S A M: A C A S E S T U D Y
A. SYNOPSIS

Sam is a 3D animation created and directed by student Kyle Winkleman. This animation explores the career choices that we make throughout our lives and the challenges that come with these choices. Sam, the principal character, has become discontent with his role in life and seeks new challenges. An opportunity for change arises when Sam discovers a career-programming disc that has been discarded by a disgruntled pilot. Sam inserts the discarded disc into his computer and receives pilot training. Soon after, he embarks on a solo flight that will test his newly gained skills. During the flight, Sam’s programming disc fails and he is forced to rely on his own skills rather than technology. At the conclusion of the flight, Sam must choose between the roles of janitor and pilot.

B. PRODUCTION OVERVIEW

The directors delivered a “locked” two-dimensional animatic at the end of the preproduction phase. From that point, the directors had 20 weeks to complete the remainder of the project and no budget to do so. The DigiBeta (stereo mix) and DVD (consumer 5.1 mix) formats were selected as final release formats. All workprints were delivered as 320 × 240 QuickTime™ video at a frame rate of 29.97 nondrop. A time code burn-in window was provided to help with spotting and to check for sync drift. The original audio for the sound track was developed using Digidesign’s Pro Tools® software. The entire score was built using production music from the DeWolfe library. An attempt was made to record as many original SFX as possible, but SFX from the libraries of The Hollywood Edge and Sound Ideas were also used. All recording, editing, and mixing sessions were done using the WAV audio file format at 24 bit, 48 kHz. The WAV audio file format was selected for cross-platform compatibility.

C. THE DIALOGUE STEM

This animation has no sync dialogue; however, radio communication from an off-screen flight controller was added to provide realism.
1. RADIO COMMUNICATION

(off-screen; mono; panned to center)

Flight instructions are transmitted from a control tower. The contents of the transmission do not contain story points.

2. RADIO COMMUNICATION

(off-screen; mono; panned to center)

Flight instructions are transmitted from a control tower. The contents of the transmission contain limited story points. The radio sounds are spiked to emphasize the phrase “clearing for landing.”

D. THE MUSIC STEM

Sam contains no sync dialogue, and music is the driving element for much of the sound track. Because there was no budget for music, a decision was made to use library music for the underscore. The academic institution’s blanket license with DeWolfe Music allowed the students to use an unlimited amount of their extensive library at no additional cost. Frederic Talgorn (DeWolfe Music) composed much of the music from which the cues were derived. By using the same composer, a sense of continuity was created throughout the score. Full orchestral music cues were selected to match the visual scale of the animation. The following are brief descriptions of the individual cues created for this animation.

<table>
<thead>
<tr>
<th>Cue 1M1</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title Sequence</td>
<td>“Final Encounter” by Frederic Talgorn. This cue was designed to underscore the title sequence, establish scale, and transition the audience into the story. The cue builds to a climax, which is synced to the first on-screen launch. Rather than edit the beginning of the cue, an additional 26 seconds of video (black) was provided to match the music length (backtiming).</td>
</tr>
</tbody>
</table>

| Start: 00:00:11:29 | End: 00:00:50:25 | Total: 00:00:38:00 |

* Times listed are derived from the original DVD release not the QuickTimes available online.
**CASE STUDY: SAM**

<table>
<thead>
<tr>
<th><strong>Cue 1M2</strong></th>
<th>“Final Encounter” by Frederic Talgorn. This cue underscores Sam’s disappointment with his current role as a janitor (subtext scoring).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sam’s Discontent</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Start:</strong></td>
<td>00:00:52:15</td>
</tr>
<tr>
<td><strong>End:</strong></td>
<td>00:01:09:10</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>00:00:16:00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cue 1M3</strong></th>
<th>“Final Encounter” by Frederic Talgorn. This cue underscores the idea that the pilot’s frustration level has reached a critical point, causing him to abandon his life as a pilot. The music was intercut in several places to allow the string pizzicatos to sync with the footsteps.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The Disgruntled Pilot</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Start:</strong></td>
<td>00:01:14:28</td>
</tr>
<tr>
<td><strong>End:</strong></td>
<td>00:01:09:10</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>00:00:24:00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cue 1M4</strong></th>
<th>“Fantastic Voyage” by Frederic Talgorn. This cue underscores Sam’s transformation from janitor to pilot. The program disc (sound effect) is pitch shifted to the major seventh of the underscore as the disc drive is starting up. It soon resolves to the root of the chord, signifying that Sam is in programming mode. The cue was edited to climax at 00:02:30:16 as Sam looks up at the ship. A timpani syncs at 00:02:43:08 just at the moment when Sam activates the power thrusters. The cue ends on a pedal point, overlapping into the next cue to smooth the transition.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Becoming a Pilot</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Start:</strong></td>
<td>00:02:02:27</td>
</tr>
<tr>
<td><strong>End:</strong></td>
<td>00:03:00:09</td>
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<tr>
<td><strong>Total:</strong></td>
<td>00:57:12:00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cue 1M5</strong></th>
<th>“Final Encounter” by Frederic Talgorn. This cue reprises thematic material from cue 1M3 to underscore Sam’s panic as the programming disc fails. The cue becomes increasingly frantic as flight conditions worsen. At 00:03:27:04, a reprise of an earlier cue is mixed with the underscore to support the on-screen flashback. A percussion track is layered at 00:03:31:01 to create a random rhythmic feeling and provide a terminating cadence (ending) for the cue.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Becoming a Pilot</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Start:</strong></td>
<td>00:02:57:27</td>
</tr>
<tr>
<td><strong>End:</strong></td>
<td>00:03:42:24</td>
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<td>00:00:44:00</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cue 1M6</strong></th>
<th>“Final Encounter” by Frederic Talgorn. This cue underscores the exhilaration that comes when Sam defeats the odds and regains control of the ship. Additional trumpets were recorded and mixed into the cue to provide additional high-end punch. The cue begins in progress, utilizing a fade-in and SFX (masking) to smooth the in point. Extensive editing was made to the cue to ensure that the music resolves at the point in which the engine powers down.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Disaster Diverted</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Start:</strong></td>
<td>00:03:40:13</td>
</tr>
<tr>
<td><strong>End:</strong></td>
<td>00:04:02:18</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>00:00:22:00</td>
</tr>
</tbody>
</table>
E. THE SFX STEM

Sound effects for this animation provide critical story points and support the scale at which the story takes place. Two distinctive ambience tracks are used during the flight sequence to establish the rapid transitions from interior and exterior shots. Many effects were pitch shifted to work harmonically with the underscore.

1. FLIGHT DECK (TARMAC) AMBIENCE

(off-screen; stereo)

The ambience is introduced prior to the first shot, creating the effect that a ship is warming up.

2. TARMAC GARBAGE SOUNDS

(on-screen; mono; dynamically panned)

A jet fly-by provides motivation for the on-screen garbage blowing across the tarmac. The garbage was recorded on a concrete floor using aluminum soft drink cans, Styrofoam coffee cups, candy wrappers, and a couple of old 3.5-inch floppy discs. The items were fanned with a large board to avoid adding blower sounds to the effect.

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**CASE STUDY: SAM 5**

<table>
<thead>
<tr>
<th>Cue</th>
<th>&quot;Final Encounter&quot; by Frederic Talgorn. This cue underscores the reflective nature of the scene.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cue 1M7</strong></td>
<td><strong>At a Crossroads</strong></td>
</tr>
<tr>
<td></td>
<td>Start: 00:04:00:25</td>
</tr>
<tr>
<td></td>
<td>End: 00:05:13:08</td>
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<tr>
<td></td>
<td>Total: 00:01:12:00</td>
</tr>
<tr>
<td><strong>Cue 1M8</strong></td>
<td><strong>At a Crossroads</strong></td>
</tr>
<tr>
<td></td>
<td>Start: 00:05:12:15</td>
</tr>
<tr>
<td></td>
<td>End: 00:06:31:05</td>
</tr>
<tr>
<td></td>
<td>Total: 00:01:18:00</td>
</tr>
</tbody>
</table>
3. **ROTATING SCREEN TITLES**

(On-screen; mono; panned to center)

A rusty door hinge was used to sonify the mechanical-like rotation of the screen title, implying that the title is a physical element in the scene rather than a graphic overlay. A whoosh was added to enhance the motion of the title being blown off the screen.

4. **CRANE**

(Off-screen; mono; dynamically panned)

A mechanical lift was added to represent an off-screen crane hoisting the cargo container seen on-screen. The effect begins before the container is seen on-screen and continues after it moves off-screen.
5. **THE GLOBE**

(on-screen; mono)

This effect was created by dragging concrete blocks against each other. Close microphone placement (condensers) was used to accentuate the high-frequency components. The concrete provided a sense of magnitude while also suggesting the physical makeup of the globe.

6. **CARGO LIFT OF THE SHIP**

00:00:36:00 (on-screen; mono; panned to center)

This stereo effect was created using a servo that was pitch shifted over time.

7. **TARMAC VEHICLE**

(on-screen; mono; dynamically panned)

The sound of the vehicle was synthesized to give it a futuristic quality. This effect was pitched over time to suggest the engine start-up and was time scaled to create the impression that it continues to accelerate off-screen.

8. **LAUNCH SEQUENCE NO. 1**

(on-screen; mono; dynamically panned)

This built-up effect consists of a turbo engine start-up, an air compressor, and a jet fly-by followed by a sonic boom to create the impression that the ship is taking off.

9. **FLIGHT DECK AMBIENCE**

(non-sync; stereo)

The ambience for this scene was created with layers of wind from urban environments. Wind gusts, cranes, and traffic sounds were added periodically to provide contrast. Two separate stereo tracks of distant air traffic were developed to enhance the ambience during quieter moments.
**10. FLIGHT DECK BLOWER**

(on-screen; mono; panned to center)

The starter sound for the flight deck blower was created through synthesis. The primary sound of the blower consists of a wall-mounted fire extinguisher reversed. A small jet engine was pitched down to provide the sustaining element of the blower. The effect was volume automated to follow Sam’s body movements. In addition, it was processed with Digidesign’s VariFi™ to produce the power-down effect.

**11. LANDING SEQUENCE**

(on-screen and off-screen; stereo)

This built-up effect consists of several fly-bys panned and volume automated to create perspective and movement. Off-screen garbage sounds were added
to place the ship and Sam in the same environment. Pulsing whooshes were used to represent the erratic landing of the ship. Twisting leather sounds were used to represent the on-screen hand grips that secure the ship to the flight deck.

12. **FLIGHT DECK CARGO VEHICLE**

(on-screen; mono; dynamically panned)

The synthetic motorized sound is consistent with the first on-screen tarmac vehicle. The effect is pitched over time to suggest motor speeds.

13. **CARGO LIFT OF THE SHIP**

(on-screen; mono; dynamically panned)

This is the same lift used in the opening sequence, pitched down to reinforce the container descending.

14. **EXTENDING THE COCKPIT**

(on-screen; mono; panned to center)

This effect was created using a synthesized bubble sound with a soft servo added.

15. **VENTILATION SOUNDS OF THE SHIP**

(on-screen; mono; dynamically panned)

Each vent was sonified with compressed air, pitch shifted for variation, and time scaled to match the images.

16. **ANGRY PILOT FOLEY**

(on-screen; mono; dynamically panned)

These footsteps are covered with sounds made from twisting balloons and leather. An electrical sound was added to suggest disc failure.
17. CAREER PROGRAMMING DISC

(on-screen; mono; panned to center)

This effect was created by rubbing the rim of a crystal glass. When the light illuminates, we hear the sound.

18. DISC EJECT

(on-screen; mono; panned to center)

The eject portion of this effect is a recording of disc being ejected from an old drive. Some of the disc-handling sounds are actually 35-mm camera shutters. The sound of the disc hitting the tarmac was created by breaking a thin plate glass and was edited to match the image.
**19. ON-SCREEN CRANE**

(on-screen continuing off-screen; mono; dynamically panned)

This effect was created by layering pistons with a diesel engine. The sound is panned back and forth to image.

**20. THE KEYPAD**

(on-screen; mono; panned to center)

The extension of the keypad arm was represented using an adjustable desk lamp arm. Light telemetry sounds include squeaky springs added to cover individual key punches.

**21. FLIGHT HANGER**

(on-screen; mono; panned to center)

The flight hanger is a built-up effect beginning with two Foley fist hits on a thick notepad. Squeaks were added to cover the spring on the extending lamp arm. The interior of the flight hanger was built up using sounds derived from an auto mechanic shop. These sounds include air compressor tools, welding torches, and a warning buzzer. The effect ends with the sound of a hanger door closing, composed of reversed air and a large metal door closing with heavy reverb added. The door closing is an off-screen event that is timed to occur just before Sam looks back.

**22. TARMAC AMBIENCE**

(off-screen; stereo)

This built-up effect was created with multiple spaceship fly-bys generated by synthesizers. Additional wind was added to complete the ambience.

**23. FOLEY FOOTSTEPS**

(on-screen; mono; panned to center)

Footsteps were introduced after the edit so as not to advertise the interruption in the walk cycle.
24. **DISC HANDLING**

(on-screen; mono; panned to center)

This Foley effect was created using the same disc drive used earlier. The effect is terminated with the sound of a camera shutter to cover the on-screen visual of the disc being removed. A small plate glass was broken to cover the sound of the disc hitting the tarmac.

25. **LEARNING SEQUENCER**

(on-screen; mono; panned to center)

This effect begins with the sound of crystal glass being rubbed. Each rim sound was pitched to work harmonically within the score. A whoosh with Doppler effect was added to signify that Sam has transitioned into the learning sequence. An EKG beep and a 35-mm camera sound were used to contrast the black-and-white images. The EKG represents Sam's physiological response and the 35-mm sound represents his intellectual acquisition. A flatline sound and a reversed whoosh were used to transition Sam out of the learning sequence.

26. **ENGINE POWER-UP**

(off-screen moving to on-screen; mono; panned to center)

The sound of a jet engine powering motivates Sam to look toward the flight vehicle. A thrust sound (pitching up) was added and cross-faded to sync with the rise of the jet.

27. **INTERIOR AND EXTERIOR AMBIENCE**

00:02:40:01 (non-sync; stereo; narrow image)

Separate ambiences were created to support the flight sequence, which cuts back and forth from interior cockpit shots and exterior vehicle shots. Hard cuts were made for the purpose of advertising the changes in perspective. The low frequencies of both ambience tracks were rolled off with EQ so as not to interfere with the low timpani notes, essentially cutting a hole in the ambience for the music.
28. JET ROLLOVER

00:02:41:02 (on-screen; mono; dynamically panned)

The jet fly-by was created using a library effect treated with Doppler and panned to imply a rollover.

29. JET FLY-THROUGH

(on-screen; mono; dynamically panned)

The jet fly-through was created using a library effect panned from the front channels to the Ls and Rs in 5.1.
30. **JET EXTERIOR**

(on-screen; surround)

For this exterior ambience, no volume changes were made because the camera follows the ship.

31. **FLY-BY**

(on-screen; mono; dynamically panned)

This jet fly-by was pitch shifted and time scaled to match the on-screen image.

32. **WARNING BEEPS**

(non-sync; mono; panned to center)

Warning beeps were added to the interior cockpit ambience and pitch shifted to match the underscore. Additional beeps were gradually added and pitched down a minor second to make the beep more dissonant and threatening.

33. **LEARNING DISC EJECTED**

(on-screen; mono; panned to center)

This effect was created using the previously mentioned disc drive.

34. **BUTTON PUSHING**

(on-screen; mono; panned to center)

Telemetry sounds were edited to sync with the keypad actions.

35. **SHIP SPIRALING DOWNWARD**

(on-screen; mono; dynamically panned)

A low animal growl was added to a jet fly-by to increase the perception that the vehicle is falling.
36. COCKPIT AMBIENCE
(non-sync; stereo; narrow image)
Keyboard typing and fists hitting the dashboard were edited into the ambience in sync with Sam’s on-screen actions.

37. JET POWER FAILURE
(on-screen)
This is a fly-by with low-frequency effects (pitched-down lion growl) added. The effect was pitched down over time with WaveMechanic’s Speed™ to suggest a power failure.

38. WINGS EXTENDING
(on-screen; mono to stereo)
Various servos were edited and time scaled to fit on-screen action.
39. **ENGINE THROTTLE**
(on-screen; stereo)
The sound of a jet engine powering up was added in sync with the on-screen throttle motion.

40. **FLY-THROUGH AND ROLL-OVER**
(on-screen; surround; dynamic panning)
Panning was used to create the sonic effect that the ship is flying through you in both directions.

41. **FLIGHT PANEL WARNING BEEPS**
(on-screen; mono)
Various telemetry sounds were used to sonify the blinking lights of the flight panel.
42. **ENGINE POWERING-UP**

(on-screen; mono)

This built-up effect has multiple jet-engine power-ups. The tail end of this effect was pitched down over time to reinforce the deceleration concept.

43. **LANDING SEQUENCE**

(on-screen; mono)

Compressed air and whooshes emphasize the visual bouncing of the vehicle as it lands on the tarmac. Leather and balloon sounds were used to represent the handgrips securing the vehicle.

44. **FOGHORN**

(off-screen; mono; center)

The foghorn is pitched so it fits harmonically with the underscore. This sound occurs off-screen and explains why Sam looks off in the distance. It also symbolizes the beginning of a new journey.

45. **PREPARING FOR TAKEOFF**

(off-screen; mono)

This effect was created using the sound of a turbo engine powering up, servos for retracting wings, and compressed air covering the release valves.

46. **TARMAC CARGO VEHICLE**

(on-screen; mono; panned to image)

This vehicle was created by editing the same cargo vehicle used earlier.
47. CARGO DRIVER FOLEY FOOTSTEPS

00:04:54:07 (on-screen; mono; panned to image)

These Foley footsteps were created by clicking ballpoint pens.

48. FINAL DISC HANDLING

(on-screen; mono)

This effect was created using an old disc drive and a small plate glass, both pitched and time scaled to match the on-screen visuals.

49. AMBIENCE

(off-screen; stereo)

This ambience track was constructed with over 20 distinct ship sounds to create a traffic loop. The last fly-by suggests Sam is embarking on his new adventure.