



Eyes in the skies

The making of “Flying Dreams” was a breakthrough use of drones for specialty cinema

by Judith Rubin

“Flying Dreams” is a new flying theater attraction in the Ferrari Experience building at the new Ferrari Land, a third gate that opened in April 2017 at the PortAventura theme park destination resort near Barcelona. “Flying Dreams” serenely soars over world landmarks and swoops down to spotlight 11 different models of Ferrari GT™.

“Flying Dreams” represents a breakthrough in the use of drones for specialty cinema. From the first test of equipment in the field, to the international shoot in six countries, to the last pixel in post production, the media production team led by Mousetrappe faced and overcame a series of unique challenges.

The “Flying Dreams” media production team is a who’s who of specialty cinema and special venue attractions, helmed by Mousetrappe, with Daren Ulmer (director) and David Briggs (writer), Don MacBain (producer), Sean Phillips (director of photography), Ken Saba (editor), Rick Rothschild (consultant); Jon Baker and Bruce Broughton (music and sound) and Muse VFX (visual effects).

The brief

After a media-rich preshow (also produced by Mousetrappe) guests settle into the 70-seat theater. The gondolas of seats are accessed on three levels, floated forward into the hemispherical dome and surrounded by projected imagery, in a four-and-a-half minute flying experience. “Basically, you pick up your Ferrari at the factory, visit all the locations, then arrive with your Ferrari at Ferrari Land in PortAventura,” said Daren Ulmer.

According to Ulmer, Mousetrappe developed the storylines, storyboards and concept art for “Flying Dreams” after being enlisted by PGAV Destinations, which was consulting on the project for Port Aventura.

“The known parameters for flying theaters are that you have 9-12 shots or scenes, each 15-35 seconds long,” said Ulmer. “For each scene, we had three goals to meet in terms of design and selection. First, the Ferrari car had to be the hero of the shot. We had to get close to the car, and our relationship to the car as we flew past was very important. Second, every location needed to be iconic and instantly recognizable, keeping in mind the Port Aventura

visitor demographics, which are Europe-centric, with many guests from the UK and Russia. Third, everything had to support the ride experience – to be memorable from a ride standpoint as well as cinematic. That last point was something Rick Rothschild emphasized.”

“It’s a combination of motion, visual and aural,” said Rothschild. “You need extraordinary environments, surprise elements, reveals, the awe and beauty of the location, and the fun of flying. The score and sound effects are immensely important as well.”

By the end of 2015 the team had the “what” and “why” - but would still need to nail down details of “how” and “where.”

Getting to drones

Traditionally, this type of aerial footage has been captured using a large format camera mounted on a helicopter. However, between budget considerations and the need to fly low and close to the car, helicopters were ruled out for “Flying Dreams.” Based on previous experience with drones, Ulmer was confident they could successfully mount a high-resolution camera onto a drone and fly it helicopter-style. Mousetrappe’s winning bid to produce the media for “Flying Dreams” committed Mousetrappe to this approach.

Don MacBain was engaged to take charge of testing the process and securing the locations, and would be part of the crew that went overseas to shoot the film, along with

Ulmer and Phillips. “I agreed with Daren that we could make it work,” said MacBain.

For the initial test, “We hung a 6K RED Dragon camera (the final deliverable being in 4K) with a fisheye lens on the drone and did basic testing maneuvers - flying straight up, doing a 360 and then back down, at an easy feeling clip,” said MacBain. “We did another following a car down a road in Topanga Canyon. We took the footage and added micro-stabilization post software to some of it, then went to Vancouver to view it in the FlyOver Canada theater.”

Teaching the drone some new moves

The next step was to find a drone operator receptive to the language of cinematography. “We needed to fly, bank and maneuver like a fixed-wing aircraft,” said MacBain. “Drones are not manufactured and set up to fly like that; the eye of the camera never tilts the horizon. Most drone operators are comfortable with up-down tilt, left-right panning and forward-back operations.”

When a helicopter is used for aerial photography, the camera is moved primarily by how the helicopter is moved,” said Rothschild. “Imagine the vehicle is the body of a bird that flies, soars and dives. The camera is the point-of-view and directs you where to look. The audience is the bird’s head, and the body of the bird doesn’t always go the way its head is turning. With a film like this, captured in a hemispherical way for dome projection, you want the guest to look around - that’s the fun of it. To get the drone to support that kind of choreography is challenging.”

A drone captures a Ferrari car on the racetrack (left). Don MacBain and Daren Ulmer observe a drone in flight during a shot in the Alps (right). Photos courtesy of Don MacBain



“Flying Dreams” media production team & select projects

Mousetrappe

- Space Shuttle Atlantis, Kennedy Space Center Visitor Center
- “Beyond All Boundaries,” National World War II Museum, New Orleans
- Recognized projection mapping spectaculars around the world for a major entertainment operator

Don MacBain

- “Viaggio In Italia,” Ferrari World Abu Dhabi
- Permian Basin Petroleum Museum (media content)
- “Driving with the Champion,” Ferrari World Abu Dhabi

Sean Phillips

- “King Kong 360 3-D,” Universal Studios Hollywood
- “Flying over Heilongjiang,” for Wanda Group
- “Flying Over Israel,” for Hollow Studios

Ken Saba

- “Soarin’ Around the World” (Disney)
- “Soaring Over the Horizon” (Disney)
- “Star Tours – The Adventures Continue” (Disney)

Rick Rothschild

- “Soarin’ Over California” (Disney)
- “FlyOver Canada,” Canada Place, Vancouver
- “FlyOver America,” Mall of America, Minneapolis

Enter Aerobo, a drone company based in New York City, owned by Brian Stroom, a movie buff. “Aerobo had discovered amazing ways to move the camera,” said MacBain. “They understood the banking maneuver to tilt the horizon, and how an aircraft moves. The drones we used were heavy lifters, capable of carrying 25-30 lbs. It takes a pilot and assistant, each with a joystick type controller – one for where the camera is looking, and one for where the drone is flying.” The successful test shot in Monument Valley, UT with Aerobo’s camera operator Jeff

Brink and pilot Mike Ferguson, was also the first location shoot for “Flying Dreams.”

Because of the wide-angle lens, portions of the drone rotors often ended up in the shot. This was minimized by mounting the camera to a 6” inverted riser, custom-built by Aerobo. “It made the rotors much less present in the top of the frame; the rest was cleaned up in post production,” said MacBain.

Location challenges

Mousetrappe’s team had established its methodology, but faced new challenges taking it overseas. “Countries and cities are all in different stages of the process when it comes to regulating drones,” said Ulmer. “In many cases, locations were in the phase of banning all flights for drones of the size and weight we were using.”

This added more complexity in terms of maintaining consistency from one shot to another. “This was not your usual process for an around-the-world shoot,” said MacBain. “It was learn-as-you-go. In each location, we had to find a drone company, operator pilot, and assistant, and the right drone, and have the camera set to capture the image properly in relation to the screen.”

“We had to re-pitch several locations to the client, and we realized we would have to use more CG (computer generated imagery) than originally planned,” said Ulmer. Scenes of the Statue of Liberty, the London Eye, and the Great Wall of China were all done in CG. “We couldn’t get permission to fly the drone close enough to the Statue of Liberty for the shot we needed,” said Ulmer. “In this format, the wide-angle lens makes things get very small onscreen very quickly. The statue would be very small, the New York skyline would be even smaller, and where’s the car?”

Although most shots were live action, the team made the most of the flexibility afforded through CG. “It allowed us to make the ride experience bigger,” said Ulmer. “We were able to push the camera a little more aggressively, and do things we couldn’t otherwise do, such as fly through the middle of the London Eye. It gave us more freedom in placing the Ferrari cars.”

Ferraris around the world

There were five on-location teams, in Italy, Spain, France, Russia and the US. “I was particularly passionate about this project,” said Ulmer. “I directed every shot and every part of this process, and was on location for everything. We broke it into two trips to Europe and my wife Jill Ulmer was with us as script supervisor. We did a shot every three days: two filming days and one travel day.”

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Sean Phillips, as DP, was responsible for the camera and especially the lens. While the drone camera operator handled pan and tilt, he calibrated the lens position, ensuring the projected imagery would end up onscreen in the right place. “We made up a lens board - a piece of metal that holds the lens in place and allowed us to mount it to the front of the digital camera - and it had to be redone every time we were in a new location with a new drone team,” he said. “Coordinating with the crews, we could view the shot on a monitor, which assisted with composition and technical management.”

Matt Duclos of Duclos Lenses furnished an essential element. “Duclos provided a specialized 8mm fisheye lens, re-barrelled from scratch, for stable, aerial photography on a drone,” said Phillips.

Many of the 11 Ferrari GT models represented in “Flying Dreams” were CG-rendered. “We would shoot a proxy car that was smaller than the Ferrari, and cover over it in post,” said Ulmer.

Phillips devised a camera solution to capture a “reflective sphere” for each virtual Ferrari. Four digital cameras, adapted to accept wide-view fisheye lenses, were mounted

to the car to capture the environment as it drove through. This information was later used to texture-map reflections onto the CG cars. All footage was shot at 60 fps. Visual effects and compositing were done in-house at Mousetrappe and by Muse VFX.

“Daren had very clear ideas about what he wanted,” said Phillips. He found Mousetrappe’s virtual reality (VR) system to be a useful tool for previewing and reviewing shots to ensure things were on track. “When you looked around you’d see what you’d see in the theater,” said Phillips. “It was really good for framing and motion.”

“At Mousetrappe we use VR as a pre-visualization and development tool, so we had developed a VR version of the flying theater itself,” said Ulmer. “As we filmed around the world, using our custom software, this enabled us to review the shots and how it was going to look in the dome between each shot attempt. We could share this remotely with everyone involved in the process.”

Editing and post

Back at Mousetrappe with the footage, the next part of the job was to put the show together in a way that felt right, with transitions from one location to the next



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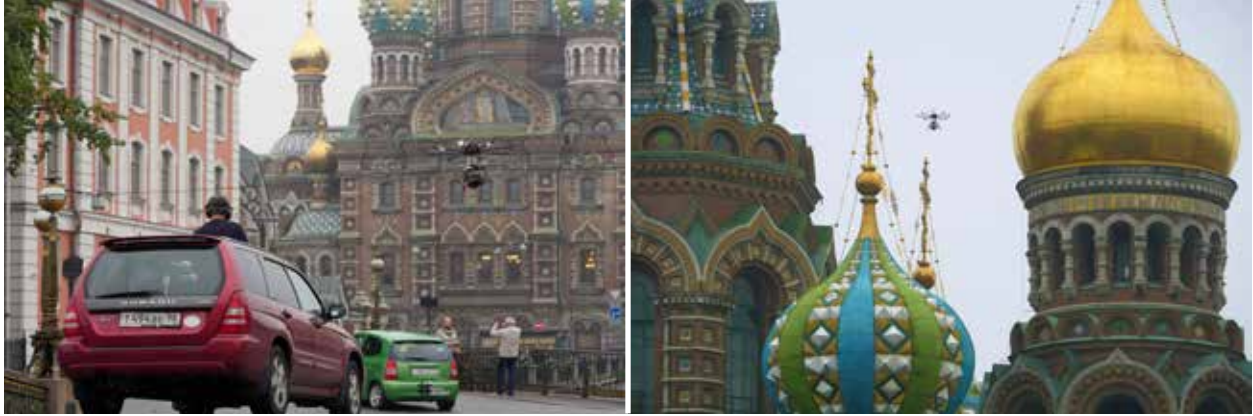
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A drone maneuvers up to and between the domes at Church of the Savior in St. Petersburg, Russia. Photos courtesy of Don MacBain

and knowing what the motion of the ride would be like. Under contract to Mousetrappe, Saba worked out of their Burbank offices for about seven months until the film wrapped.

“Flying Dreams’ brings something different to the flying show genre because in addition to all the great scenery, this one has a point – the Ferrari car that’s leading us through these different landscapes,” said Saba. “I loved the sense of intimacy. When we dip down and get close to the car, it feels like our feet are hovering just slightly above ground. We’re closer to the ground, closer to the car.”

Music and the future

Music scoring for “Flying Dreams” was done by Bruce Broughton and recorded in Nashville with a full orchestra, with audio sweetening and sound effects by Jon Baker Productions. “The car is the hero, and we had to hear the authentic engine sounds of that car,” said Ulmer. On site for three weeks at PortAventura, the final touches were programming the ride with system provider Brogent Technologies, adding 4D effects and doing final color correction in the dome.

The flying theater is an evolving genre. “In each one I work on, I keep thinking about things we didn’t try last time,” said Rothschild, “Where drones are going in all of this is an open question, but be prepared for the unexpected. As creative people, we keep an open mind.”

“What makes a flying film really work? Taking guests to places they’ve never been from a viewpoint they may never experience,” said Saba. “It’s a magical ride to magical places.”

“Flying Dreams’ was a rewarding collaboration, and will influence what comes next,” said MacBain. “To successfully and fully utilize drones for a world-class, flyover, ridefilm, dome attraction was a leap forward in the methods of cinematography and storytelling. This project is at the top of my list for just about everything.”

Ulmer said, “Flying Dreams’ was a truly rewarding project in every aspect – creatively, technically, aesthetically – and we’re very proud of the extraordinary experience we all got to create. The guest response has been wonderful, and it is the result of an effective team effort not only internally, but also with our clients and partners at PortAventura World and PGAV Destinations.” •

