

Nightswimming Pure Research • Final Report

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Crux Encounter Productions

Action in Two Media:

Under what circumstances can we perform the illusion of violence for two media simultaneously, maintaining complete believability for both audiences?

Supposition

We believe Stage Combat storytelling can be conducted in such a manner that it can be presented in both live and digital formats simultaneously. In our experiment, a fully-realized action scene shall be created and tested to satisfy the technical specifications of both media. Furthermore, we will endeavor to prove that the quality of the production, including audience satisfaction, will not be impacted to any detriment by using both media at the same time.

Preamble

On stage, the illusion of violence is performed to an audience that is spread out over a wide range of seats. Each individual audience member (generally speaking) has binocular vision which allows the audience member to see depth of field. We, as the artists, create choreography resulting in a final product that is one continuous performance of physical choreography with sound and acting choices, which tricks the senses of a live audience into believing the illusion of violence. If someone were to observe this work from anywhere other than the selected audience perspective, the tricks and techniques would be revealed and the illusion of violence broken, much like seeing a magic trick from the wings.

On a film set, the illusion of violence is communicated to a single perspective, the camera lens. The camera lens captures things in only two dimensions, therefore not allowing for the same perception of depth-of-field as the human eye. To accommodate this, we use different illusionary techniques to hide the magic tricks from the singular perspective audience (i.e. the camera) to tell the same story as we would on the stage. Traditionally, combat on film is done from multiple takes at multiple angles. These several pieces of footage are later cut together by an editor to create a single product.

The two different media achieve the illusion of violence using different techniques, to two very different audiences, seemingly mutually exclusive. The goal of this research is to test strategies to perform for both media simultaneously.

General Reflections on Results

Following our experiment, we have full confidence that this is a viable process, and that high-quality performance and viewing pleasure are possible for two media simultaneously. All suppositions were answered to our satisfaction. We discovered that the combined knowledge in the room had more of the answers to the anticipated problems than we expected. This allowed us to find new problems and solutions as we moved through the process. Additionally, some of the problems we anticipated being troublesome turned out to be smaller in reality.

Experiment Participants

This Nightswimming Pure Research project was conducted at the University of Toronto's Centre for Drama, Theatre, and Performance Studies in the Luella Massey Studio Theatre from October 23 to 25, 2018. Thank you to the Centre for its support and collaboration on Pure Research.

Jade Elliott McRae - Lead Researcher, creatives and tech
Siobhan Richardson - Lead Researcher, performance

Alice Cavanagh - performer, recorder
Andrew Hodwitz - performer
Abanoub Andraous - lead camera and camera advisor
Ilan Waldman - technical director of camera crew
Afton Rentz - performer
Tyler Séguin - stage director, filmic director
Timmy Bender - performer, recorder
Jareth Li - Lighting Designer
Louis Li - camera operator
Aaron Rota - camera operator

Chris Sutherland & Tiffany Yaw – Luella Massey Studio Theatre house technicians
Gayle Ye - camera and technical

Brian Quirt – Nightswimming Artistic Director, research advisory and audience perspective
Brittany Ryan – Nightswimming Producer, research advisory and audience perspective

Special thanks to Chris Warrilow and Fantastic Creations for weapons and props rentals.

Experiment Investigations

1: The difference between capturing the illusion of striking on film, and viewing the illusion of striking, live with the human eye.

Problem

Film and live performance employ different choreographic techniques in order to achieve the same or similarly satisfying illusions of violence. In this problem, we are specifically addressing, the illusion is that the human body is being struck by an object (i.e. fist to face, knife cutting belly, foot kicking knee).

The reality is that in most cases the body is not struck (this preserves actor safety), but the object simply passes by the body in a plane that the live audience/camera perceives having made contact.

In theatre this is achieved by placing the action in a location and orientation where the moment of the imaginary contact is out of view of the audience. Specifically, the body part being struck is frequently facing upstage, and the striking object is yet further upstage of that. The gap between the body and object needs to be a minimal distance apart, within a range of approximately 5” to 10”. More than this, and the human eye with its binocular vision can perceive the distance between the body and the object. We call this “hide the gap”

Conversely, in film the illusion of a strike is achieved by letting the camera see the arc of the striking object, as though the camera were in an upstage position and facing downstage in the theatre example above. As film is a 2-dimensional medium and the camera lens has monocular vision, the camera cannot perceive the distance between the body and the striking object, so the choreography does not need to adhere to the 5” to 10” rule. In fact, most often the actors are remarkably far from each other.

This is a prime example of how the two media use opposite techniques, and so we believe it will present one of our biggest challenges.

Possible Solution

We will experiment with effective camera angles in order not to capture “the Gap”

- Be sure “the gap” is still hidden to the live audience
- Be mindful of the 180-degree rule when choosing camera placement

Practical Application

- Before the experimentation workshop, pre-test all the angles we want the camera to catch and not to catch to examine various available camera placements.

- Prepare storyboards and shoot pre-visualizations
- Train the actors to hit specific marks so as not to affect the capture technique

Predicted Results

Advanced planning of camera placement and choreographing camera moves with as much specificity as the performers' choreography will eliminate faulty capture.

Actual Results

Predicted results achieved. Using proper film techniques and placing those techniques in the correct place on stage covers those illusions for both media in real time. The choreographing of all of the elements -- actors and camera movement -- became imperative for both forms of media (i.e. location of human eyeball and location of camera) but in real-time when choreographed properly both worked at the same time. Focus was on clarity of live audience placement, camera placement, and consistency of actor placement (hitting marks). We thought it would be harder to achieve than it turned out to be. The execution was simple, though the pre-planning time commitment was extensive.

While this may seem to be a simple solution to a simple problem, the next step after testing one action, was to test a variety of actions in a series with our actors in various orientations to each other and to the camera, within the context of a scene. In order to avoid showing "the trick" to either audience, the performers had to have the utmost technical proficiency and consistency. Simultaneously and similarly, camera action needed to have high levels of consistent execution.

2: The nature of how action scenes in film are shot and edited

Problem

The biggest problem for us will be how the audience perceives action caught by a camera. An action sequence in film is often filmed over multiple weeks with hundreds of hours going into multiple shots and sometimes hundreds of cuts, spliced together into a single five-minute, on average, action scene. This scene then has millions of dollars of visual effects laid over top of it. A lot of filmmakers use these multiple cuts to guide the audience through the action toward a specific goal.

We will be using significantly fewer cuts. Our "cuts" will be through a switcher on our live feed, "editing" on the fly. This leaves us without the ability to do a reshoot if something doesn't work. Cuts are only from camera to camera to achieve close-ups on action that cannot be perceived by the camera at a distance. We will also not have many visual effects laid over top of the edit.

All of this combines to show the audience something they may not recognize as an action scene, in the traditional film sense.

Possible Solutions

The simplest, and yet also most difficult to execute, solution to the multiple edit problem is to not use too many edits. For our live audience, we are guiding the story with a more traditionally theatre sense of building the action in a conflict. At the same time, we are crafting the blocking and choreography to allow for close-ups, 50s and pans to encapsulate the bulk of the camera work.

Practical Application

- We will “front load” our process to have a very clear view of what we want to capture, and predetermine which moments specific cameras need to capture, so that we show all of the important story moments to both audiences.
- We will have storyboards and pre-visualizations (see above) to help the filmic director to understand the physical storyline and call the cuts and changes accurately, only switching to capture moments that a camera would normally miss.
- We will train our actors for the theatre context and for long shots of continuous action with clarity and accuracy, to minimize the risk of wanting to re-shoot for actor error.
- Actors will be choreographed to hit specific marks.

Predicted Results

Having pre-visual rehearsals informs the entire team of the desired aesthetic and specifics of choreography. This also informs the DoP so that they are prepared for the capture process of that day. This allows the DoP to capture the scene with specifically choreographed edits which retain the movement and apparent speed created by camera edits, without the need to use numerous cuts, also achieving the ability to guide the audience’s eye to the story of the physical

Actual Results

We were correct in our supposition that this type of project needs to have the work front-loaded. In addition, we discovered that yet more process can, and should, be added to the pre-visualization stages. What we discovered was that in real time with mobile camera operators, the actors did not have to be placed as precisely as anticipated. The operators were able to adjust their positions to account for slight variances in actor placement. This allowed both live and filmed capture of the fight choreography to be successful. We used less switching and cutting than we expected. Cameras were able to focus on moments that we wanted seen regardless of complexity of the scene. A specific concern was that group fights would lose impact. However, it was discovered that the story simply adjusts.

3: Lighting Discrepancies

Problem

Lighting is perhaps the technical aspect of these two media that is most opposite. Lighting for film is set up shot by shot to illuminate specific things and is minutely adjusted to accommodate camera position. In theatre, lights are set in position, and the design is predetermined. Blocking and choreography is often created with these pre-determinations in mind. We are also needing to make adjustments for skin tone and costume, especially on camera.

Possible Solution

We will, at this, stage be unable to light each individual scene in an on-set environment, so the remaining option is to light for stage and see what we pick up, adjusting our lighting levels to find a balance of what the lens can pick up.

N.B. Due to the time constraints of this research project, levels are the more practical avenue of research, as we would prefer to focus our time on the various aspects of experimentation rather than spending the time on re-hanging lights. That said, we are making a note of this on our “wish list” should the rest of the research go shockingly quickly.

Practical application

- Hang lights for a specific theatre design
- In the moment, adjust levels to see what the intensity changes achieve
- Make minor design adjustments that can be done without re-hanging or focusing.

Predicted Results

We will begin to build a vocabulary of what is most successful in our lighting designs

Actual Results

This was much less of a problem than we thought it would be, as modern cameras pick up an extraordinary amount of light. The dimmest stage lighting that the human eye can see doesn't get picked up by camera lenses. In these instances, levels were boosted approximately 20% to 30%, which solved the issue. Otherwise, all other lighting states translated to camera. More light is sometimes needed on faces. It is important to note that we had a brilliant lighting designer who is already versed in both media. In addition, the physical space greatly affected the quality of the light, as it was a highly reflective white space with a rounded back wall.

4: Showing the live audience the film production side

Problem

In live events, the various cameras are often within the frame at some point or another. As we are a live theatre company, our intent is to bring that live theatre experience into the digital world and onto your device. However, seeing cameras in the shot removes the immersion into the intimate theatrical experience.

Possible Solutions

Hide cameras from the live view. Choreograph for the live audience and for the static camera positions.

Practical application

- Choreograph camera ops to remain behind screens
- Choreograph fights to be cognizant of camera placements, so we still aim for visuals clear of technical equipment
- Use cameras that are well concealed (cables)

Predicted Results

We conceal the operators for the live audience, and choreograph so that the cameras are already in the positions they would need to be in.

Actual Results

Live audiences reported that the cameras did not affect their enjoyment of the show. Without an explanation of the presences of cameras, audiences' curiosity drew their attention to the cameras. However, with an explanation of the presence of cameras and the reason for them, the live audience reported forgetting cameras were there. In future, it is still recommended that the visual presence of cameras is minimized.

5: Sound

Problem

Actor volume in the theatre and for film are drastically different. In theatre, we craft a live soundscape. Actors project their voices differently based on the size of the house. During the fight there may be lines delivered, though more commonly we use unbridled shouts as part of the soundscape. The weapons make contact with each other, usually creating the base for that soundscape. Additionally, there may be recorded sound, such as ambient noises to help set the location, or music to amplify the emotional effect. We often have someone at a sound console to

balance the different types of sound, though sometimes the performers do it in the moment. On film, fight scenes are usually shot without any sound, with sound is added in post-production.

Proposed Solutions

We will build our usual theatre soundscape and experiment with methods of capture for film, seeking to achieve a live mix. We will experiment with the mix and levels. If method of capture is not sufficient, adjustments to acting style will be made.

Practical Application

- Floor mics for footfalls
- Suspended mics for general sound
- Lavs (head and cheek mics) for voices and breath
- Lav on swords to catch the sword sounds individually
- Adjustments to soundscape/acting to help adjust levels.

Predicted Results

A live mix will allow adjustments to be made on the fly.

Actual Results

Live mixing was indeed most effective. After various attempts, we discovered that using only lav mics and ambient mics provided all the sound required for this experiment. To achieve the balance we were looking for in this space, the ambient mic levels were lowered by the end of the experiment. Sound is a complicated process. We discovered that a sound technician was needed to monitor lav and ambient levels in real time, for both stage and camera. Once we discovered this, a university crew member, Chris, stepped in and monitored both sets of sound levels to find the optimum outputs in both media. Once we had a sound engineer, the sound for both stage and film worked in a satisfyingly cohesive manner.

6: Knaps

Problem

The manner of creating the sound of a strike to a person's body is handled very differently in the two media. In theatre, we create the sound of strikes to the body by creating sound with alternate strikes. For instance, instead of slapping a face, we clap hands, called a "knap". This action is timed to the moment of imaginary impact. On film, the knap would be perceived which would confuse the audience and destroy the realism of the moment, so the sound is instead inserted in post-production.

Proposed Solutions

We will continue to use theatre knaps but adjust the camera work to follow the story we want the audience to follow.

Practical Application

- We will choreograph of the camera switches and set the actor/camera placement to hide the knap away from the camera as well as from the live audience.
- Camera frame will be chosen to keep knaps out of frame.
- Knaps will be choreographed to stay outside the frame, or perhaps be given to a 3rd party (an actor not involved in the moment of contact).
- Actors will be reminded to make the smallest actions or to make knaps “en route” in the subtlest manner possible to eliminate the distraction caused by seeing a knap in frame.

Predicted Results

Using the above in combination will eliminate the distraction caused on camera by theatre knaps, by reducing the number of occurrences of on-camera knap action.

Actual Results

Knaps translated well to both media. Proper performance technique ensures that actions that are meant to be hidden visually stay hidden. Sound also translates effectively to both media, though a sound engineer was needed to ensure the desired effect was achieved. For instance, the sound of a slap worked well with when the source was both ambient and lav mics, but was best with solely the sound picked up from the lav.

7: Acting Style

Problem

Acting styles and techniques vary greatly between film and theatre based almost entirely the distance the audience is from the actor in a theatre. The sensitivities that a camera and mic have would mean some of the more dramatic choices that work very well on a stage would be overwhelming when the same scene was caught on film. The nuance of film acting is often in the lack of facial movement and focused on the eyes. Use of the same technique in a theatre context would make a character look dead and expressionless.

Proposed Solutions

We will create a hybrid acting style that serves both camera and live work.

Practical Application

- Actors will need to have an awareness of the storyboard to be able to adjust acting proportion to the frame of the camera (subtle for close-ups).
- Camera will not linger in close-up but will be used for punctuation.

Predicted Results

The hybrid acting style allows the larger visuals of theatre to be served, while we gain the subtlety needed for intimate camera moments.

Actual Results

To our surprise, the acting techniques for film and stage were very compatible. We experimented with the speed and size of the acting, and discovered that, as long as the camera wasn't in close-up, the movement and acting techniques were completely viable. Even when the camera was switched to a close-up shot, there was no distinguishable difference between stage acting technique and film acting technique, as long as actors were in motion and proper technical aspects of acting-for-camera were applied (example, eyeline choices). Screen audience was satisfied and the live audience never knew the difference.

8: Cameras and the human eye require different rates of movement for actions to read as “fast” or “slow”

Problem

Different physical speeds are needed for live perception and for camera capture. The human eye perceives in a different manner than the camera does. In addition, the performer's distance from the camera affects how the camera picks up movement; different rates of performer movement are needed depending on the frame. In changing speeds, actors often require different amounts of energy to perform which read as different threat levels.

Proposed Solutions

As frames and angles are selected, movement rates will be adjusted to suit. By capturing the acting work, we help the audience engagement to be based more on the emotional plot of the story, rather than the experience of speed.

Practical Application

- Actors will be coached to move in a manner that reads as threatening, regardless of the movement's perceived speed.
- Frame sizes will be selected relative to weapons and movements in the choreography to enhance the movement of the action.

- Capturing of acting moments that communicate intent, intensity, and danger, to accommodate for choreography that is not running at film speed.

Predicted Results

Capturing of acting and overall commitment to storytelling improves the digital audience's engagement, so that a feeling of speed is not imperative for audience enjoyment and experience of the threats. That said, choreographing frame size to suit the movement required by the weapon, and maintaining intense actor engagement, separate from a sense of speed, helps to support that sense of threat.

Actual Results

Our most surprising discovery. We already knew that the human eye appears to capture speed slower than the camera. However, we were completely incorrect in how we thought this process would go. A change of frame size was not integral to the audience's experience of threat or speed. Of higher priority is that the action itself is captured on camera. Best selection of the frame was to capture the entire movement of the weapon so that the story is fully told. It was also discovered that the camera angle to the action needed to be selected in order to best showcase the choreography. Regarding movement and threat, the live audience was able to discern a normal pace of movement, while the on-screen experience appears to be at an elevated rate. This works in favour of the artist, as the industry standard for fighting is very fast. A wonderful discovery indeed.

Conclusions

Going into this project, our instincts said that it should work, but our intellect continually pointed at the problems above, which seemed insurmountable. We are delighted to discover that our proposed solutions were often along the right track, often working well with some minor adjustments to the original plans. The technological solutions were in the right vein, though we had many surprises that were less technical, and more storytelling questions. The majority of unexpected problems with execution of the solutions came in the form of technical difficulty and supporting our personnel. Aspects that posed delays in schedule include the following:

- Networking of camera equipment
- Camera operators becoming fatigued during the shooting of longer scenes, and during the length of the rehearsal process
- Procedural differences between stage and film work, specifically, decision pathways and the expectations of each person's role and their place in the process.
- Changing camera shots takes longer than changing scenes in theatre
- Experimentation to find sound and lighting states that work for both stage and camera took longer than expected

During the process we discovered that it is possible for the film aspect to be run in a manner that is much closer to a theatre process than a film process, rather than asking the theatre process to fit into the film process. In a film process, we would generally expect to rehearse camera action with the acting rehearsal. We found that, if the filmic director was familiar with the acting scene, then the filmic director could use a prompt book similar to a stage manager in order to cue their camera operators during the run. This allowed the camera operators to work without having seen the acting rehearsal first. However, it must be stated that there was higher artistic satisfaction for actors, crew, and audience when camera operators were involved in the rehearsal process.

Upon further reflection we realize that our experiments ran as quickly and efficiently as they did because we had the privilege of working with such a skilled group of people. The positive effect of such a collection of dedicated expertise in this case was unmistakable.

Recommendations for future work

While our pre-visualization (planning and creating visual representations of complex scenes before filming) was fairly complete, there was yet more “front-loading” that could be done before getting into the experimentation (the performance) space. Extensive detail work is recommended before getting into the performance space. Additionally, time contingencies and back-up plans for technical difficulties are strongly recommended.

This experiment allowed us to make many exciting discoveries. We learned about processes and potential best practices for multiple departments in two forms of media. The combination of artistic practices has been successful, and inspired us to continue this work in the future. However, all of the new knowledge has also revealed more questions to consider in future endeavors. The following are some questions we will continue to contemplate as we move forward.

- What does our ideal work flow look like to include the needs that camera crew have the filmic director be familiar enough with the show to create their book and call the show effectively.
- How early do technicians need to be involved to serve their process and what specific training do they need for this specific application?
- Can we continue to find ways to minimize the presence of the camera in the live space? Do we seek to see cameras in our space as part of the theatre experience, like we see the speakers and the lighting instruments? Or do we save the presence of the camera for a piece which specifically asks us to consider the cameras and their operators as a part of the storytelling context?

Appendix I: terms

Closeups - a camera shot that tightly frames an object or person.

50s - a camera shot capturing a person from the waist to the head, not including the legs.

Pans - a camera shot that turns horizontally to sweep across the scene.

Knap - a percussive sound made by hitting a resonant part of the body. This is timed to the moment an impact would happen and is staged so it is hidden from the audience.

Gap - the space left between actors when simulating an impact. The gap must be hidden from the audience in order for them to buy the illusion.

180-degree rule - If we draw an imaginary axis between the camera Lens and the object being hit, the object doing the hitting must cross that axis, or else the blow does not appear to land. Once our performers or our camera is moving, the ability to find that specific point becomes an essential skill. The accuracy of each of those moments of imaginary contact is paramount to accurate storytelling.

Filmic director - term specific to this project - the person responsible for ensuring the action was properly captured on film, while the choreographer ensured it translated for the live audience.

DoP - Director of Photography. Establishes the visual look of a film/TV show/etc. Makes artistic and technical decisions about lighting, film stock, shot selection, camera operation and other elements.