mission order from Galaxy Aeronautics Organization (GAO) to search for and find a secret planetary expedition team, named Aurora that has been working on Planet M-6, but has also lost contact with Earth for two months. GAO orders Patrick U7 to travel to M-6 to investigate what is going on there and to find the space team and bring them home. They tell Patrick that during his mission he will be wearing a new version of a specially designed spacesuit that is called the “U7”, and that it is named after Patrick U7 himself. This pleases Patrick.
Patrick U7 blasts off into space and heads through the galaxy towards Planet M-6. The trip is flawless. During his orbits at several numbers of declinations after he nears Planet M-6, he detects a signal from the planet and it seems this signal might lead him to the *Aurora* expedition team. Patrick tells GAO he has found what might be the *Aurora* team. GAO comes onto communications and congratulates Patrick and then orders him to land at the signal siting coordinates and search for the *Aurora* team.

Patrick lands on planet M-6, near the source of the signal. He disembarks the spacecraft in his new spacesuit. He switches on his helmet light and enters the spacecraft chamber. It is very dark and in shambles inside everywhere. It appears as if something has physically destroyed and melted the interior, including the main computer center. There is no one around. Patrick moves through the area and comes across the holographic recording black box. He switches it on. There is an audio recording on the device. He listens to the recording and he hears the member’s voices clearly. Things seem normal, but then terrible sounds and screaming begin. The recording abruptly stops. Patrick is unnerved. He contacts GAO immediately and reports his findings. GAO orders Patrick to keep looking for the team members.

Patrick continues his search. He moves to a long hallway that leads to another chamber, and there he discovers the *Aurora* team’s dead bodies. They are strangely arranged almost symmetrically in a single row along both sides of the hallway. The chamber begins radiating pulses of blinding light and smoke. Patrick does not look directly at the light, and he approaches the nearest body lying motionless on the floor in the hallway. He turns the dead astronaut over and looks into the clear shield on his helmet. Patrick is startled to see that the astronaut has been reduced to a skull. He moves to the next body closest to the first one. He turns the body over and finds that the second astronaut still has skin around the skull and concludes that he died more recently. He also
notices that both astronauts have similar spacesuit labels to his, U1 and U2.

Patrick stops moving forward in the hallway. He is confused and frightened. He contacts GAO and reports what he has found. GAO orders Patrick to keep moving down the hallway toward the second chamber. Patrick argues that he believes there is extreme danger and he requests that he be allowed to retreat to his own spacecraft and leave the planet. GAO threatens Patrick that he needs to follow orders and proceed to the second chamber, or he will be dismissed from GAO when he is back on Earth. Patrick is stunned. He hesitates for a while, but then he starts to move down the hallway again. There are four more dead astronauts inside the hallway. He examines the third, then the fourth, and then the fifth astronaut. He finds that each astronaut is less and less decomposed the closer they are to the final chamber. Suddenly he feels dizzy and his body begins to tremble uncontrollably. Patrick can no longer stand on his. He steps back and falls to the ground. On the ground he faces directly to the helmet face shield of the sixth dead astronaut whose spacesuit is labeled U6. Patrick is becoming incoherent and losing consciousness. Before he blacks out, he opens the face shield of the dead astronaut and sees dried blood around the astronaut’s mouth. Patrick screams for one last time as he realizes the dead astronaut looks just like him.

Patrick U7 is dead. As Patrick U7’s spaceship is being remotely launched from Planet M-6 back towards Earth, GAO communications announces that the mission is a success and that much was learned from this mission and the design of the U7 spacesuit. They encouragingly state that the next spacesuit, U8, will achieve even better performance in this radiation environment.
### Timeline

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<td>Voice Recording</td>
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<tr>
<td>Credits</td>
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<td>Compositing</td>
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## Budget Plan

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Storyboard
(examine 3 bodies, before contact with
artists name:)

3rd angle cam \rightarrow 3rd angle cam
2nd front cam \rightarrow 1st panel cam
Montage to handheld

Same cam setting
Same shot, different dead body, different table

Talk to himself, from that doesn't make any sense!

Patrick walks back a little bit, but over the fourth 3rd body scene take 04 05 06
This shot at the chamber door, I see the monster near Cairo's dialogue

Patrick tests to the ground & breaks out, he finds the
sick dead guy with just like him

Scene: Cairo
pops lots of pvc. Inside, 3 duplicated models
Screening Response

The final film was screened at the SOFA screening. I got different opinions from the audience. The major criticisms centered around the amounts of captions I used in the film and the animation that seemed to be stiff in some scenes. The main praise I got was the high quality of my 3D Modeling, Shading and Lighting in the film. They also liked my atmospheric environment and props a lot. The voice of the character worked very well from the beginning to the end.

Generally speaking the audience felt that it is a visually appealing 3D film but can be improved by some better story setups and smoother animation. I agree with most of the audience's comments. I did spend more time on the 3D processes of Modeling, Texturing, Shading and Lighting. Keep refining my animation will be my next job to make the film become a better one.
Snapshots