



GoPro®

PROFESSIONAL GUIDE TO FILMMAKING

Bradford Schmidt
Brandon Thompson

Foreword by Nicholas Woodman, founder of GoPro



GoPro®

PROFESSIONAL GUIDE TO FILMMAKING

Bradford Schmidt
Brandon Thompson

This page intentionally left blank

GoPro[®]

PROFESSIONAL GUIDE TO FILMMAKING

Bradford Schmidt
Brandon Thompson

Foreword by Nicholas Woodman, founder of GoPro

 PEACHPIT PRESS

GOPRO: PROFESSIONAL GUIDE TO FILMMAKING
Bradford Schmidt and Brandon Thompson

PEACHPIT PRESS

Find us on the Web at www.peachpit.com

To report errors, please send a note to errata@peachpit.com
Peachpit Press is a division of Pearson Education
Copyright © 2015 by Bradford Schmidt and Brandon Thompson

Senior Editor: Karyn Johnson

Senior Production Editor: Tracey Croom

Developmental Editor: Corbin Collins

Copyeditor: Kelly Kordes Anton

Proofreader: Scout Festa

Cover Design: Aren Straiger

Cover Photos: Kelly Slater (front), Caleb Farro (back)

Interior Design: Mimi Heft

Compositor: Kim Scott, Bumpy Design

Indexer: Valerie Perry

NOTICE OF RIGHTS

All rights reserved. No part of this book may be reproduced or transmitted in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. For information on getting permission for reprints and excerpts, contact permissions@peachpit.com.

NOTICE OF LIABILITY

The information in this book is distributed on an “As Is” basis, without warranty. While every precaution has been taken in the preparation of the book, neither the authors nor Peachpit Press shall have any liability to any person or entity with respect to any loss, damage, or injury caused or alleged to be caused directly or indirectly by the instructions contained in this book or by the computer software and hardware products described in it. This is an advanced guide to filmmaking with the GoPro. Some of the techniques used may not be appropriate or safe for non-professionals.

TRADEMARKS

Throughout this book trademarked names are used. Rather than put a trademark symbol in every occurrence of a trademarked name, we state we are using the names only in an editorial fashion and to the benefit of the trademark owner with no intention of infringement of the trademark.

ISBN-13: 978-0-321-93416-1

ISBN-10: 0-321-93416-4

9 8 7 6 5 4 3 2 1

Printed and bound in the United States of America

Acknowledgments

In finding media for this book, we benefited from the knowledge and curation of the social and creative teams at GoPro, and we would like to thank them—specifically, Jensen Granger, Mattias Sullivan, Pilar Woodman, and Sean Custer. We would especially like to thank Jensen Granger for his Photoshop expertise. He and Sean Custer also provided the burst photo stitches featured in this book. We also thank Karyn Johnson at Peachpit for shepherding us through this whole process, and Mimi Heft and Nancy Aldrich-Ruenzel for their everlasting patience. We'd also like to thank Jordan Miller, Caroline Emerson, and Anna Hoff for not going insane as we took over their couch every weekend for two years to work on this project. Further, we owe a debt of gratitude to GoPro's legal team, Sharon Zezima and Simon Seidler. A final GoPro thanks goes to a few individuals who helped develop this book: Kim Lantz, Justin Wilkenfeld, Paul Osborne, Paul Crandell, and Nick Woodman.

And, of course, much of our work at GoPro would not have been possible without the ceaseless adventuring and creative endeavors of GoPro users, those athletes, photographers, filmmakers, adventurers, and enthusiasts who have used the product to capture many of the beautiful moments you see throughout these pages. They have all freely contributed their images to this book, and for that we are grateful.

Finally, we dedicate this book to all of the production artists and producers who make up GoPro's in-house media production team, GoPro Original Productions. Creating art takes time and patience. This book is a tribute to these artists' labor, love, and frequent nights spent sleeping under the desk—all in the pursuit of their passions.



Table of Contents

Foreword xv

Preface xvii

History of GoPro 3

1 GoPro Primer 12

Basic Definitions 14
Resolution
Aspect Ratio
SuperView
Field of View
Frame Rate
Suggested Modes for Maximum Quality

Photo Modes 20
Time-Lapse Photos
Night-Lapse Photos
Burst Photos

Video Modes 29
720p
960p
1080p
1440p
2.7K
2.7K 4:3
4K
WVGA

Protune 38
Auto White Balance
Color
ISO Limit
Sharpness
Exposure

GoPro Studio 40

Wi-Fi 43





2 Mounts 45

GoPro Mounts 46

Wrist Strap Camera: The Beginning

Head Strap

Helmet

Chesty

Adhesive Mount

Suction Cup

Handlebar/Seatpost Mount

3-Way Extension Arm

Roll Bar Mount

Surfboard Mount

Jaws Mount

Tripod Mount

The Handler and Norbert

Experimental Mounts 74

Gnarwhal

Spinner

Mouth Mount

Appendage Mounts

Backpack Mount

Extensions

Filmmaker Toys 86

Aerial Photography

Steadicams and Gimbals

Sliders and Jibs

Tow Cams

Sound



Multi-Camera 92

Dual and 3D

Array

Spherical





Grant Davis / Australia  Ankle Mount  Photo/.5sec

3 Angles by Activity 98

Surf	100	Underwater	116
Snow	103	Wake and Wind	118
Auto	104	The Outdoors	121
Bike	106	Music	122
Human Flight	108	Sports	124
Paddle	111	Animal	126
Motorcycle	112		
Skate	115		



Mark Garonzik / Machu Picchu, Peru  Chesty  Photo/5sec

4 Capturing a Story 128

Preparation 131

Story Research and Planning

Story Building Blocks

Camera Gear

Audio Gear

What's in Your Pack?

Production 138

Trapping as Coverage

Shot Classification

Primaries and Secondaries

Light 144

Low Light

Directing the Interview 148

Static Interviews

Active Interviews

Interview Theory

Environmentals and Time-Lapses 156

Photos

Experimentation 160

Downloading and Review

Improvisation 163

Biography of a Production 168

One Man, One Camera

A Friend and Four Cameras

Product Launch Production

One Man, 30 Cameras

5 Art of Editing 178

Getting Started 180

Gear

Organization

Workflow Overview 182

Selects 185

Transcoding

The Paper Cut 186

Paper Cut: Jeb Corliss Tianmen Cave 187

Story 188

Characters and Conflict 191

Structure 192

Music 194

The Rough Cut 197

Timeline Settings

Continuity of Space and Time 198

The Cut 200

Action Cut

Match Cut

Jump Cut

Smash Cut

Cutaway and Crosscutting

Time Manipulation 206

Slow Motion

Motion Interpolation

Speed Ramping

Fast Motion

Reverse Motion

Time-lapses 211

Interviews and Voiceover 213

The Second Pass 214

Peer Review

Pacing

Music Redux

Final Pass 221

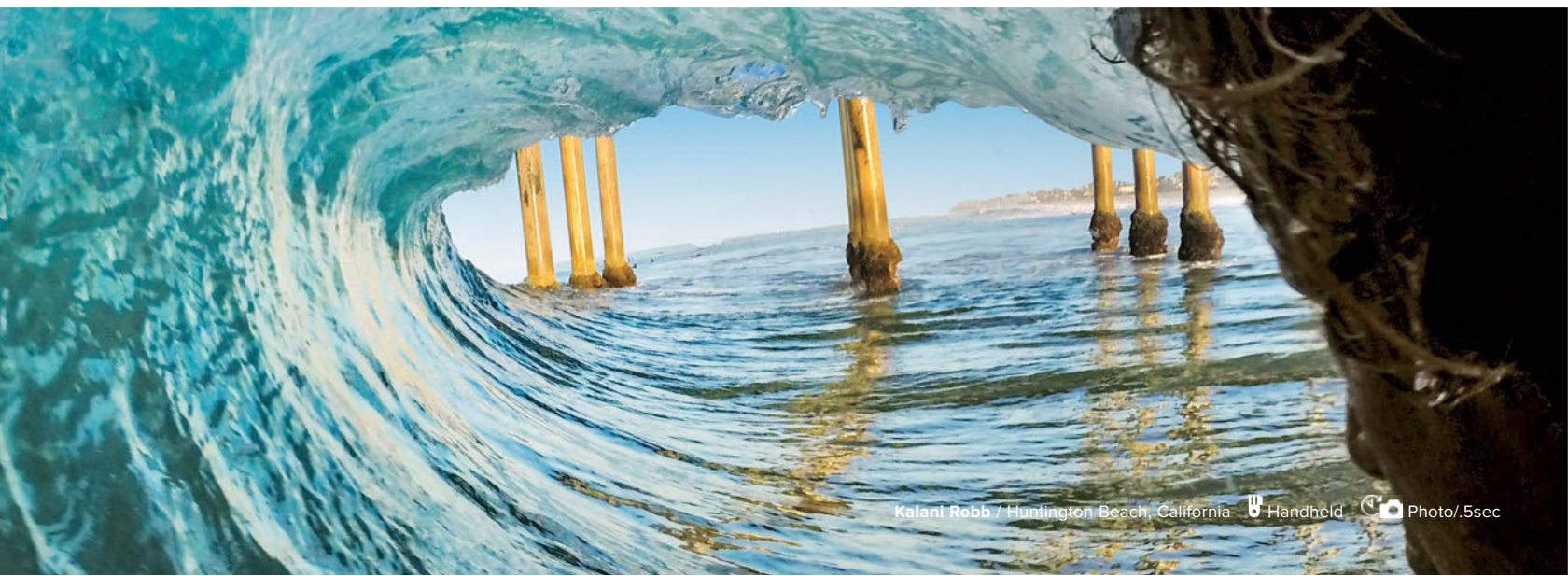
Cropping and Stretching

Sound

Motion Stabilization

Graphics

Color Correction







6 Story Analysis 232

The Moment	234
The Montage	237
Character Study	238
Power Intro	240
The Race	243
Athlete Sections	244
Bookends	245
The Intermission	245
Travel Montage	246
The Journey	248
The Sequel	
Music Video	251
The Surreal	252
The End Is the Beginning	254
The Inner Conflict	256
The Cause	258
The Romantic Comedy	260
The Spirit Quest	261
The Meta-Story	262
Short Feature	264
Act One	
Act Two	
Act Three	



Yara Khakbaz / San Francisco, California  Polecam  Photo/5sec



7 Share Your World 266

- GoPro App 268
- GoPro Studio and Edit Templates 270
- Image Quality and Exporting 271
- Forums for Sharing 273
- YouTube: Abe Kislevitz 274
- Instagram: Zak Shelhamer 276
- Facebook: GoPro Bomb Squad 278
- Viral Videos 280

Videos Reference 284

Index 291



Bradford Schmidt, Nicholas Woodman / Sonoma Raceway, California  Handheld  Photo/.5sec



Foreword

Since founding GoPro in 2002 and witnessing the incredible events that followed, I've come to believe our personal interests and passions act as roadmaps for our lives. Passion is often what motivates us to get off the couch and start moving in a certain direction. The direction we choose, over time, becomes our life. Consider this and you'll appreciate the events that brought me together with this book's author and the founding member of GoPro's media production team, Bradford Schmidt.

In 2002, I was out of work and had no idea what to do with the rest of my life. With hopes of finding inspiration on the road, I planned a five-month surf trip around Australia and Indonesia to pursue my obsession with surfing. The irony is that I had my inspiration for GoPro, initially a simple wrist camera for surfers, before I even left for my trip. By the time I met Bradford four months later aboard an overnight ferry to the Mentawai Islands in Indonesia, I was already testing an early GoPro prototype. Bradford and I had both followed our passions to that point in space and time and it was there, on that boat, that we formed a friendship that would one day lead to great things.

In the years that followed, I established GoPro as a small but growing business and Bradford followed his passion for filmmaking to UCLA film school. During that period I met Bradford's childhood friend, Brandon Thompson, and each year I would send the two of them prototypes of GoPro's soon-to-be-released camera for them to test on their adventures. Always honest, they generally weren't too impressed until 2009 when I sent them an early sample of the HD HERO, GoPro's first HD camera. I vividly remember Bradford calling me up, excitedly telling me just what I'd told him the day before: "This camera is going to change everything."

Shortly thereafter, I convinced Bradford to leave the lure of Hollywood to establish what would become GoPro's in-house media production department, GoPro Original Productions. Brandon soon joined and a magic momentum set in. Although a far cry from what it is today, our media production team started with a spark that would help it become what is now arguably the most innovative and creative group of short-form content creators in the world. That spark was Bradford, himself.

Today, Bradford, Brandon, and I work together with GoPro's nearly 900 employees to enable others around the world to self-document and share their interests and experiences like never before. GoPro has become a global movement of visual expression thanks in large part to the inspiring content Bradford and his team have produced over the years. This book is an invaluable window into their creative thinking and summarizes years of experience and insight. Hopefully it serves as a spark for you just as the authors have for GoPro.

Don't forget to follow your passions. They just might lead you to you.

Nicholas Woodman,
Founder and CEO of GoPro



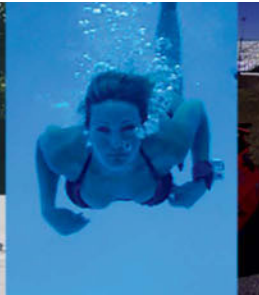
Preface

AS STORYTELLERS AND MEMBERS OF GoPro's media production department, we feel blessed to have been able to contribute to a dynamic company and watch GoPro grow from a tiny startup to the leading international brand that it is today. This book is an attempt to sum up everything we have learned about capturing and editing GoPro content during that time. This is the book we wish we'd had five years ago, when we first started making videos for GoPro. We've taken special care to make the contents applicable to all GoPro users, whether you are a seasoned professional filmmaker or a stoked amateur who has pulled the camera out of the box for the very first time.

The videos featured in this book are direct examples of what is being discussed in the text, and we highly recommend that you watch them as you flip through the pages. There are several ways to access these videos:

- Go to www.peachpit.com/GoProBook, where you will find a hyperlink list of all the videos in this book, organized by order of appearance and chapter.
- Scan the QR codes provided in the video bar using a smartphone or tablet equipped with a QR app.
- Use YouTube or Google to search for the video's title.
- Enter the URL link directly into the address bar of a web browser.
- In the e-book version of this book, you can just tap the link.

With each video, we have tried to give credit to the principal GoPro production artists involved in its creation. This isn't always easy. Crew members and editors often help direct productions, and directors often work with editors in the editing room. Everyone wears many different hats, so we have tried to credit everyone in their primary role to avoid redundancy. Of course, many other unnamed individuals are involved in these projects. We appreciate all the time, efforts, and patience of everyone involved in our collaborative style of filmmaking.



LITTLE WAVE MACHINE

LOVE IT SURFER dudes can snap themselves riding the waves with this fab water-proof action camera. Either take pics with the 3MP Digital Hero 3 or video your moves. It also works up to 30 metres deep, is easy to use, lightweight and straps to your wrist. See www.actioncamerax.co.uk






INTRODUCTION

History of GoPro

As recalled by Bradford Schmidt

IT WAS 2002. I WAS back home after three years of traveling, holding in my hands dozens of 35mm photographs still warm from the printing machine at my local pharmacy. My brother was there, thumbing through the photos with me. I hoped these pictures might be enough to convince him to return with me to a magical set of remote islands that were being whispered about in the surfing community—the Mentawais. Although it had been a surf trip, any pictures of myself actually surfing were conspicuously absent. I had traveled alone, so all the shots were limited to perfect waves without a surfer in sight, taken from the beach before I paddled out. The photos felt strangely empty, considering the euphoria I'd experienced riding those waves.



The results were going to be different the next time, however I scraped together enough funds for another round-the-world ticket and bought an expensive waterproof 35mm camera. Several months later, my brother and I stepped onto the wooden planks of an old ferry leaving from Padang, Sumatra, for the far-flung Mentawai Islands. On the back deck of the ferry, where we strung our hammocks and surfboards, lay a fair-skinned, blonde-haired woman taking a nap. Strange. This was a locals' ferry... typically no Westerners. Then from the depths of a cargo hold filled with fluttering chickens and bleating goats came a distinct laugh, warm and booming. A wild-haired Nicholas Woodman was charming the captain of the ferry with his broken Bhasa and salty grin.

On the overnight ferry, we learned that Nick had graduated from the University of California, San Diego with a major in visual arts, though he had no interest in a normal job. He wanted to be an entrepreneur. He'd started a company called FunBug during the dotcom era, but it had gone bust after a couple of years. Reeling from that failure, he decided to spend his personal savings on an extended surf trip to stretch his mind and gather inspiration for his next venture. Nick also came prepared to document his love for surfing. He'd combined a surf leash, a series of O-rings, and a disposable waterproof camera—the first GoPro prototype.

Over the next two months, my brother, Nick, his girlfriend Jill (now his wife), and I became tight companions, traveling together from wave to wave and island to island. Nick and I connected through our mutual love of photography and our desire to get the shot. We surfed many sessions experimenting with his prototype wrist camera, dreaming of the possibilities of where such an idea could go.





After that trip, I continued on to Africa and traveled for several more years while Nick returned to California to start GoPro. All the while, Nick was busy patenting the wrist strap design and trying to get his company off the ground. Originally, his vision was to develop a wrist strap that was interchangeable with any disposable camera and license the idea to a larger company. But that process proved to be too slow and difficult and Nick determined there was more opportunity in developing his own camera specifically designed for his wrist strap invention.

By 2004, I was living in San Diego working as a surf instructor. One day, I got a call from Nick asking me to help him set up his booth at the local surf industry trade show. Nick and Jill drove down and picked me up in their VW bus. We set up a quaint little booth complete with faux Roman pillars Nick borrowed from his parents and large Kinko's printouts of GoPro's first product: a waterproof wrist camera named HERO. There we were, a tiny little idea surrounded by the titans of the surf industry. As we parted ways after the trade show, Nick handed me a HERO camera to use on my next adventure, working on boats in the Caribbean and surfing in Mexico.





A year later, I returned to California. Jill picked me up in San Francisco and drove me down to Pescadero where their 1971 yellow VW bus named “Lily” waited for me. I was to buy it and live in it while attending film school. Woodman had been developing the first digital version of his HERO camera. Operating on one AAA battery, it could record 10 seconds of low-res video at 240p, somewhere around 20 frames per second, with no audio. He was ecstatic about the possibilities... a tiny video camera the size of a matchbox! Having been entrusted with one of his new prototype cameras, I drove away in my new bus and picked up my childhood friends Brandon Thompson and “Big Metal” Todd Henry and headed south to Baja. Most of our product testing took place around Scorpion Bay. It was there that we recorded the first ever GoPro follow-cam shots and the 1971 VW bus became known as “The Chupacabra.”

In 2007, I was still at UCLA studying filmmaking when Nick released his second generation digital wrist camera, the Digital HERO 3. It captured three-megapixel photos, and was a quite innovative for its time. By then, GoPro was doing well enough that Nick could afford to attend race driving school, another one of his passions. During school, Nick had the idea to strap his digital wrist camera to the roll bar of his car to record video of himself driving on the track. As soon as Nick stepped back and saw his wrist camera mounted in this new way, a lightbulb turned on and Nick suddenly realized that GoPro could be much more than just a wrist camera company.



Digital Hero Soul Arch

“Big Metal” Todd Henry tries out his soul arch at an ultra-secret surf spot in Baja that is definitely not Scorpion Bay. Shot on the Digital HERO in 2006.

<https://vimeo.com/109760084>

Filmer: Bradford Schmidt
Editor: Brandon Thompson





That summer I was headed back down to Baja again with my friend Brandon, and before we left a box arrived from Nick. It contained a few of his Digital HERO 3 cameras, several prototype water-housings, a bunch of adhesive-backed, 3D-printed mounts for attaching the cameras to surfboards, a vented helmet strap, and most importantly, experimental wide-angle lens adapters. Brandon and I used duct tape to attach the lens adapters to the waterhousings and used surf wax to waterproof the lens elements. Somehow, the adapters worked well enough and Brandon and I were inspired to shoot the first (and perhaps the silliest) GoPro story: “The Last, Greatest Epic Spot.”

In the Fall of 2008, Nick gave me a call to say there was no need to duct tape and surf wax seal the wide angle lens adapters anymore. He wanted to fly me to Bali for a week and even pay me. I just needed to bring home tropical barrel shots with the first ever wide angle GoPro: the Digital HERO 5 Wide.



The Last, Greatest Epic Spot

A couple of friends, a VW Kombi, and an end-of-the-world south swell all come together in GoPro's first story piece. Shot on the Digital HERO 3 in 2007.

Filmers: Bradford Schmidt, Austin Schmidt, Brandon Thompson, Cameron Barsanti
Editors: Bradford Schmidt, Brandon Thompson



<https://vimeo.com/109965533>



Weeks later, I walked straight off the plane from Bali to another ASR tradeshow in San Diego to deliver the golden shots. But this time, I didn't find a small booth with faux Roman pillars. GoPro had several big-screen TVs, a motorcycle, a race car, and a sports car in a big open space next to the titan surf companies. Alongside Nick and Jill were Neil Dana, Ruben Ducheyne, Vince Geluso, Damon Jones, and Justin Wilkenfeld. All were friends of Nick's who had helped grow GoPro over the past few years. Nick had hired his college friends on the theory that working with friends made work feel less like work. Not a bad theory, as it turns out.

At that tradeshow, a USC ski crew convinced Justin to sponsor them with two new wide-angle GoPros. That winter, future Senior Production Artist Abe Kislevitz and his friends would make ski videos like nothing we'd ever seen before. Nick later stumbled upon these videos on YouTube and was inspired to hire Abe.



<http://youtu.be/nDMJYrynNA>

USC Ski & Snowboard Video of the Week

One weekend, two cameras, one ski team. EPIC. Shot on the Digital HERO5 Wide.

Filmmers: Abe Kislevitz, Chris Farro, Caleb Farro, Matt Cook
Filmer: Abe Kislevitz





A year later, in August 2009, a little cardboard box arrived at my doorstep. It was actually Brandon's doorstep—I had only just graduated from film school, was unemployed, and was sleeping on his couch. Inside the box was a prototype GoPro HD HERO... 1080p. I was expecting it as Nick had called me the day before to tell me he was sending me his latest and greatest camera. "This is going to change everything," he'd said. Up until that point GoPro felt more or less like a cool hobby idea my good friend had come up with. I picked up the camera and walked outside to shoot some sample footage in the parking lot. Once I came back in and watched the footage on my computer, I started freaking out and called Nick:

"Nick! This camera is going change everything," I yelled.

"Dude, I know! That's what I was telling you!" Nick shouted back.

"So what do you think?" he then asked. "Do you want to move up here full-time and start a YouTube channel for GoPro?"

"Yes, my friend. Yes."



GoPro 2010 Highlights: You in HD

We shot 100% of this video with the HD HERO® camera.

Filmers: GoPro Media & Athletes
Editors: Bradford Schmidt, Abe Kislevitz, Brandon Thompson



<http://www.youtube.com/watch?v=yo3M6EB8kmk>

It seems only a short time, but a lot has happened since then.

It's often said that success can have strange effects on people, especially between friends. There is a fear that the essence of the friendship and the purpose of the things you work so hard to achieve will be lost. Such has not been the case at GoPro. It's still a company of friends—only there are more of us. Nick's desire to bring his friends together on a shared quest has made GoPro a family. Everyone cares about each other as much as we care about the company.

Success hasn't changed who we are, and for that I am so grateful. Jill's laughter today is as infectious as the first time I heard it on the Sumatran seas. Nick's voice retains that resonating warmth, and that curious sparkle in his eye has only gotten brighter with time.

NASDAQ, New York City



By the start of 2014, GoPro had become the No. 1 brand channel on YouTube.
On June 26th, 2014, GoPro became a publicly traded company.
The IPO valued GoPro at several billion dollars.

Capturing a Story

EVERY TIME YOU PRESS RECORD on your GoPro during an experience, you are capturing a story. Every time you play that recording for someone, you are sharing the story. What makes GoPro so powerful is this: That is *your* story you are sharing.

GoPro is a proactive capture device that allows the filmmaker to experience a moment he or she is passionate about, self-document that moment, and then relive and share that moment as a story with others. A GoPro complements an experience rather than getting in between the filmmaker and the experience itself. In this way, filmmaking with a GoPro differs from traditional methods.

There is a saying in film: A story is told three times. Once in writing. Once in production. Once in editing. This idea can be applied to GoPro filmmaking. Initially, a story begins in your head when you come up with the idea and plan it out, usually by writing it down. When you are shooting, the story morphs and is adapted according to the situation. In editing, the story becomes more precise. With each telling, the story gets better. You eliminate the bad ideas and add better ones.

This chapter and the next walk through each stage of the filmmaking process. This chapter covers the first two stages, planning and production, as well as some theory and lessons we've learned in our own filmmaking journey. The final stage, editing, is covered in Chapter 5.





Preparation

Good filmmakers understand the *direction* of the story and the structure from start to finish, while adapting along the way. This requires planning. Sloppy filmmakers just shoot everything and expect to make sense of it later in the edit. You can always cobble something together in editing, but it's painful and less elegant. When a story is truly directed from the beginning, it can become far more powerful.

Story Research and Planning

If you want to create a story, the first question you should ask yourself is this: What am I passionate about? What do I want to experience? Maybe you just built a bike jump with your buddy in your backyard. Maybe you always wanted to go to Peru. Maybe you saw a photo of an albino whale off the Great Barrier Reef and you want to swim with it. Finding that passion is the starting point. Proper research and planning can set up the experience to become a great story.

Once you have the idea, explore YouTube and Google to gain knowledge and understanding of the locations and characters. Look at photos and Facebook pages. Research every website on the topic you can find. Listen to interviews of characters you're interested in—they can provide a sense of depth in your story. Make phone calls or Skype with potential subjects who live in the area or have previously traveled there. Consider logistics: permits, visas, immunizations, weather, and safety. How much time is required to properly experience what you are passionate about—allowing for complications and improvisation?

And then there are aesthetics. In traditional cinema, entire departments handle art direction, costumes, and the like. An audience will quickly judge your characters as authentic and believable or not based on appearance. Spend time figuring out the colors, clothing, and gear—and how they interact with the setting—to make an image sing. If you're diving underwater, for example, a solid black wetsuit and hood have zero expression and personality. If the gear you want to use is involved or expensive, contact the companies directly to see if they will send or sponsor equipment. This can be one of the most enjoyable parts of the pre-production stage, and it helps your mind start visualizing creative ideas for the film. This visualization can propel you into the stage of writing or sketching the story's scenarios.

Most importantly, consider what that ultimate moment of your story will be. The moment that will be so amazing you can close your eyes and practically feel it. Because that moment will be the climax—the most important building block of your story.

Story Building Blocks

Story building blocks are the basic foundation on which your story can be built. When preparing for a production, we always plan on capturing the following general building blocks:

- **Introduce the environment and characters.** Including yourself. Who are we and where are we?
- **Capture the climactic moment.** This is what you came here to do and the reason the audience will watch your story. Plan coverage for that moment.
- **Document the resolution.** This is an easy one to forget. Whether it's victory or failure, capture it all.

The climactic moment is almost always planned, because it's the whole reason you are telling the story. On an average story shoot, we plan for five days minimum—one day for scouting, three days for filming, and one day as a buffer for the weather. The sooner you can capture the climactic moment, the better. You can spend the remaining days covering the other building blocks.

In preparation, figuring out the climax to aim for and communicating it to everyone beforehand gets you most of the way to success with fewer surprises. When creating the climax, the filmmaker must set up the right scenarios in which genuine and authentic actions occur. Even in traditional scripted filmmaking, the best directors are not the ones who tell actors to stand here and say this exact line. Rather, they try to create a scenario in which characters feel and act naturally. The same principles apply with documentaries or with GoPro filmmaking.

The best climactic scenarios involve a character who overcomes an obstacle. When telling a GoPro story, the obstacle is often inherent to the experience. For example, let's say you were about to go paragliding with a hawk today, *but* it's windy and dangerous and the guide doesn't speak your language. Capitalize on these *buts* and document them. With experience, you will learn to adapt your story during production whenever a sudden obstacle might create tension that builds toward the climax.

So, now that you've figured out *what* you're going to shoot, you need to think about *how* you're going to shoot it.



Camera Gear

When assembling gear for a shoot, most of the filmmakers at GoPro (called production artists) begin by making a list of everything they could possibly need for any situation. With GoPro, the temptation is always strong to be an absolute gear hound. Spread all the gear on the floor and look at the empty bag. Then, ask yourself, “Am I *really* going to use this?” Envision the weight of it all on your shoulders—while carrying it through the airport, loading it into cars, unpacking all the bags, repacking it for early morning wake-ups, reorganizing it late at night after a long day. Sometimes, too much gear will paralyze you. It takes a few productions to understand that it’s not what you might use, but what you are *likely* to use. If you can narrow down to the essentials, then you’ll have room to throw in a couple of curveball gear ideas for that one shot you’ve always wanted to get.

Novice production artists will spend half the morning looking over gear and debating what they’ll use during the day—meanwhile, the beautiful dawn light is disappearing and your character is sipping coffee, ready to share something poignant while looking out the window at a mountain of fresh powder. All you really needed was a rolling camera. The steadicam that takes an hour to balance might give you a cinematic move, but it won’t bring back the genuine moment you missed, and that could have been the heart of your story.

It’s wise to carry a camera, LCD BacPac, and two charged batteries in your pocket on a shoot at all times. Also remember to pack a few mounting extension arms and keep them handy while shooting. These small parts can be useful for mounting to anything and tweaking the camera’s angle. Finally, don’t forget audio gear. Sound is extremely important. Consider whether a waterproof backdoor, skeleton backdoor, or The Frame is the best sound-related accessory for the job. As good as the HERO4’s audio capabilities are, if you’ve got an interview and there’s any wind, an external mic may be the way to go.

Audio Gear

Proper audio gear is essential. Absolutely essential. Good sound is like the air you breathe—you don't notice it until it's bad. Depending on how loud the surrounding environment is, the HERO4 has surprisingly good audio when used with a head strap, helmet, a Chesty with The Frame mount. For interviews in a quiet environment, you can often get away with using the camera's internal audio. However, to guarantee great audio, we always use a lavalier or shotgun mic just in case. We usually stash in the backpack a set of lavaliers for each main character or a shotgun mic in case something unexpected begins to happen.

Currently, the our media production teams use a Countryman waterproof lavalier with an 1/8-inch plug that connects into a USB adapter. It's decently priced and durable, and it provides great sound when clipped or taped onto a lapel/shirt. In conjunction with a Chesty mount, you can simultaneously capture great audio and POV video during an active interview. If the Chesty mount is not aesthetically pleasing in the shot, simply dedicate the camera to audio. Place the unit in the subject's pocket and press record. It'll capture audio for two hours, at which point you can swap the battery if it goes dead.

Always use foam or fur to help with wind noise on the lav mic. K-Tek, creator of the Norbert, also sells great small furs for lavs. It's wise to back up your interview audio with a shotgun mic, if possible. A number of good short shotgun mics with 1/8-inch plugs are available. Rode makes a great shotgun called the VideoMic Pro, but its rubber shock mounts don't hold up well to rugged use. For something more durable, Shure makes a great short shotgun mic called the VP83.

If using a dedicated audio camera or multiple cameras during an interview, you may need to sync the sound together in a dedicated sequence on your editing timeline. You can do this manually by lining up the waveforms or by using programs such as PluralEyes. If you are recording music professionally, it goes without saying that it's best to use dedicated audio recording equipment, rather than camera audio or a lavalier, and then sync that audio with the video on the timeline.

What's in Your Pack?

Here are the essentials that we as GoPro filmmakers carry in our backpack on any given production:

- 4 to 6 cameras in waterproof cases with quick-release (QR) buckles
- 4 Frame mounts with protective lens covers and QR buckles
- 1 LCD BacPac with backdoor
- 1 Battery BacPac with backdoor
- 1 Smart Remote and charger
- 10 Adhesive Mounts (curved, flat, and surf)
- 1 grab bag of mounts (quick-release buckles, J-hooks, extension arms, etc.)
- 1 Chesty (chest harness)
- 1 head strap
- 1 mouth mount (experimental)
- 2 gnarwhal long extensions with screws
- 1 Handler grip mount
- 1 handlebar/seatpost mount
- 1 roll bar mount
- 1 Jaws mount
- 1 3-Way Extension Arm
- 2 tripod mounts
- 1 RPS pole
- 1 medium JOBY GorillaPod
- 1 charger for 2 batteries with cables
- 4 extra batteries
- 4 micro SD cards with readers
- 2 anti-fog packs
- 2 GoPro Floaty Backdoors
- 1 laptop (15-inch)
- 2 mini hard drives (1 TB each)
- 1 Norbert
- 2 mic adapters (3.5mm)
- 2 lavalier mics
- 1 shotgun mic



Production

Telling a story with GoPro is an art unto itself. In our media department, we refer to individuals with this skill as production artists. Production artists are like independent directors. While shooting on a production, they must be conscious of camera placement, coverage, sound, light, recording interviews, logging and reviewing footage each day... all while being aware of the story as it evolves around them.

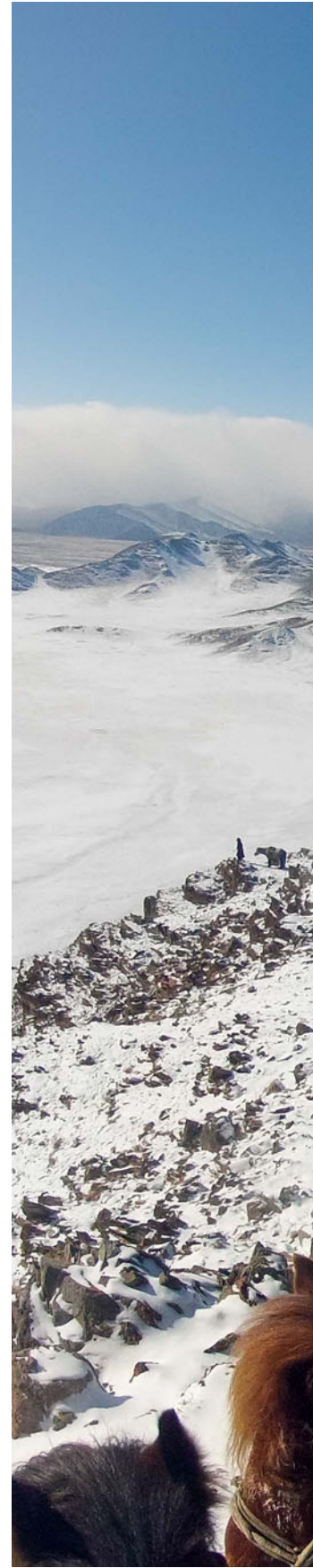
Trapping as Coverage

Nathan Myers, editor for *Surfing* magazine, first coined the term *trapper* for how we shoot with the GoPro. During the Bali shoot for the HD HERO2 launch video, Myers observed two of us methodically strapping and sticking multiple GoPros to four surfers, pressing record, and heading out. Two hours later, we all came back in, reviewed the footage, tweaked the setups, and repeated the process. Session after session after session. Myers observed that this was a fundamental difference in content creation. We weren't chasing shots. We were *trapping* them. We set up the scenario and waited for the moment to come to us.

Limitation can be the best motivation for creativity when you are forced to invent new ways to get the shots you need to tell the story. As an example, before GoPro, skiing was mainly filmed with a long lens to capture the skier in context with the surroundings. With GoPro, that isn't an option. The solution is to put a GoPro on the end of a ski pole and go off the jump *with* the skier. The inventive follow-cam shot is more engaging, and all because of a limitation. This concept applies to most activities and is a big part of how GoPro has created a whole new method of filming.

In classic cinema, *coverage* is defined as the use of multiple camera setups and shots to comprise or "cover" an entire scene. Traditionally, there is one shot called a master, which is a wide shot covering the entire scene from entrance to exit. And although you can shoot an entire scene in one shot, this doesn't leave room for changes in the edit. In editing, having more coverage allows flexibility for continuous cutting of an action from one perspective to another, letting the audience digest a moment or scene from multiple perspectives to achieve maximum impact.

Lauren McGough / Mongolia  Handheld  Photo/5sec





Shot Classification

When planning for coverage, it's important to understand the different types of shots, what they are capable of capturing, and how they will be used in editing. We use five traditional cinema terms to classify GoPro shots:

Wide shot: The primary focus of a wide shot is the setting and then the character(s) within it. This is standard and typically static. The wide shot is used as reference for the rest of the coverage. For GoPro, a wide means the camera is not usually attached to the character. The tiny camera also allows the filmmaker to transform a static wide to a dynamic moving wide. Steadicams, poles, handheld gyros, or drones are the best tools for this. We typically shoot both a drone and a follow-cam for coverage, usually running the scenario twice so the shots are clean. Statics still have their place for establishing, pacing, and beauty. In the climactic moment, however, a dynamic moving master can be incredibly impactful.

Full shot: The primary focus of a full shot is the character's full body interacting with the setting. This is achieved by mounting the camera several feet away from any part of the body via equipment or a long extension such as a pole, spinner, surfboard, or ski tip.

Medium close-up shot: As the camera moves closer, the primary focus of a medium close-up shot begins to shift from the setting and character's body to the face. Sometimes, only half the body is seen and can feel larger than the setting itself. To achieve these, mount the camera either onto or very close to the body using mounts such as the 3-Way extension arm, Handler grip mount, spinners, or backpack mounts. These are some of the most popular GoPro shots.

Close-up shot: The focus of a close-up shot is solely on the character's face while the setting fades into the periphery. The character's emotion feels larger than life as it takes over the entire screen. Use mounts such as the gnarwhal or handheld.

POV shot: With a POV shot, the audience is experiencing everything from the subject's perspective. The inclusion of hands, arms, and legs within the shot gives the best orientation and sense of immersion. Use mounts such as the head strap, helmet, or Chesty. While POV shots are obviously a staple for GoPro, in traditional coverage they were considered a specialty shot and used only on specific occasions.

John Jackson / The Andes, Chile

Full shot



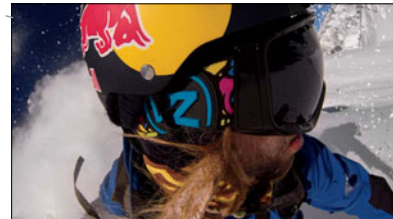
Dynamic Wide shot



POV shot



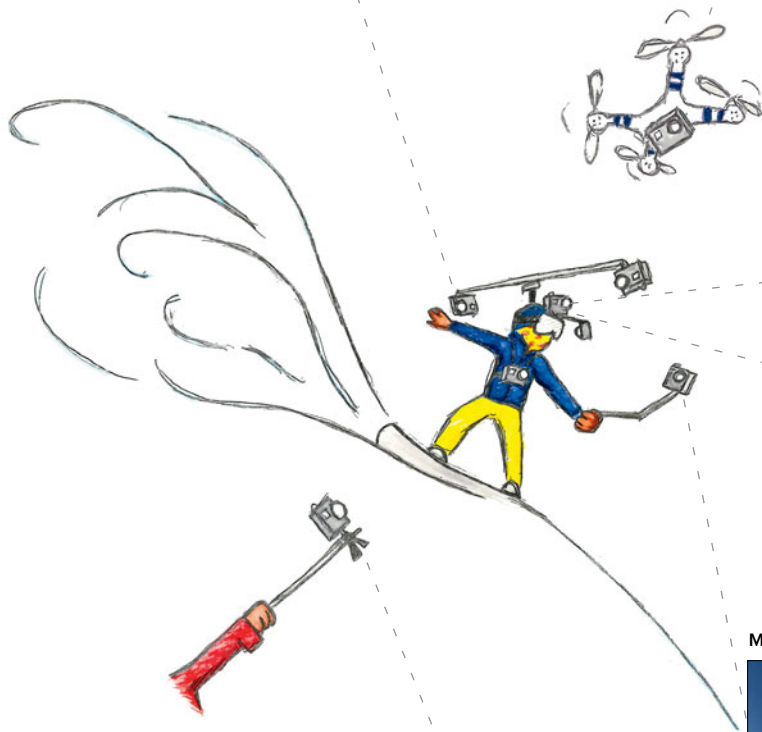
Close-up shot



Medium close-up shot



Wide shot



Primaries and Secondaries

Traditionally, directors use storyboards and shot lists to plan their shots. At GoPro, we generally don't storyboard each sequential shot. If it helps you, however, then by all means do it. We often draw camera and mount setup diagrams for important scenes. Whether a character or vehicle, draw a stick figure with GoPro cameras and all the potential mounting options. Share the drawings with the characters beforehand so that everyone is prepared. This will eliminate surprises and misunderstandings while filming.

We generally shoot what are called primaries and secondaries. *Primaries* are shot first, especially when the scenario is new and unknown, and they usually consist of wide shots and POV coverage. The primaries provide the essential angles you need—so even if everything else goes wrong, you have these to fall back on when creating the video. *Secondary* setups involve backpacks, poles, armatures, and gnarwhals—generally, things you don't want to see on the character within the wide shot. The secondary setups are typically our most inventive and experimental mountings, producing unique angles you've never seen.

Well in advance, the filmmaker and character should decide what POV mount is as natural a part of the character's ensemble as a shirt or a hat would be. Seeing the POV camera in the wide shot is generally fine, and can lend a sense of realism as if the characters are filming everything themselves without any kind of "film crew." Primaries are usually from head- or chest-mounted cameras. This uncomplicated approach keeps the characters from being distracted as they experience the scenario for the first time. The filmmaker can then watch the action in order to educate himself or herself on where the secondaries should be. Once you've thoroughly nailed your wides and primaries, move on to your secondary setups—the money shots. Secondary setups can be awkward, distracting, and sometimes complicated for the character to use, so be willing to adapt and improvise. Often, we'll repeat our primary angles while filming secondaries, just for additional footage.

As an example, while shooting in the Bahamas for the HD HERO2 Dive Housing launch, we needed to capture a climactic scene where two characters rode a tiger shark together. The primary setup consisted of Mark Healey and Roberta Mancino's head-mounted GoPros and a single wide shot from cameraman Andy Casagrande. We introduced the secondary setup on the last day, and included a pole mount attached to Healey's waist and a leg mount on Roberta's jet boots. The wide shot and POV head-mounted GoPros were great and would've made a solid scene, but Healey's secondary mount intimately captured both athletes simultaneously connecting with the shark and put the magic into the climactic scene.

Before embarking on an adventure, always ask yourself, "What's my next unique shot?" We always aim for one new type of shot every production, something we haven't seen or tried before. Sometimes it works, sometimes it doesn't, but it forces an artist to be progressive and continually improve.

Secondary



Secondary



Secondary



Primary



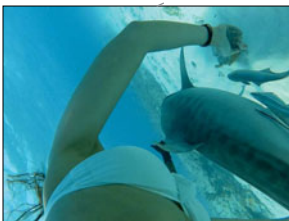
Primary



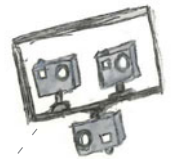
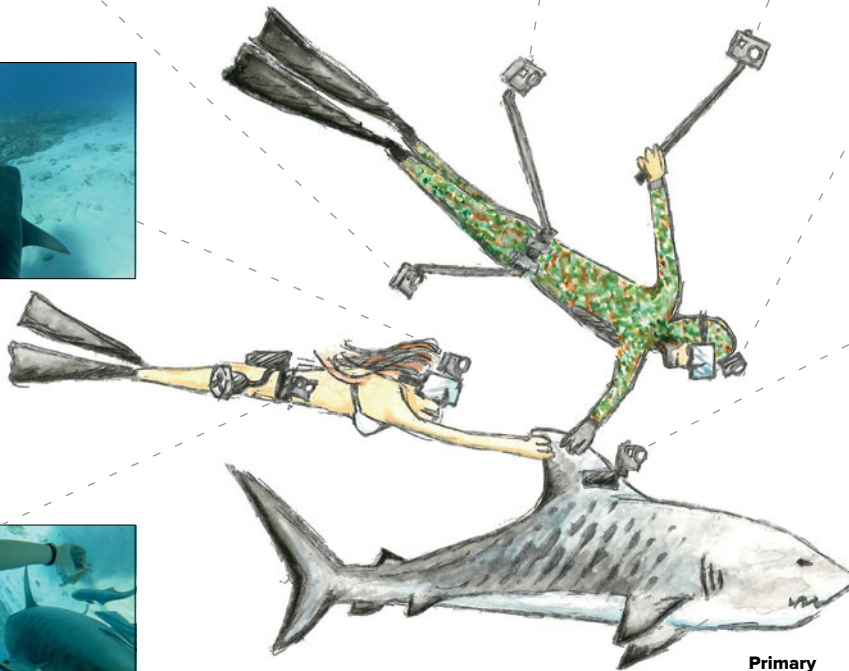
Secondary



Secondary



Primary



Light

Light plays a crucial role in capturing impactful footage as well as emotion for your story. On productions, we often schedule a specific afternoon or even full day to scout each location and understand what is best for lighting. As in all outdoor photography, dawn and dusk are the most ideal conditions. In the HD3+ shoot “Moab Towers and Magic Backpacks,” the light greatly complicated production planning and execution. We scheduled four days to film the multi-pitch climb up the Fisher towers and then a BASE jump off. This also included time for interviews and establishing shots. On the scout day, we surveyed the towers and divided the story into three building blocks. An Initial Ascent up the tower for the introduction, a Final Ascent up the twisting formation called Ancient Art (which leads to the climax), and a climactic BASE jump off with a floating resolution in the air.

Ancient Art rises nearly a thousand feet above the desert floor, facing west. Each section of the video took place on a different part of the tower and had different lighting requirements. The sandstone chimney that comprised the Initial Ascent only received light from 10 a.m. to noon. The best light for the Final Ascent occurred right after the sun peaked over the surrounding cliffs, at 8:30 a.m. The BASE jump was best filmed at dusk when the sunset illuminated the rock spires to a glowing red and filled the valley with magical light for the climactic beat. This meant that the athletes and crew had to be in position for all these crucial times. When factoring in the wind, weather, and other variables, each successfully filmed scene became something of a logistical miracle.

Capturing the climax was the most difficult of all. During the summer months, the sun drops quickly, limiting our magic hour to, at most, 20 minutes from 7:10 to 7:30 p.m. Wind was an X factor that could make or break the shoot. As the sun dips, the desert cools down, creating gusts and updrafts in the late afternoon. Anything over 10 mph is unsafe for jumping. So at 7:00 p.m., Ashburn and Miller had to be at the top of Ancient Art and poised to jump. The crew needed to be in place with all ten cameras rolling, both quadcopters ready to go, and all of us waiting for the wind to die down before the sun dipped below the horizon.

Why all this work and coordination for only several seconds of freefall? You’ve already committed the effort, time, and money to travel somewhere. This is the climax of the story—the magical moment the audience has been waiting for. Make the moment the most impactful it can be with the best possible light.



Moab Towers & Magic Backpacks



Hayley Ashburn and Marshall Miller ascend and leap from Ancient Art in the Fisher Towers in Moab, Utah. Shot on the HERO3+ in 2013.





<http://www.youtube.com/watch?v=fVcV9ltdZ8w>

Director: Bradford Schmidt Producer: Yara Khakbaz
Crew: Mike Pfau Editor: Ryan Truettner



Colin Guinn  Drone  1080p60 Medium



Hayley Ashburn  Hand Mount  1440p48



Hayley Ashburn  Helmet  1440p48



Low Light

GoPro was conceived with outdoor settings in mind. Our original HD HERO sensor was specifically designed for performance in bright sunlight, not for dark interior lighting. But GoPro's ability to capture in low light has increased by leaps and bounds since then, and the HERO4 Black leverages its new processor and updated Protune settings to deliver the most stunning low light performance, yet.

At GoPro, we always set the ISO or gain to 400 for video. This will cause the camera to crush the blacks regardless of the lighting conditions, keeping the processor from ramping the gain and creating image noise. The featured Tony Royster video is a great example of how an ISO setting of 400 can be used to create a dramatic scene. The interior lighting setup and projections were controlled with the understanding that this new ISO locking feature would be able to handle the surrounding dark curtains and allow them to fall into black without pumping up the gain and noise.

Frame rate affects footage quality in low light. In essence, the faster the frame rate, the less time each frame has to expose properly. At 24 or 30 fps, each frame has four times the ability to register light than at 120 fps. Shooting high frame rates during lower light or cloudy scenarios yields grainy and blurry images because the camera doesn't have enough time to expose each frame properly.

GoPro has also introduced an Auto Low Light mode for users who may not be as conscious of light levels and frame rates. In this mode, the camera detects if the light drops below an acceptable level and automatically slows down to 30 fps. For example, if you are recording at 1080p60 and happen to step indoors, the clip will drop to 30 fps to allow for better exposure. The Auto Low Light mode simply duplicates each frame to keep the clip at a constant 60 fps for playback. While this isn't ideal for editing, precious footage could be salvaged. However, we encourage you to always be aware of lighting conditions and be proactive in changing camera settings as conditions change, rather than using an automatic mode if your goal is the ultimate in image quality.

Edward Ma, Glitch Mob / Red Rocks Amphitheatre  Adhesive Mount  Photo/2sec



Tony Royster Jr. – Drummer's Odyssey

Tony Royster Jr. discovered his calling in life was to play the drums; he was 3 years old. By the time he was 11, he was a child prodigy. Shot on the HERO3+ in 2013.

Director: Jordan Miller
Editor: Gabriel Noguez
Producer: Jaci Pastore



<https://www.youtube.com/watch?v=kOY7BeZCY-U>

Directing the Interview

Everyone has a genuine story to tell. Good interviewing depends on the interviewer's ability to gain the subject's trust and help them deliver that story in an authentic way. The easiest way to accomplish this is to make the interview an engaging conversation instead of a question-and-answer session.

A typical GoPro interview setup combines a short shotgun on top of a Norbert with two cameras. Each camera is set to different FOVs, such as 4K Wide and 2.7K Medium. Medium FOV limits any facial distortion and feels more natural. Keeping an interview rig within close reach is good practice because interviews can happen naturally or as a reaction to a situation. Nothing sounds more genuine than the emotion of the moment.

When directing interviews, remember the following principles:

- Do your research beforehand. It's good to ask for explanations and clarity, but don't arrive clueless. An informed interviewer gains the subject's trust.
- Double-check audio levels and recording. Nothing is worse than doing the same interview twice due to technical issues.
- Turn off the blinking red light on the GoPro. It can be distracting and remind the subject they are being recorded, which makes them self-conscious.
- Keep the lens at eyeline. Too high or too low can be unflattering, unless it is a deliberate thematic choice.
- Don't ask questions that can be answered with a "yes" or "no."
- Tell your interviewee to reformulate your questions as the first part of the answer. This provides needed context to the answers in editing.
- Be conscious of keeping the subject's audio clean. Don't interrupt the end of his or her lines when conversing or asking the next question. For encouragement, offer a silent nod or smile.
- Be aware of voice quality, pacing, and energy. If the subject is speaking too fast, calm them down with deep breaths. Do physical exercise to get a flat or bored subject's heart beating. When someone is energized but speaking slowly, it adds weight to the words.



Jordan Miller, Bradford Schmidt / Sumatra, Indonesia



Sam Lazarus, Bradford Schmidt, Kerri Wolter, Walter Nesor / South Africa



Bradford Schmidt, Ingrid Visser / New Zealand



Bradford Schmidt, Mark Addison / South Africa

- Keep response questions clear and concise. Avoid direct address so subjects don't become self-conscious. For example: "Describe that moment" instead of "Tell me exactly what you were feeling." This subtly focuses the subject on the experience instead of the present interview with "you" and "me."
- Keep the GoPros rolling after the interview is "over." Subjects will relax when the perceived pressure of the interview has ended. Sometimes, you'll be chasing after a genuine quote and as soon as the interview is over, they casually deliver gold.
- Keep a notepad for reference. Make sure you have covered the five Ws: Who, What, Where, When, and Why.

Static Interviews

The classic "talking head" is a *static interview*. Static interviews are a necessity for large heavy cameras that require tripods and are difficult to move around. GoPro production artists try their best to stay away from static interviews, because they are traditional and lack energy. Technological advancement in our 5 oz. cameras easily allows for dynamic and active interviews. That being said, there is something about a beautifully composed portrait of a subject with a gorgeous background. If you are going to shoot a static, shoot it well. A very slight bit of movement from a slider with layered background elements will feel more dynamic. If you don't have a slider, try to make your static unique. The video example "Masters of Indo" places the main characters, Marlon Gerber and Varun Tanjung, on the ground, lying perpendicular to each other. An interview six inches off the ground is unusual.

The interview is part of your story, so use it to tell even more about the character or the theme. In "Masters of Indo," we were attracted to the tree during the shoot because it reminded us of what the story was about—a family tree, the inheritance of a surfing dynasty, handed down to each protégé descendant. In the middle of the interview, we asked the nephew, Varun, to go swing on the rope. This allowed the uncle, Marlon, to open up as he was otherwise guarded in his nephew's company. This also gave us the ability to break up the interview in editing by cutting between the two's POV cameras, which made the interview childlike and playful. It also offered a great visual metaphor for the story: Marlon is rooted in the family tree, looking up and forward in time at Varun, who now has the same choices (and perhaps fate) as Marlon once did.

The analysis may seem silly or too deep, but the thought the filmmaker puts into a story are the layers the audience may (or may not) read into. If the thought isn't put in to begin with, then the layers won't be there.

Active Interviews

Active interviews can open up a world of layered storytelling. Most people have a difficult time being themselves in front of a lens, especially if they are staring right at that lens. GoPro's size goes a long way in making the camera invisible to the subject. Distraction is the easiest way to help the subject forget the camera is present. Strap the cameras on, turn the blinking red lights off, press record, and walk around with your interview subjects. Let them show you around, interact with things and other people, and they will naturally begin to tell you a story from the past. Once it seems as if they've forgotten the cameras are even there, begin to engage in a deeper conversation.

The “World of Gavin Beschen,” featured in Chapter 6, is an example of an active interview. Beschen is a naturally shy person, and placing a camera in his face wasn't going to create the right atmosphere. Strolling down to his home break and around his garden allowed him to relax. Paying attention to his words and asking open questions led to natural conversations about his passions in life—his family and daughter.

One of the most cinematic techniques for active interviews is using a steadicam or handheld gimbal. Floating around a character as they are in the midst of showing you the surroundings and what they are passionate about can be dynamic and inspiring. “Our Orangutan Brethren,” featured later in this chapter, is a good example of an integrated steadicam interview. This is classically referred to as a “walk and talk,” in which the subject is shot from the front and led by the filmmaker, who is walking backwards. In the final ascent leading up to the freedom of Suri the orangutan, we interviewed Peter Pratje as he brought the crew to the release site.

Walking backwards while filming can be tricky—it usually requires a spotter and decent path. It's important to be conscious of layering background elements when possible to help create a dynamic sense of movement. In this case, the jungle provides ample layering. Used properly, a technique like this can really emphasize a certain part of the story. Pratje's walk and talk gave the audience the feeling that the story was moving somewhere important, which it was: toward the final climax of Suri's release.



Masters of Indo

Marlon Gerber fosters his protégé nephew Varun Tanjung in the ways of Indonesian surfing. Varun has a choice, just as Marlon did. Shot on the HERO3+ in 2013.

Director: Bradford Schmidt Producer: Yara Khakbaz
Crew: Jordan Miller, Adam Instone Editor: Ryan Truettner



http://www.youtube.com/watch?v=_UUJJQ02n0

Interview Theory



Of the five Ws—who, what, where, when, and why—the “why” is the real question you need answered, and it often serves as an underlying theme of the story. It’s the question we as humans struggle with and try to answer our entire lives—and the audience is no exception. Nevertheless, the direct question, “Why do you do what you do?” is for a subject one of the hardest to answer. Just ask it of yourself. Your answer will probably seem vague, generic, and unsatisfying. Direct “why” questions typically yield indirect answers, but a series of indirect questions can reveal answers that even the subjects themselves are not fully aware of.

Getting to the root of the “why” question starts with earning the character’s trust. Using good communication practices—such as looking the person in the eyes, showing respect, and not interrupting—all help do this. But trust really starts with people being able to identify with one another. The best interviews are those in which the interviewer-interviewee barrier breaks down. Make it a two-way conversation and not an investigation. Come prepared with a story about yourself that your subject can identify with. Maybe you’re talking to a BASE jumper and you tell him about the time you were scared of heights as a child. Making yourself vulnerable compels them to open up as well. Subjects almost always reciprocate with a story of their own. Connection and empathy go a long way toward gaining trust.

You should be interacting and conversing with the subject(s) as much as possible during the first few days of the shoot. Continually ask yourself what makes them tick. Observe them and test them out with a few light inquiries to get a sense of who they are. Jot down notes and begin formulating a list of interview questions. It’s good practice to have the subject begin an interview by stating his or her name, origin, and profession. Then have the subject describe the present situation and purpose. These are good warm-up questions and provide an informed baseline to work from later in the edit when context is needed. Once they are answered, however, it’s best to spend all your time and energy with the most important question: why?

The questions you’ve prepared aren’t set in stone. They are a guide. Always be willing to lead the interviewee along a different line of thought, or to challenge your subject. In the “Supercross New Year 2013” video, Ryan Villapoto is practiced and understated in his interviews. Both he and James Stewart have done plenty of them, so the process must be mechanical for them. During the interview Villapoto states, “I race motorcycles because I grew up doing it. It’s the only thing I know. Now it’s my job.” The interviewer nods and moves on with another question. An opportunity was missed. He could have responded with, “So it used to be fun as a kid, and now it’s just a job for money?” This kind of challenge could have transformed the mechanical Ryan into a passionate Ryan, defending why the sport is meaningful to him.



Andy Casagrande, Roberta Mancino, Bradford Schmidt / Bahamas  Norbert  Photo/5sec

We all want to be understood, and that innate human need always shows itself in one way or another—tone, body language, analogies, and so on. We are subconsciously telegraphing others in order to be understood. Pay attention to the signals and they will dictate the course of the interview. Maybe the character is trying to express an issue or problem they have but won't directly say it. When you get to a trusted and deep space with your character, there may be awkward silence or pregnant pauses. Don't be the one to fill the silence—let them do it. The interviewer's job is to create a safe place and gain the trust needed for the subject to open up. Trust is earned, not given. And it is the filmmakers' responsibility in editing to use that trust wisely and be true to that character.

It's useful to prepare your list of guidance questions over the first few days of a shoot, arrange them with a few warmup questions, and then throw in a challenging one relating to the thematic "why." Progress the interview in overlapping circles with each new topic touching previous important ones. Continuously loop back and remind the subject of certain ideas or feelings they spoke of earlier. Natural repetition can help arrange sentences cohesively and concisely. As a filmmaker, you will notice the necessity of this in editing, when you have to cut down or rearrange voiceover.

This kind of progressive overlapping technique was used while filming in the Bahamas for the HD HERO2 Dive Housing product launch with Mark Healey and Roberta Mancino. Over the first few days, we noticed a few commonalities between the freediver and the skydiver, which helped us arrange our list of guidance questions. Both feared other humans more than wild animals. Both have issues with loss of control, but derive purpose and pleasure from situations in which nature has total control over their life. Both subjects shared an interesting thematic interplay of euphoria through fear and loss of control which manifested in their dreams. Each interview lasted two-and-a-half hours with many questions adapting to how each was responding to the fear. We have included the following list of guiding questions used while interviewing Mark Healey for "Director's Cut: Shark Riders" (indirect "why" questions are in bold).



Supercross New Year 2013

James Stewart and Ryan Villopoto are starting 2013 with style. Get a glimpse of each rider's philosophy and training ground as they prepare for the 2013 Supercross Season! Shot on the HERO3 in 2012.

<https://www.youtube.com/watch?v=BoTha-S1leU>

Producer: Jaci Pastore Filmmers: Kyle Camerer, Will Posey
Editor: Matt Sanders



Interview Questions: Mark Healey

Can you state your name and where you're from?	(who)
What comes up first when you Google yourself?	(who: profession and origin)
Do you think of yourself as that person?	(indirect why)
How deep have you gone?	(what: his interest in freediving)
How do you train for that?	(go through breathing exercises to calm him)
What's the deepest you think you'll go?	(indirect why: push him on his purpose and goals in life)
What's your power animal?	(what: his interest in sharks and wildlife)
If reincarnated for all the things you've done, would it be the same animal?	(indirect why: does he respond to anything spiritual? God?)
Ever been bitten by a shark?	(when: tell us a story)
What's the scariest break you've ever surfed?	(when: his interest in surfing)
What's scarier: great white sharks, big wave hold-downs, or shallow water blackout?	(what)
Has there been a situation where you've felt out of control with sharks? With surfing?	(when)
Describe the feeling of being out of control underwater.	(indirect why: fear)
Where is the environment you like to control?	(indirect why: he previously talked about interior mind control as self-control)
Have you ever heard of lucid dreaming or had a lucid dream?	(when or who)
Are people or nature easier to predict?	(indirect why: control)
Do you have nightmares? Have you been eaten by a shark in a nightmare?	(share your own nightmare here to identify)
You watch and monitor shark behavior to sense danger. Do you monitor people in the same way? Is it different?	(indirect why: control)

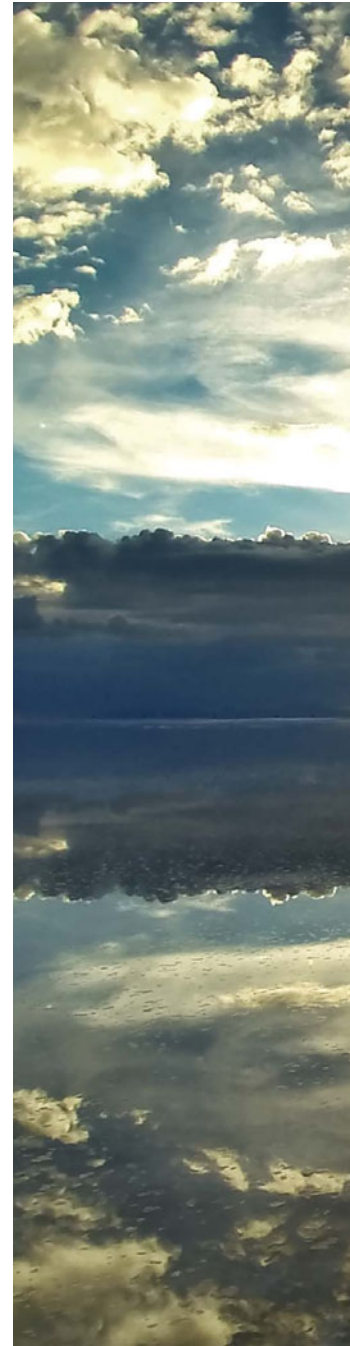
Environmentals and Time-Lapses

Environmentals are shots that depict a story's location, often also showing the characters within it. They can be used as a video's opening, resolution, to bridge between story beats, or to convey the passage of time or journey. They can be either video or time-lapses typically shot during the spare moments on location. On the scouting day, always note where the sun rises and sets, and keep an eye out for any features or opportunities to shoot subjects that draw insightful elements into your story.

For video environmentals, set up foreground elements to give depth. If you can get the character in the shot, then all the better. We used this technique in "New York City...a Day in the Life," featured later in the chapter. We constructed a clothesline on top of a random NYC skyline apartment building, and Ryan Sheckler skated behind on the bridge multiple times while we faked wind by shaking the line. Small details make environmentals shine.

When it comes to time-lapses, there are two different types. One is an actual photo time-lapse shooting at a designated interval, and the other is a video time-lapse sped up. For video, we tend to shoot 4K30, in case something doesn't look natural when sped up. Windy trees, waves, or rivers can look jittery in a photo time-lapse, so having more frames to work with gives the editor more control. However, we use photo time-lapse mode for sunrise and sunset when good exposure and low light is needed or when shooting over extended periods of time. For extended time-lapses, we usually use a 64 GB memory card and a Battery BacPac or USB power.

Environmentals are best used to introduce and underscore themes in a video, as in "Remembering Sion Milosky." The opening time-lapse, captured with an egg timer, shows the abrupt appearance and departure of a silhouetted surfer. It's a nice introduction for a video about loss and the shortness of life. For the final shot, we see a small stream running out into the ocean waves. It's a peaceful shot, as if we are seeing Sion's spirit flow back to mother ocean, his home and resting place. This static environmental gives resolution to the story.



Remembering Sion Milosky

This video is GoPro's tribute to Sion Milosky: loving father, experienced waterman, and big wave charger. He will always be remembered. Shot on the HD HERO in 2010.



http://www.youtube.com/watch?v=fn5_ivjLa_Y

Filmmers: Bradford Schmidt, Jordan Miller
Editor: Brandon Thompson







Photos

During production, we generally alternate between photo and video on certain mounts when the moment and lighting are right. Usually, the best photos are captured with secondary setups such as a 3-Way extension arm, backpack mount, or gnarwhal mount, which all do a good job of capturing the subject within his or her surroundings. These angles are very unique to GoPro and can tell a complete story in a single shot.

Time-lapse photos captured at 0.5 second intervals is the go-to photo mode for just about every production. There may be a thousand photos to sort through at the end of a session, but .5 second intervals will capture that quick moment of high action. It's good to remember, however, that in low-light or indoor situations, it's best to switch to photo every 2 second mode for the best exposure. (The Night-Lapse section in Chapter 1 gives additional information on shooting photos in low light.)

If the activity or action is calculated and brief, such as jumping off a waterfall, then burst is the photo capture mode of choice. Using the Smart Remote or GoPro App can achieve even more precise results when capturing a 30 photo burst over a 1-second period. One thing to keep in mind when timing a burst photo sequence is the 1-second delay that occurs from the remote or app to the camera it triggers. Sometimes, we use 30 photos every 2 or 3 seconds to ensure the moment is not missed.

When framing and mounting for photos, it's best to think differently from video. For example, turning the camera sideways for a vertical photo is usually more advantageous for self-capture. There is a tendency to point the camera at your face, but with such a wide lens, the upper half of the photo will consist of sky while the bottom half of the body will be cut off. It's best to aim the camera at your midsection or belly button to achieve proper framing for self-capture. When mounting a camera, stability and vibration are usually major concerns for usable video. However, in .5 sec or burst photo mode, shake or vibration usually don't matter. We ziptie long poles off vehicles, which bounce around. We even toss the camera high in the air for unique overhead aerial pictures. All you need for a good photo is great light and one split-second where it all comes together.

Cort Muller / Tignes, France  Handheld  Photo/.5sec

Experimentation

Wait... they did that with a GoPro?

An ordinary GoPro can achieve extraordinary things. Seeing Felix Baumgartner take several GoPros up to the harsh, freezing environment of Earth's stratosphere in order to document his free fall from the edge of space was testament to how far a GoPro can go. We are continually astounded by the innovation and creativity we see from our users, professional and amateur alike. Their creative use of GoPro is inspiring and never-ending.

We've seen doctors adapt our 3D HERO System to capture a series of magnification mirrors to record 3D endoscopic surgery. Inventive astronomers have mounted GoPros to telescopes to capture pictures of the moon. Rocket scientists have inserted GoPros into a vacuum cryo-chamber to record and study plasma propulsion. Wildlife scientists use GoPros to document animal behavior at night with infrared lights. Biologists use macro lens adapters to place GoPros on feeders to record hummingbirds and insects. Oceanographic researchers combine footage from multiple GoPros to create animated 3D mapped environments of the sea floor. Because of GoPro's versatile and adaptable nature, the only real limitation is your imagination.

Take a moment and think about the story you are going to capture. Is there a unique way to film it that most people have never seen before? GoPros have the ability to go places where humans cannot. Be inventive and innovative in your filmmaking endeavors. Spend some time researching on YouTube and Google. There are all sorts of forums, websites, tutorials, and videos which explain a vast variety of interesting applications, adaptations, and uses for your GoPro that go far beyond what you normally see.

Bradford Schmidt / San Francisco, California  GoPro + Macro  Photo/.5sec





Downloading and Review

Good organization of video footage starts on-site while the filmmaker is still shooting. When downloading all the footage at the end of the day, we tend to organize GoPro video files by character and by mount. All of Character A's helmet-cam for a given day goes into one folder, Character B's helmet-cam into another, and so forth. We then label the folders. You'll be thanking yourself later when you open up those neatly organized and labeled folders for selecting and editing. It's also imperative to back up the files on another hard drive on location. At GoPro, we actually back up our daily downloads twice.

For a production, one of the most critical and easily forgotten steps is footage review. This should take place each night when downloading the SD cards. A nightly review lets the filmmaker know what was actually captured and what was missed. Are there any character observations that should be brought up later in the interview? Is there an opening beat for the story? Is there an ending beat? Does the climactic beat even work? Did something go wrong? The review informs shooting decisions for the coming days and can even affect the direction of the story.

Most importantly, as a filmmaker you should use the review to identify what is working and what isn't. Make sure you are on your way to capturing all the building blocks that will later create a beginning, middle, and end to your story in editing. But it's also important not to be too attached to the building blocks you imagined. It may cause you to miss a genuine opportunity to improvise and capture something you didn't think of. The opening or ending of a film can surprise you in the midst of shooting, when something authentic happens with your character. You have to be open to improvisation and ready to let that magic happen.

Improvisation

Improvisation can save a story that is struggling, but it can also get the filmmaker into the most trouble, if solely relied upon. Good improvisers already have a masterful grasp of the tenets of filmmaking. They come prepared, and their experience and skill allow them to recognize when magic is happening and capture it. Novice filmmakers sometimes arrive unprepared and rely only on improvisation, where proper planning and effort would be more suited.

Since the beginning of GoPro, some production artists have consistently produced that certain magic; others have done so with far less consistency. Why? The successful artists are present in the moment. These are the artists in tune with their characters and aware of the potential possibilities at any given moment. A simple example of being in the moment was captured in “Roshambo—Red Bull Rampage 2012.” After a frustrating, dusty day, production artist Trenton Pasic saw Chris Van Dine and Tyler McCaul walking up to the top of the Rampage course. Fortunately, he was prepared with two spare cameras in his pack. Sure, practice was over and the shooting day was done. But Trenton popped the two cameras on their helmets and began rolling. He ended up capturing a funny, natural moment between the two bikers and a great narrative flow that became a successful viral video for GoPro.

Another pillar of improvisation is understanding how to adapt or change direction when things go wrong, even when the climax is planned. This is often figured out during the downloading and review stage of a shoot. Improvising can keep a filmmaker from coming home empty-handed. We experienced this while shooting “Ken Block in Russia.”

The production was supposed to be the first of an interwoven series for the release of our Wi-Fi BacPac in the Spring of 2012. Everything seemed to go wrong on this shoot. Wrong hotel locations, wrong firmware on prototype cameras, wrong weather... wrong climactic beat. We originally planned to have Block jump over a moving train as the climax for the story. On location, we quickly



Roshambo – Red Bull Rampage 2012

Chris Van Dine and Tyler McCaul take their first top to bottom runs in practice at Red Bull Rampage 2012. Shot in 960p48 on the HD HERO2.

Filmer: Trenton Pasic
Editor: Trenton Pasic



https://www.youtube.com/watch?v=C_h1Cgv4K2c



sobered up to the fact that the jump wasn't realistic. The next climax concept was to build a jump in the woods alongside the running train. The Russian crew spent all night building the jump, but the weather was too warm the next day. The jump didn't freeze properly and Block nearly ran into a tree at 50 mph. So that idea was scrapped.

Time was running out on the last day, and we still didn't have a climax or an ending. For our climactic beat we settled for Block destroying 30 GoPro cameras laid in an arc on the snow. But we knew we needed some kind of payoff to save this video from failure. We playfully matched a Russian skier against Block, who he blasts with a dramatic spray of snow. The rear bumper of his car had been torn off during that scene. Suddenly, we had an idea for a payoff. We improvised an ending where the Russian skier sees Block's car in the parking lot and kicks the bumper off as payback. Her revenge included the banter of the Italian mechanics, which made it even more humorous. It was our first improvised foray into GoPro comedy. And luckily it worked—the improvisation saved the video.

Some productions require improvisation, such as filming wildlife. When you have no control over the main characters, how you imagine the climax becomes more of a dice roll than a plan. Improvisation is key in understanding how to create optimal scenarios, predict behavior, and adapt to wildlife characters while still capturing a climactic beat for the story.

Bradford Schmidt, Ken Block / Russia  Pole  Photo/.5sec



Ken Block in Russia

Ken Block is on a mission of destruction as he battles the elements, races rogue skiers, and tries to take out as many cameras as he can. Shot on the HD HERO2 in 2012.

Director: Bradford Schmidt Producer: Yara Khakbaz
Crew: Travis Pynn, Nicholas Lubsen, Rod Rojas
Editor: Jordan Miller, Davis Paul, Zak Shelhamer



<https://www.youtube.com/watch?v=EPr32OYuEmo>

In 2012, the HERO3 was GoPro's first camera with a flat lens housing, thereby enabling extremely clear underwater footage for the first time from a stock GoPro. An underwater scene was a critical requirement for the launch video and we wanted to show the world something it hadn't seen before. There are only a few places where humans can legally dive with humpback whales. Tonga is one of them, with tropical water allowing more than 100 feet of visibility. We hired the best freediving coach in the world, Kirk Krack, and three professional freedivers: Ashleigh, Erin, and Mandy. The climactic moment was ambitious: three female characters in the same frame with enormous humpback whales.

Our outfitter in Tonga, Alistair, administered a dose of reality. Normally, the BBC or NatGeo would employ him for something like this with a shooting window of 20 or 30 days. We only had five.

Over the first few days, we followed the whales and learned a few interesting techniques. The animals have to welcome you into their space—you can't simply run at them. After you calmly swim parallel to them for a while, the whales grow curious and come closer and closer to you. We found out they were as curious about us as we were about them, but the approach had to be on their terms. We captured some beautiful shots, sometimes with one of the girls in the frame, but nothing magic. During review, we noticed one whale had come up underneath us with a big curious eye. One of us turned around and waved an arm. The whale turned and waved in response. Alistair explained that if the whale was curious enough, it would mimic you. That sparked a new idea for the climactic beat: capturing all three girls interacting and spinning with a whale in a single shot. Alistair's response was bleak: impossible.

On the second-to-last day, we improvised a new plan. At an opportune moment, Kirk would film a close follow behind the girls while Bradford would capture the wide and give the signal. In the late afternoon, it just happened. A large female was resting below the surface. The crew dove down parallel to the whale's eye level. The humpback and crew drifted closer and closer. The signal was given and the whale watched as the girls began to turn. As if on cue, the humpback turned and spun in sync with the freedivers. Our improvised plan had captured the impossible.

Bradford Schmidt, Ashleigh Baird, Erin Magee, Mandy Rae-Krack / Tonga  Norbert  Photo/5sec



Whale Fantasia

Alan Watts, three sirens, and three humpback whales dance together in a short film that will inspire you. Shot on the HERO3 in 2012 with freedivers Ashleigh Baird, Erin Magee, and Mandy Rae-Krack.



http://www.youtube.com/watch?v=7Sv_Bv1H7BQ

Director: Bradford Schmidt Producer: Yara Khakbaz
Crew: Kirk Krack, Mike Pfau, Caleb Farro Editor: Brandon Thompson



Biography of a Production

GoPro productions take many forms. We encounter various productions from a single camera shoot to a multiple crew production launch involving more than a hundred rolling cameras. Here we outline four distinct types of productions along the spectrum, from simple to complex.

One Man, One Camera

This video was the very first user-generated edit we ever published on the GoPro channel. One morning, Nick came into our Half Moon Bay office, where there were only 12 of us at the time. He was ecstatic about an edit he saw on YouTube...a customer was fulfilling the promise of GoPro! The video was well thought out and beautifully shot by a passionate kid, Brendan Schnurr, who didn't take himself too seriously. Schnurr was having fun with his one GoPro and he made an awesome piece in the middle of nowhere by himself, with a snowboard and a kite. We contacted him and asked if we could promote it on our channel and send him a camera to stoke him out. And he was stoked. This was the very beginning of what was to become the User Generated Content section of GoPro's media department.

This video is still one of our favorites and it epitomizes all that is GoPro. Brendan had all the elements to make up a short little story. He composed each shot with his single camera. He started with setting up establishing shots in the snow and an introductory close-up of the character—himself. Static wide shots are interspersed with POV shots from the Chesty mount and handheld. Great funny music and a climax or rather anti-climax that makes you laugh. This is the dream of GoPro realized and it's a beautiful thing. One man. One camera. And a whole lot of creativity.

Brendan Schnurr / Keswick, Ontario



Canopy



Photo/2sec



Snowkiting in the Backcountry

Shot in 720p60 on the HD HERO in 2009, Brendan Schnurr shows how to get creative with a single camera.

<http://www.youtube.com/watch?v=xr8N3IOP8X8>

Filmer: Brendan Schnurr
Editor: Brendan Schnurr







Bradford Schmidt, Julius, Jordan Miller / Sumatra, Indonesia 📱 Handheld 📷 Photo/.5sec

A Friend and Four Cameras

“Our Orangutan Brethren” was a production by two great friends, Brad Schmidt and Jordan Miller, who had tickets to Sumatra and wanted to hang out with orangutans. It’s an example of how any passionate GoPro user and a buddy equipped with a couple of cameras can yield an incredible heartfelt story. This wasn’t a large production, and it didn’t require much money.

The idea began with a passion for the topic of endangered orangutans. Then came a lot of Google and YouTube research before finding the main character, Peter Pratje, and contacting the Frankfurt Zoological Society through its website. Next came several Skype calls with Pratje to collaborate on the potential building blocks for the story: training at the jungle school, the deforested wasteland, and most importantly, a plan to release a rehabilitated orangutan into the wild, which would naturally be our climax. Despite the necessity of improvisation with wildlife, we were prepared. We tried getting orangutan POV with Chesty mounts and handheld mirrors on the first day, but this failed. On the second day, we tried our handlebar mount on a wooden stick that had some strategically placed fruit drizzled with honey. The idea worked like a charm. We pretended to hide the stick, which made the apes desire it even more. They would snatch the camera stick away from us and carry it up into the trees and share the fruit with each other. This gave the story unique footage no one had ever seen before: orangutans filming themselves.

But just as some aspects necessitated improvisation, other aspects had to be deliberately planned in order for the story to convey specific ideas. The deforested wasteland needed to be personal to the orangutans, thus making it personal for the audience. We planned to film an orangutan on a dead tree, mourning the destroyed homeland. Pratje said orangutans would never climb a tree with no fruit, but we insisted. The single shot took four hours, but that moment became the emotional punch of the piece and served the exact purpose the story needed.

Any filmmaker could’ve made this story. We shot the entire thing with a handful of cameras and a couple of filmmaking toys: a drone, a Kessler Cineslider, a Glidecam, and a Sail System Backpack. Our audio gear included a lavalier mic and a shotgun mic. It was an uncomplicated shoot, simple and realistic for two friends, but it yielded one of the deepest stories we’ve ever told.



Our Orangutan Brethren

What we do for orangutans, we do for ourselves. Peter Pratje reveals how we, as individuals, can help prevent their imminent extinction. Shot on the HERO3+ in 2013.

Director: Bradford Schmidt Producer: Yara Khakbaz
Crew: Jordan Miller Editor: Mario Callejas



http://www.youtube.com/watch?v=oir_PSJpbAA

Product Launch Production

“New York City...A Day in the Life” is a prime example of a GoPro professional production. We had a large crew consisting of five GoPro members, a local producer, a local scout, a professional skate filmer, and the professional skater, Ryan Sheckler. We had never filmed street skating, a big city or a marketing segment for a complicated product like the Wi-Fi BacPac and Remote before, which made this our most calculated production up to that time.

The concept was a skater’s journey over the Manhattan Bridge to the Lower East Side skate park. Sheckler and his filmer, Erik Bragg, were to capture it all themselves with myriad GoPros and our new Wi-Fi products. The building blocks of the story were broken down into three major sections for the skater’s “line” through the city. The introduction, on the Manhattan Bridge and the Chinatown stair set, would build to the climactic moment where Sheckler would kickflip over a taxicab before entering the skate park.

In order to prepare properly, we actually shot the entire film at each location with a local skater on our scout day. The Sun Seeker app uses a phone’s GPS to project the sun’s path while standing at a location. This allowed us to plot out the best time of day when the sun was peeking between tall skyscrapers to light up a location. After the initial scout day, we put a rough cut together that night to see what worked and what didn’t. We realized we would need to depend heavily on graphics to communicate the features of our new Wi-Fi products.

The introduction and middle sections were fairly straightforward, but the finale was not. We arrived at the Lower East Side skate park four hours before sunset to prepare the scene and rig 30 static cameras around the taxicab, brick walls, curbs, and street. Once it was all done, we patiently waited until the light was best. Fending off the gathering crowd around the scene, keeping 30 cameras rolling on a city street, a dozen crew members choreographed, and a professional athlete landing a difficult trick was a feat unto itself. At the end of the day, the major lesson we took away from our professional product shoot in NYC was preparation and scouting saved our asses. But, of course, our job was only half done. The editing was going to be the hard part.



<http://www.youtube.com/watch?v=6Jl0wUyH7q4>



New York City...A Day in the Life – Starring Skate Legend Ryan Sheckler

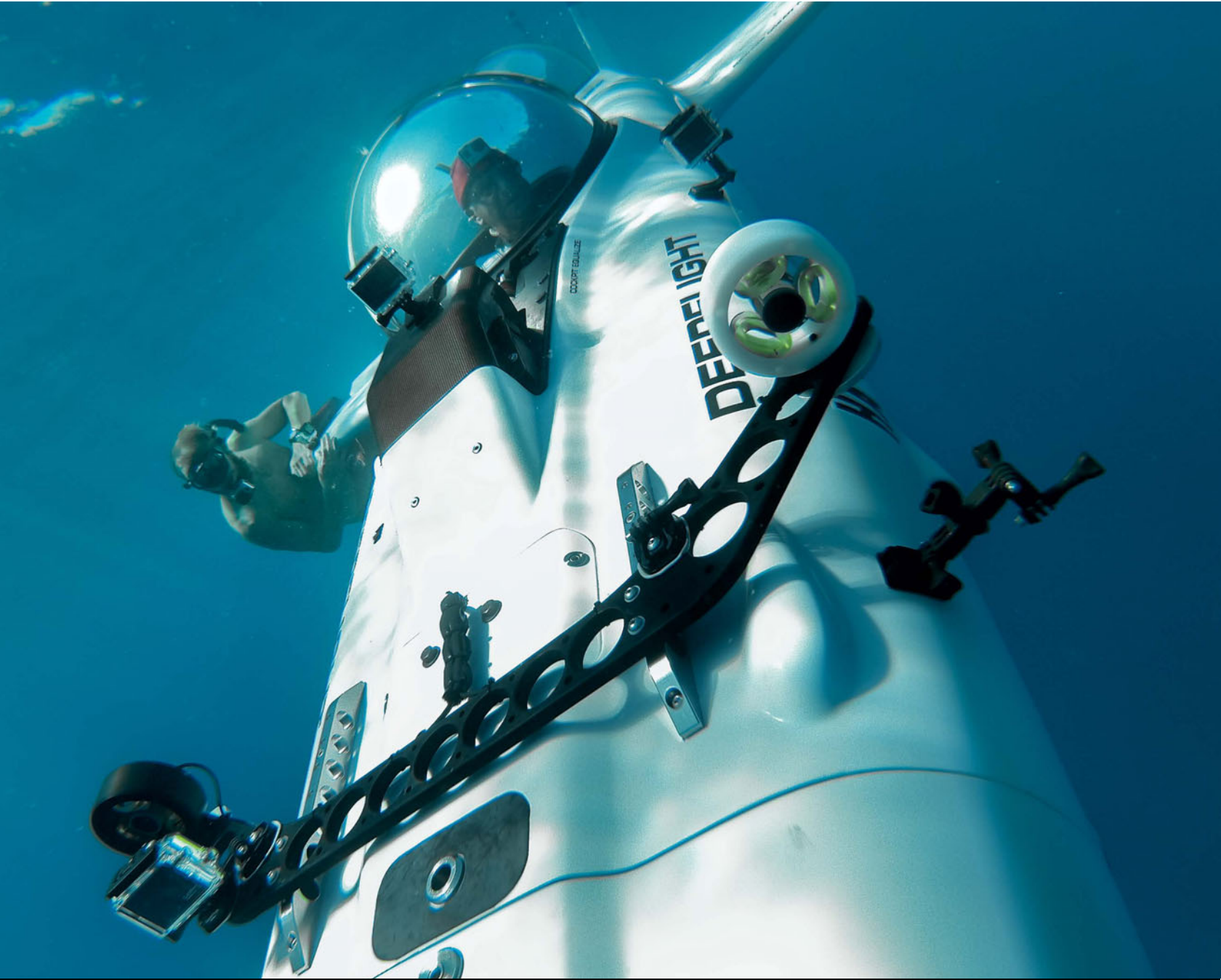
Ryan Sheckler takes a run from the Manhattan Bridge to the Lower East Side skate park. Shot on the HD HERO2 in 2012.

Director: Bradford Schmidt Producer: Yara Khakbaz
Crew: Zak Shelhamer, Nicholas Lubsen, Matt Lin, Sam Lazarus
Editors: Erik Bragg, Jordan Miller, Abe Kislevitz





Erik Bragg, Bradford Schmidt, Ryan Sheckler / New York  Norbert  Photo/.5sec



One Man, 30 Cameras

How has GoPro empowered the individual? “Deepflight Submersible - Searching for Whale Song” was filmed by one professional in a single day. It began when inventor Graham Hawkes invited Nick Woodman to test drive Graham’s new submersible in Hawaii. For the story’s building blocks, we planned (hopefully) for a whale encounter as the climax and a surface breach as the resolution. We drew mounting diagrams complete with a few wild ideas, including an elongated spinner mounted perpendicular to the vehicle’s nose, like a propeller. Upon arrival, the first afternoon was spent preparing the submarine with sticky mounts and extensions using a camera and an LCD BacPac. Most of the cameras couldn’t actually be placed on the submarine until it was floating in the water, so all the mounts had to be prepared beforehand. The extra few hours of preparation are essential so when the time comes, you simply press record and let the cameras do all the work.

In the morning, we found out Woodman wasn’t able to pilot the submersible due to Coast Guard regulations. But we had Hawkes and his copilot Lee outfitted with red beanies, head straps, and lavalier mics in their submarine, all ready to be launched into the sea. All of the GoPros and mount setups were swum out to the floating sub and snapped into place in ten minutes. Hawkes was instructed to talk through everything while he was down at depth, explaining about the whales and the song and how he was recording them. His voice-over would be the spine of the story. The trapper had laid out all the GoPro traps and now had to trust that the magic of Hawkes’s personality and the underwater dive would shine through to the 30 rolling cameras. Though whales were everywhere around us, and the hydrophones picked up whale song, Graham and Lee never visually encountered any underwater. We debated how to handle this in editing—an archive clip from the Tonga production gave a surreal moment of connection between Lee and a whale waving at each other. The climactic scene felt emotionally true to the story.

In this case, proper preparation, solid coverage, and understanding of the building blocks of the story made reconstructing that story on the timeline much easier. The filmmaker had a narrative flow in mind throughout the production, which allowed the editor to focus on making each beat impactful, rather than wasting time trying to conjure a structure out of thin air.



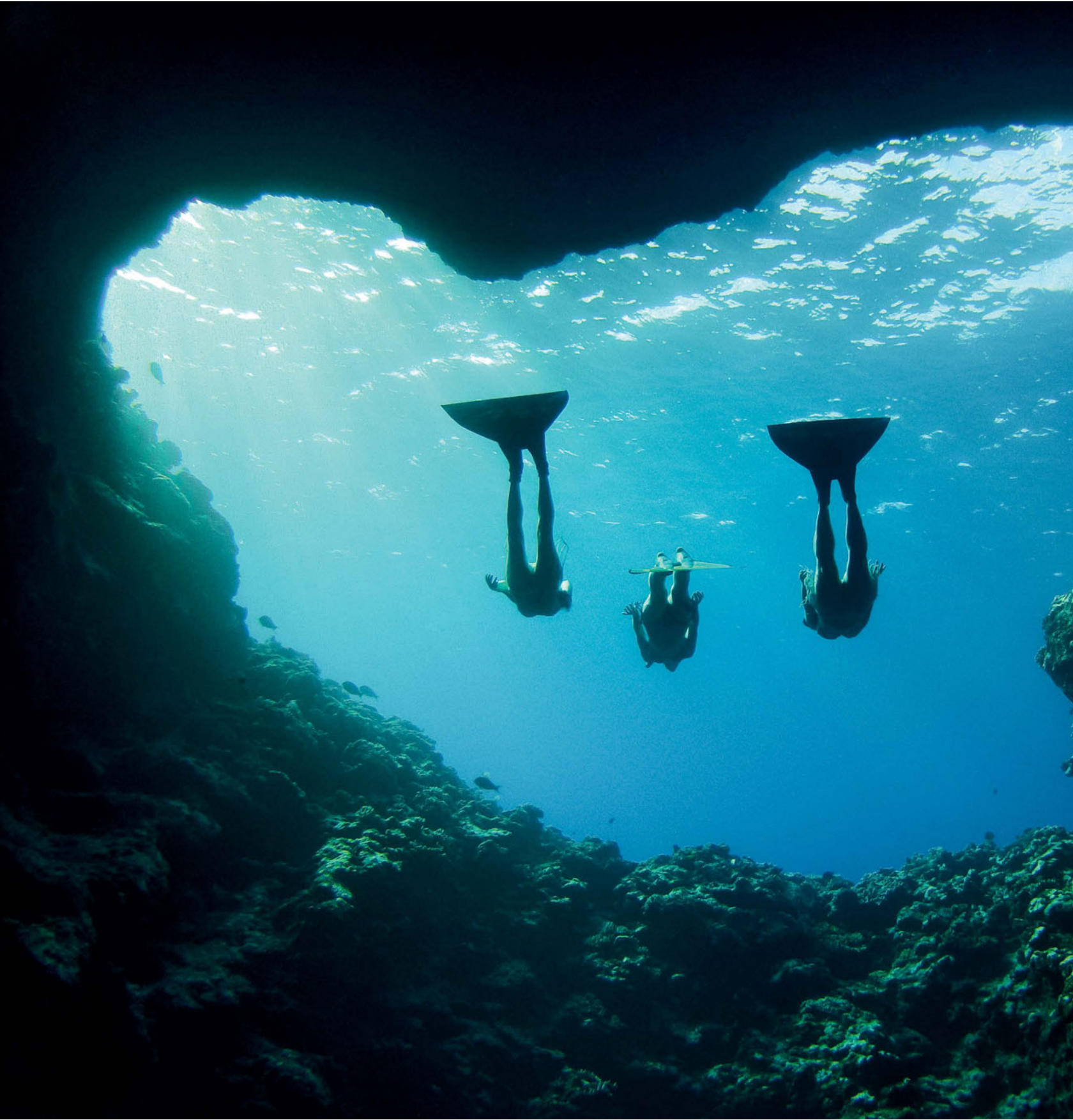
DeepFlight Submersible – Searching for Whale Song


Renowned submersible designer Graham Hawkes and copilot Lee Behel go on a surreal submersible adventure. Using their hydrophones, our intrepid explorers cruise the underwater valleys of Hawaii in an attempt to capture a whale song. Shot on the HERO3 in 2013.

Director: Bradford Schmidt Editor: Brandon Thompson



http://www.youtube.com/watch?v=xRsV_eUovKw



An underwater photograph of a cave entrance. The scene is dimly lit, with a bright opening on the left side showing the surface of the water. The cave walls are covered in green and brown algae or coral. The water is dark blue and slightly hazy.

The best stories generally come from an artist who follows an idea throughout the shoot and goes into the editing phase with a map. You won't know everything that happened if you've shot with your GoPros properly, but you laid the best traps during the shoot with your coverage, and now it's time to find out if there are any golden surprises. Good filmmakers have a narrative flow in mind, which has been growing and adapting throughout production based on the story's building blocks. When they enter the editing stage, they write this down in what we call a "paper cut." Good footage is key. Editing is important, but remember: superb editing turns mediocre footage into mediocre footage edited superbly... which only yields a superbly mediocre video. Capture the content pool that will give you the ability to sculpt your masterpiece.

Your story will be as deep and as layered as the thought you put into it. That thought should occur during the shooting phase and the editing phase. Your well-thought-out details may seem trivial sometimes. But the audience will get out only what you put in, even if what they are getting isn't precisely what you intended...there is substance in it, and that is art.

Index

Numbers

2.7K 4:3 video mode, 35
2.7K video resolution, 14, 34
“3rd Person Paramotor,” 90
3-Way extension arm, 63
4:3 aspect ratio, 15–16
4K video mode, 36
“60-foot Waterfall Drop,” 85
720p resolution, 14, 30
960p video mode, 31
1080p resolution, 14, 32
1080p60, 18
1440p resolution, 14

A

action cuts, 202
action shots. *See* angles by activity
active interviews, conducting, 151
adhesive mounts, 57
aerial photography, 86
Alexander, Cole, 68
Amonson, Neil, 54, 74, 108
angles by activity
 animals, 126–127
 automotive vehicles, 104–105
 biking, 106–107
 camera modes, 98
 human flight, 108–109
 motorcycle, 112–113
 music, 122–123
 outdoors, 120–121
 paddle, 110–111
 skateboarding, 114–115
 snow, 102–103
 sports, 124–125
 surf, 100–101
 underwater, 116–117
 wake and wind, 118–120
animals, filming, 126–127
appendage mounts, 80–81
Ashbum, Hayley, 83, 144–145
aspect ratio, 15
Astill, Jason, 71

athlete sections, 244
audio gear, considering, 135
audio recording, 122
Australian Longboarding
 magazine, 20–21
automotive vehicles, filming,
 104–105
“Avalanche Cliff Jump with
 Matthias Giraud,” 194
Avatar, 40

B

backpack contents, 136
backpack mounts, 82–84
Baird, Ashleigh, 166
“Banzai Pipeline,” 67
Barrett, Patrick, 32, 204, 243
“Base Jump Clip,” 74
BASE jumpers, filming, 108
Basich, Mike, 17
basketball, filming, 124
Beauford, Carter, 79
Beschen, Gavin, 256
biking
 filming, 106–107
 freestyle, 61
“Black Lips Stage Dive at SXSW,”
 68
Blanchard, Alana, 245
Block, Ken, 165
Bloom, Philip, 34
BMX Fullpipe Dreams, 43
bookends, 245
Borgic, Steve, 244
Brown, Ben, 137, 110
Brown, Bobby, 77, 137
Bruneau, Mikey, 67, 209
“Bungee Jumping” commercial, 80
burst photo mode, 26

C

Callejas, Mario, 265
camera gear, considering, 134
cameras, close focus, 160, 162
Camerer, Kyle, 18, 154
“The Cape Griffons,” 260
capture frame rate, 18
Carr, Julian, 54
cars, filming, 104
Carson, Christopher, 86
Casagrande, Andy, 93
the cause, 258
Chambliss, Kirby, 56–57
Chapman, Kalani, 30
character study, 238
characters and conflict, 191
Chase, Aaron, 106, 248–249
Chesty mounts, 54–56
“Chilean Powder Run,” 63
climbing, filming, 121
close-up shot, explained, 140–141
Cloud Chasers Balloon Rides, 28
color correction, 228
“Combing Valparaiso’s Hills,” 198,
 254
conflict and characters, 191
continuity of space and time, 198
Corliss, Jeb, 45, 186–187
coverage, defined, 138
“Crankworx Whistler,” 51
cropping and stretching, 222–223
cropping technique, 19
crosscutting and cutaways, 205
Cullen, Mike, 262
Currier, Landon, 50
Custer, Kevin, 24
cutaways and crosscutting, 205
cuts. *See also* editing
 action, 202
 cutaways and crosscutting,
 205
 jump, 204
 match, 203
 overview, 200
 smash, 205

D

- Dave Matthews Band, 79
- Dawson, Leah, 237
- Daytona International Speedway, 12–13
- De Vleeschauer, David, 35
- “DeepFlight Submersible – Searching for Whale Song,” 175
- “Descent into the Lava of Marum,” 261
- directing interviews, 148, 150
- “Director’s Cut – Shark Riders,” 252
- “Dreams with Kella Moniz,” 205

E

- editing, 188. *See also* cuts;
 - final pass; second pass;
 - storytelling
- characters and conflict, 191
- computer, 180
- continuity of space and time, 198
- earbuds, 180
- external hard drive, 180
- final cut, 199
- headphones, 180
- interviews and voiceovers, 213
- music, 194–195
- organization, 181
- overview, 178
- paper cut, 186–187
- and post-production, 231
- root folder and subfolders, 181
- rough cut, 197–198
- selects, 185
- software, 180
- speakers, 180
- story, 188
- structure, 192
- time manipulation, 206, 208–209
- time-lapses, 211
- transcoding, 185
- transcoding software, 180
- workflow overview, 182

- end is the beginning, 254
- “Endless Barrels,” 100
- environmentals and time-lapses, 156, 159
- Escamilla, Mike, 43
- exporting and image quality, 271

F

- Facebook, sharing on, 273, 278
- “The Family Crest,” 251
- Farro, Caleb, 75
- fast motion, 209
- Fernando, Ravi, 209
- Fierro, Justin, 243
- “Final Cut: Combing Valparaiso’s Hills,” 199
- “Final Cut: Lost in Peru,” 248–249
- final pass. *See also* editing
 - color correction, 228
 - cropping and stretching, 222–223
 - editing, 221
 - graphics, 227
 - motion stabilization, 225
 - sound, 224–225
- “Fire Breathing with a 24 GoPro Array,” 94
- “Fireman Saves Kitten,” 280–281
- “Fireworks Showdown with Jeremiah Warren,” 37
- fishing, filming, 121
- Formula Car Clip, 32
- Forsberg, Chris, 58
- forums for sharing, 273
- FOV (field of view)
 - Medium, 16–17
 - Narrow, 16–17
 - Wide, 16
- The Frame mount, 25, 51
- frame rate, 18
- Freeman, Mark, 28
- full shot, explained, 140–141

G

- Garside, Chris, 60
- gear, considering, 134
- gimbals, 88
- Giraud, Matthias, 194
- gnarwhal mounts, 74–76
- “Golden Eagle POV Flight in 27.K,” 35
- GoPro App, 268
- GoPro Bomb Squad, 278
- “GoPro 3D: Highlight Reel 2011,” 92
- “GoPro HERO4: The Adventure of Life in 4K”, 35
- GoPro mounts
 - 3-Way extension arm, 63
 - adhesive, 57
 - appendage, 80–81
 - backpack, 82–84
 - Chesty, 54–56
 - extensions, 85
 - gnarwhal, 74–76
 - handlebar/seatpost, 60–62
 - head strap, 48–50
 - helmet, 51–53
 - Jaws, 68–70
 - mouth mount, 79
 - Norbert, 72–73
 - roll bar, 64–66
 - spinner, 77–78
 - suction cup, 58–59
 - surfboard, 67
 - wrist strap, 46–47
- GoPro Studio, overview, 40
- GoPro Edit Templates, 270
- Goulet, Ali, 248–249
- Grand Prix of Sonoma 2013 Celebration, 32
- graphics, 227
- Grimaldi Garcia, Pedro, 26
- Gunn, Colin, 144

H

handlebar/seatpost mounts, 60–62
hang gliders, filming, 108
“Hangtown AMA Motocross,” 218
Hatchet, Hip, 204
HD HERO2, 20
HD HERO2 versus HERO3, 211
head strap mounts, 48–50
Healey, Mark, 155
helmet mounts, 51–53
HERO3, release of, 20, 29
HERO3 versus HERO3+, 203
HERO3+ Black Edition, 237
HERO4
 The Adventure of Life in 4K, 36
 Protune settings, 20, 25
“Highest Road in the World,” 112
hiking, filming, 121
“Himalayan 4,500 km Adventure,” 213
Hodgson, Pete, 85
Hoerner, Alex, 224
Hoerner, Christoph, 224
Holden, Katie, 249
Houston, Hart, 58, 243
“Hovercraft Deer Rescue,” 188
“Human Flight – TV Commercial,” 195
“Hunting and Fishing,” 121

I

“Ice Caves,” 86
ice skating, filming, 125
image processing, 14
image quality and exporting, 271
improvisation, 163, 165–166
Ingleby, Harley, 20
inner conflict, 256
Instagram, sharing on, 273, 276
intermission, 245
interview questions, 155
interview theory, 152, 154

interviews
 active, 151
 directing, 148, 150
 static, 150
interviews and voiceovers,
 editing, 213

J

Jacobsen, Anders, 206
Jamieson, Kris “Jaymo,” 50
Jaws mounts, 68–70
Jeannette, Gunnar, 12
Johnson, Joseph, 18
Johnson, Tyler, 94
Jones, Damon, 121
Jones, Mikala, 96
journey, 248–249
jump cuts, 204

K

Kalanick, Cory, 280
“Kayak New Zealand,” 111
kayaking, filming, 111
Kelley, David, 94
Kenison, James, 188
Khan, Ossie, 195
Kirkham, James, 32, 58
Kislevitz, Abe, 19, 243, 274
“Koh Yao Noi”, 34
Krack, Kirk, 49

L

Laude, Stefan, 194
“Let Me Take You to the Mountain,” 103
Lewis, Nate, 58
light
 low light, 147
 overview, 144
“Lion Hug,” 281
lion hunt, 126–127
“Lions – The New Endangered Species?,” 256, 281

“Longest Jump Story,” 104
“Lost in Jellyfish Lake,” 234
low light, filming in, 147

M

Ma, Edward, 147
MacAskill, Danny, 219
Macdonald, Andy, 246
Mancino, Roberta, 191
Mancuso, Julia, 76
Marquardt, Melissa, 118
match cuts, 203
Matthews, Dave, 79
McGarry, Kelly, 33
McGough, Lauren, 138
McMahan, Chris, 53
medium close-up shot, explained, 140–141
Medium FOV (field of view), 16–17
Melbourne Skydive Centre, 195
Menzies, Bryce, 64–65
Miller, Jordan, 23
 “Black Lips Stage Dive at SXSW,” 68
 “Misdirected Man” by Hip Hatchet,” 204
 “Remembering Sion Milosky,” 156
Miller, Marshall, 15
Milosky, Sion, 67, 156
“Moab Towers,” 144
the moment, 234
Moniz, Kella, 205
“Monster Energy Supercross Highlights,” 217
montage, 237
Montgomery, Mike, 51
motion interpolation, 208
motion stabilization, 225
“Moto Snowy Ridgeline,” 53
motorcycle footage, filming, 112–113

mounts

- 3-Way extension arm, 63
- adhesive, 57
- appendage, 80–81
- backpack, 82–84
- Chesty, 54–56
- extensions, 85
- gnarwhal, 74–76
- handlebar/seatpost, 60–62
- head strap, 48–50
- helmet, 51–53
- Jaws, 68–70
- mouth mount, 79
- Norbert, 72–73
- roll bar, 64–66
- spinner, 77–78
- suction cup, 58–59
- surfboard, 67
- wrist strap, 46–47

mouth mounts, 79

MP (megapixels), 14

“Mt. Hood Snow Photo Expedition,” 240

Muller, Cort, 159

multi-cam

- array, 94
- dual and 3D, 92
- spherical, 96

music

- editing, 194–195
- filming, 122–123

music video, 251

Myers, Nathan, 138

N

Narrow FOV (field of view), 16–17

native capture, 19

Newman, David, 40

night-lapse photo mode, 25

Nobles, Wes, 231

Noguez, Gabriel, 68

Norbert mounts, 72–73

O

Oberschneider, Christoph, 53

“Our Orangutan Brethren,” 171, 265

outdoors, filming, 120–121

P

padding, filming, 111

paper cut

- example, 187
- explained, 186

Pappyn, Debbie, 35

Pasic, Trenton, 163

Pastore, Jaci, 32

“Pelican Learns to Fly,” 192

performances, low-light, 122

Peters, Mark, 90

photo modes

- burst, 26
- night-lapse, 25
- overview, 20
- time-lapse, 23

photo resolution, 14

Pierre, Jamie, 202

Pine, Christopher, 90

pixels, 14

playback frame rate, 18

Posey, Will, 154

“Post Office Bike Jam 2011,” 106

post-production and editing, 231.

See *also* production

POV shot, explained, 140–141

power intro, 240

Price, Devin, 262

Price, Ryan, 262

primaries and secondaries, 142–143

production. See *also* post-production and editing; storytelling

- friend and four cameras, 171
- one man, 30 cameras, 175
- one man, one camera, 168
- primaries and secondaries, 142–143
- product launch, 172
- shot classification, 140
- trapping as coverage, 138

Protune

- auto white balance, 39

- color, 39

- exposure, 39

- ISO limit, 39

- overview, 38

- settings, 23, 25

- sharpness, 39

“Proximity Flying,” 108

R

the race, 243

“Radiation City at the Cathedral of Junk,” 122

Renner, Ronnie, 31

resolution, 14

reverse motion, 209

Rice, Travis, 63

Richardson, Cooper, 157

Richardson, Kevin, 126, 281

Riemann, Adam, 213

“Rolex 24 at Daytona Teaser,” 204

roll bar mounts, 64–66

romantic comedy, 260

“Roshambo – Red Bull Rampage 2012,” 163

rough cut, 197–198

Royster, Tony, 147

“The Rubik Juggler,” 209

Ryan, Travis, 106

S

Saito, Daigo, 59

Schmidt, Bradford, 165, 256

“2010 Post Office Bike Jam,” 243

“Bungee Jumping”

- commercial, 80

“Hangtown AMA Motocross,” 218

“Ken Block in Russia,” 165

“Remembering Sion Milosky,” 156

skateboarding, 115

surfing Hawaii, 245

“Toy Train,” 95

“Wingsuit Flyers,” 191

Schnurr, Brendan, 168
second pass. *See also* editing
 music redux, 218–219
 pacing, 217
 peer review, 214
secondaries and primaries,
 142–143
“Shark Riders,” 116
Sheckler, Ryan, 172
Shelhamer, Zak, 256, 276
short feature, Acts One-Three,
 264–265
shot classification
 close-up shot, 140
 full shot, 140
 medium close-up shot, 140
 POV shot, 140
 wide shot, 140
silence, power of, 194
skateboarding, filming, 114–115
ski flying, 206
skiing, filming, 102–103
skydivers, filming, 108
Slater, Kelly, 208, 239
sliders and jibs, 88
slow motion, 206
smash cuts, 205
Smith, Ryan J., 69
snowboarding, filming, 103
“Snowkiting in the Backcountry,”
 168
social networks, sharing on, 273
Sommer, Jokke, 108
sound
 lavaliers, 91
 overview, 91
 shotguns, 91
speed flyers, filming, 108
speed ramping, 208
spinner mounts, 77–78
spirit quest, 261
sports, filming, 124–125
Steadicams, 88
static interviews, conducting, 150
Sterling, Jamie, 67, 246

story analysis
 athlete sections, 244
 bookends, 245
 the cause, 258
 character study, 238
 end is the beginning, 254
 inner conflict, 256
 intermission, 245
 journey, 248–249
 the moment, 234
 montage, 237
 music video, 251
 overview, 232
 power intro, 240
 the race, 243
 romantic comedy, 260
 short feature, 264–265
 spirit quest, 261
 the surreal, 252
 travel montage, 246
story structure
 beginning, 192
 end, 192
 middle, 192
storytelling. *See also* editing;
 production
 aesthetics, 131
 audio gear, 135
 backpack contents, 136
 building blocks, 132
 camera gear, 134
 climactic moment, 131–132
 close focus cameras, 160–162
 directing interviews, 148, 150–
 152, 154
 documenting resolution, 132
 environmentals, 156–159
 getting ideas, 131
 improvisation, 163–166
 interview questions, 155
 light, 144–147
 locations and characters,
 131–132
 overview, 128
 production, 138–145
 research and planning, 131
 time lapses, 156–159
“Sturgis: 110th Anniversary of
 Harley-Davidson,” 219
suction cup mounts, 58–59

Super Bowl 2013 Dubstep Baby
 Commercial, 29
“Supercross New Year 2013,” 154
SuperView, 16
surfboard mounts, 67
surfing, filming, 100–101
the surreal, 252
“Swimming with Dolphins,” 90

T

“Tahiti TV Commercial,” 82
Taylor, Andrew, 61
Taylor, David, 40
“The Baja 1000,” 64
Tianmen Cave, 186–187
time lapses and environmentals,
 156, 159
time manipulation
 fast motion, 209
 motion interpolation, 208
 reverse motion, 209
 slow motion, 206
 speed ramping, 208
time-lapses, editing, 211
timeline settings, 197
Tjäder, Jesper, 227
tow cams, 90
trapping as coverage, 138
travel montage, 246
Trongratanawong, Nana, 234

U

underwater filming, 116–117
“USC Ski & Snowboard – The
 Weekend,” 274

V

Van Dine, Chris, 248–249
Van Every, Rich, 249
video frame rate, 18

video modes. *See also* viral videos
2.7K, 34
2.7K 4:3, 35
4K, 36
720p, 30
960p, 31
1080p, 32
overview, 29
WVGA, 37
video resolution, 14
viral videos, 280–281, 283. *See also* video modes
voiceovers and interviews,
editing, 213

W

wake and wind, filming, 118–120
Walsh, Anthony, 82
Warren, Jeremiah, 37
water, filming, 117–119
“Whale Fantasia,” 166
White, Shaun, 244
Wick, Jeff, 29
Wide FOV (field of view), 16
wide shot, explained, 140–141
Wi-Fi, 43
Wilkerfield, Justin, 115
“Wingsuit Flyers,” 191
wingsuit flyers, filming, 108
Woodman, Nick, 32, 41, 46–47
Laguna Seca, 243
Vegas To Reno, 242
wrist camera, 46
WVGA video mode, 37

Y

YouTube, sharing on, 273–274