PROJECT

1

Getting to Know Your Camera

Imagine living in the 1920s when home video cameras had only recently been invented and were big, basic, and very expensive. This meant that only very few people could make their own movies.

Things have changed a lot since then with the introduction of digital camcorders and even more recently the camera phone. Now more people are able to record video anywhere they go, either on a camcorder or a camera on a phone. Even digital still cameras record great quality video, which just increases the options you have to make your own films.

Just take a moment to think of all the really clever people who were involved in making the video camera what it is today so that we can create our own films at home — thank you, clever people!

You don't have to have a $50,000 camera to make your own film; you can make it with any video camera you have access to. You don't even have to own a camera as long as you have access to someone else's. I started writing films before I had a camera, and I invited my friends to help me make them with their cameras. A good filmmaker uses the skills of people around them to make his or her films.

Using someone else's camera equipment is a fine way to begin filming inexpensively. However, always be sure you have permission to use camera equipment if it belongs to someone else.

As a filmmaker, you can choose to either shoot a film yourself or you can invite other people to operate the camera while you direct. Either option is fine. Your choice may depend on what you're filming and whether you need help. Many documentaries, for instance, are both shot and directed by the filmmaker in order to simplify and reduce the number of people around when filming. Usually, more people are needed to shoot a film in which dialogue needs to be recorded and lighting set up. Also, don't disregard the value of additional opinions: Having people working with you can make the filming process easier, quicker, and more enjoyable.

How Does Your Camera Work?

Don't worry: I'm not going to go into great detail here but it's useful to know the basics of how your camera works.

A video camera works in a way that's similar way to the way your eye works. Your eye sees things as a series of still images or *frames* and your brain then puts them together so quickly it looks like smooth movement — it's clever stuff, isn't it? The camera does a very similar thing: It captures movement in a series of

frames. In cameras, this movement is measured in *frames per second.* (See Figure 1-1.)

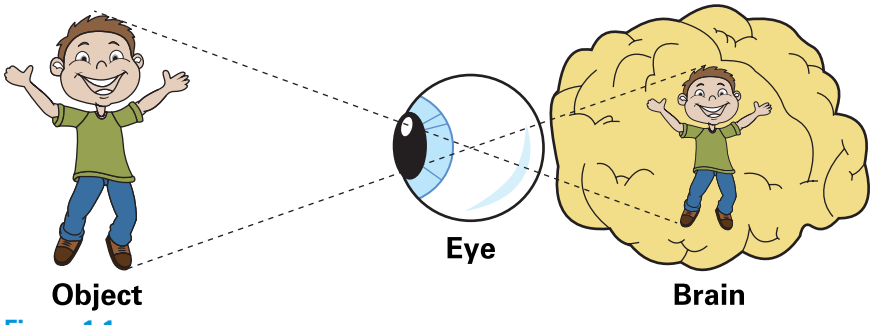

Figure 1-1

Also, like your eye, the camera records the images using light from the scene you are filming. The light enters through the lens and the images are captured by a microchip inside the digital video camera. These images are then sent to your media card or tape. Figure 1-2 shows how a digital video camera records an image to a media card or disk.

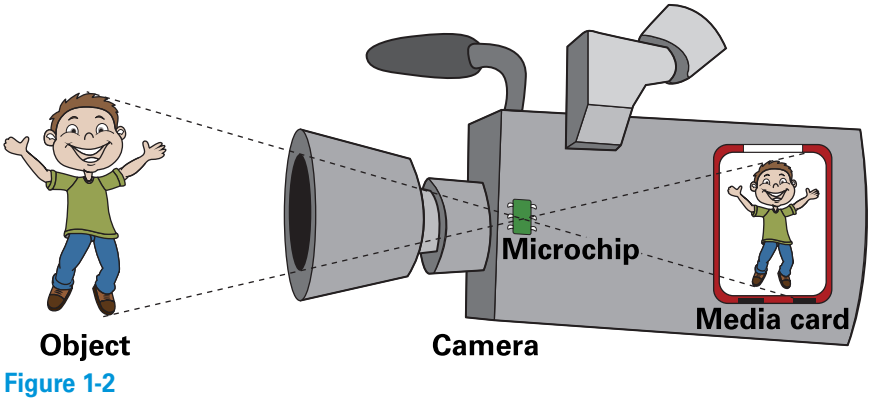

Figure 1-2

The introduction of digital video cameras has made the filmmaking process simpler and less expensive. Traditional film cameras captured film footage as a series of still images onto a light-sensitive reel of tape running through the camera. This reel of tape

would be expensive to buy and couldn't be reused. It also made setting up and checking shots difficult because there was no easy way of playing back the footage you had captured without going through the complex process of editing those reels of tape. Traditional film cameras create what I call a "cinematic" look, however, allowing for a softer look to the image than you can get with digital video. With traditional cameras, you can blur backgrounds, for example, making your subject stand out. It's more difficult to get this cinematic look with a digital video camera, especially with lower-range camcorders, which often have trouble dealing with the lighter and darker areas of a shot, and whose image tends to be sharper and more crisp.

Deciding on a Camera to Use

Digital video cameras vary in price, size, and quality. For under $100, you can buy a compact HD camcorder that will record great video, but it may not have all the functions a professional filmmaker would expect. At the other extreme, you can find video cameras that cost over $50,000, which are used to shoot blockbuster movies — but even these have their disadvantages.

As a filmmaker, I like to use different types of digital video cameras for different reasons. In the following list, I describe the different types of digital video cameras currently available:

- **Camera phones:** A camera phone is a cellphone that is able to capture still images and video footage. (See Figure 1-3.) Camera phones are more lightweight and compact, which makes it easier to capture video in smaller spaces. The latest camera phones can capture stunning photos and video footage and have helped to reduce the need for digital compact cameras.

  Camera phones don't offer the best quality for picture or sound, but they're great for capturing video simply and quickly.

Because camera phones are perfect for capturing offhand moments you couldn't film with larger, more professional cameras, I use them occasionally to capture video and images for behind-the-scenes projects.

Figure 1-3

- **Camcorders:** A camcorder (see Figure 1-4) is a portable handheld video camera designed to record video and audio. Camcorders usually have lenses built into the camera body and are designed to make recording video quicker and more simple. Over the years, camcorders have become more affordable and now offer better video and sound quality than ever before.

  There are many types of camcorders to choose from, starting with basic compact cameras around $100 shooting all the way up to the broadcast cameras above $50,000. The general breakdown is into two broad categories, as follows:

  - *Affordable camcorders:* Recently, camcorders have become more affordable, which is great news for home-video

Figure 1-4

filmmakers. The affordable range of camcorders offers some great features and fantastic quality. Most of the cameras in this range offer "automatic" functions such as autofocus, which searches for the subject in the scene you're filming and focuses on that subject, rather than on things in the background. Some of these camcorders have face-detection features so that the camera focuses on the people in the shot. Other nice features include *auto-iris,* which adjusts the brightness of the picture depending on the amount of light available, and *auto–white-balance,* which adjusts how warm or cold the picture looks, depending on what is needed in the scene.

Camcorders in this range are small, light, easy to work with, and are great for shooting scenes quickly, which is why they are perfect for shooting home videos.

- *Professional camcorders:* Professional filmmakers need more from their cameras than most home video makers do. The

ability to manually control all the settings on a camcorder is very useful to a professional filmmaker because they like to be able to choose what to focus on and how bright or warm the picture should look. The camcorders in this range are normally used by news teams to record outside broadcasts, and by production companies for corporate film projects.

Usually, the higher you go up in the range of professional camcorders, the bigger the cameras get and the more manual features they have. The bigger camcorders are heavier and can take longer to set up. The quality of the lens on the camcorder normally increases along with the quality of the picture and sound, too.

Digital video cameras record and store the footage captured through the lens onto a media device. Recently manufactured cameras record onto media cards — cards that hold digital information that can be read by your computer when editing — whereas older digital cameras record onto other media, often tape cassettes, which record data onto a reel of tape that can be played back through the camera and imported onto a computer using a cable from the camera.

I use camcorders for most of my corporate film projects, event filming, and interviews for a number of reasons: They can be easier and quicker to set up; they offer auto-focus and zoom control, which are handy when you need them; and most camcorders are designed to be handheld or carried on the shoulder for long periods, so they're comfortable to use.

- **Action cameras:** Recent developments in technology have permitted camera manufacturers to fit more into less space. This has led to the introduction of *action cameras,* which are very small, light camcorders that can be strapped to sport equipment, bikes, or cars and can record video that's normally hard to capture. (See Figure 1-5.) For example, a cyclist could attach an action camera to his helmet to record what he sees as he is cycling. Action cameras can also be attached to free runners,

skiers, sky divers, and race-car drivers to give the audience a feeling of being involved.

Action cameras are a great, inexpensive way to capture high-quality video. You can expect to pay as little as $50 for an action camera. Note, however, that the sound quality on these cameras isn't the best, which may influence your decision to buy one. Usually, however, action cameras are used for capturing shots in which sound isn't needed or isn't the primary focus.

I've used action cameras to record vehicles as they are driving. In such cases, I've attached the camera either to the windshield inside the car to film the driver or to the outside of the car to capture the car driving on the road.

Figure 1-5

- **Aerial cameras:** Shots filmed from the sky can look amazing, and they're now being used more frequently within films and TV programs. Aerial video can be captured by attaching

cameras to drones or quadcopters to get stunning wide-shot footage that you couldn't get from the ground.

Before drones and quadcopters were developed, the only way to get footage from the sky was by taking a camera up in a full-size helicopter, an expensive option. Aerial cameras give the same effect for a lot less money.

A number of different types of drones and quadcopters are available from camera stores and most start from around $50.

In some countries, you need a license to fly a drone or quadcopter, so make sure you know what the rules are where you live.

- **DSLR video:** For many years, cameras used two lenses — one through which the photograph was captured on film, and another that passed the image to the viewfinder that the photographer would look through. This approach had some problems, however: Sometimes the images photographers thought they were capturing weren't the ones they ended up with later when the photos were developed. The single-lens reflex camera (and later, the digital single-lens reflex camera, or DSLR) changed that: With the single-lens approach, the image you saw through the viewfinder was the same as what you captured on film.

  Basically, a DSLR camera is one that uses a mirror behind the lens to reflect what's happening through the lens into the eye piece. The DSLR is a still-photography camera that uses detachable lenses and produces some amazing images. Within the past ten years or so, manufacturers began including a video function with their DSLR cameras that allows you to capture beautiful video, too.

DSLR cameras (see Figure 1-6) are more compact than some of the cinematic cameras, so they're great for capturing video if you're traveling or shooting in small spaces.

DSLR video can look very cinematic, which means it looks more like the quality you would see on a blockbuster film in the cinema. The reasons for this are:

- They are equipped with bigger sensors, which capture more of the scene you are filming — more light, and a greater depth of field. See the nearby sidebar, "Depth of field."
- They allow you to attach different lenses so you can get a variety of shots. A good lens can create a beautiful shot.

For a number of reasons, DSLRs are not great for recording long video clips: They can be complicated to set up, for instance, and because they can overheat, they have a limited recording time. Additionally, recording sound with these devices isn't easy: The onboard microphone is mediocre at best; while recording, the camera produces quite a bit of noise; and the only way to connect an external microphone is through a mini jack.

Figure 1-6

I used DSLR cameras for video when they were first released and I've filmed many short films using them. The video was great, but because of DSLR's limitations with sound, I had to record sound using a separate device and then match the sound to the video later, during the editing process. If you're working on a large project, matching sound like this can take a long time.

- **Digital cinema cameras:** Digital cinema cameras (see Figure 1-7) are used to film larger film projects and they give a more cinematic feel and look to the footage. Like camcorders, digital cinema cameras have become more affordable and more compact. Fifty years ago, you would have needed a truck to carry around your cinema camera and equipment, but nowadays they can fit into your rucksack.

  Digital cinema cameras can be purchased from most large camera stores and range in price from $1,000 to more than $60,000.

  Digital cinema cameras are usually larger than most cameras because they have more technology to fit into the inside of the

Figure 1-7

camera body. They are also usually the more expensive option: With digital cinema cameras, you buy the body of the camera only and then add additional attachments, including lenses and monitors, later. Some of these attachments cost as much as the camera body.

As with DSLRs, cinema cameras have larger sensors inside the camera body to capture more light and more depth of field.

Cinema cameras tend to have more manual settings and can be complicated to set up. Because of this, I mainly use my cinema camera for dramas and films (and sometimes for corporate projects). On film projects, I have more time to change lenses and adjust settings to get the shot I want.

Depth of field

Depth of field is the area around your subject that is in focus. A shot that has a shallow depth of field has a smaller area in focus around your subject. This produces a blurred background that can make your shot look cinematic. As you can see the figure, the subject, Paige, is in focus, but the background is blurry and out of focus.

A shot that has a wider depth of field, on the other hand, has a larger area in focus around your subject. This is better if you want to get more of your scene in focus or if you have a lot of movement in your shot and you don't want your subject to go out of focus. An example of a wide depth of field appears in the figure below. As you can see, in this figure, Paige is in focus and the background is also in focus.

To have more control over the depth of field in your shots, your choice of camera is important. If you want to create a shallow depth of field within your shots, choose a cinema camera or a DSLR with a large sensor.

How to Record and Import Footage

You may be wondering why I've included a section on recording and importing footage here — you just press Record, right? It's not quite as simple as that. Many mistakes have been made at this stage, including mine: I set up the camera and was so busy watching my actors' Oscar-winning performances onscreen that I failed to notice I hadn't pressed Record — it's easily done!

Take your time. It's important not to rush when setting up your camera. Rushing can lead to mistakes. I prefer to make sure everything is set up before I call my actors in. If they arrive early, I get them to read through their lines and prepare for the shot, which gives me more time to set the shot up and make sure everything is ready before I start filming.

Directors often give instructions to cast and crew as part of the filming routine. If you watch behind-the-scenes footage from films, you can sometimes hear the directors calling out instructions to the team. (See Figure 1-8.) These may seem like code if you don't know what they mean. The following list describes some of the most common:

Figure 1-8

- **"Quiet on set":** This grabs the attention of the crew and actors around and warns them you are filming and that everyone should stop talking. If people continue to talk, you may need to shout louder.

- **"Roll sound":** This is a cue for the sound operator to start the sound recording (if you're capturing sound separately). It's also an opportunity for him or her to warn you of any unwanted noises. If all is clear and your sound operator has set the sound recording, he will respond with "Sound rolling" or just give you a thumbs-up. (See Figure 1-9.)

Figure 1-9

- **"Roll camera":** This is a cue for the camera operator to start the camera recording. When she's done this, she'll respond with "Camera rolling." Remember to keep your finger away from the Record button while filming — you may accidentally press it again and stop recording. (See Figure 1-10.)

Figure 1-10

If you watch behind-the-scenes documentaries about the making of films you see the camera operator shout out "speed" instead of "rolling." This is a leftover from the days when the cameras recorded onto reels of tape. On those cameras, the motors inside the cameras would need a few seconds to get the reel of tape rolling at the right speed. Back then, the camera operator would wait until the camera was rolling at the right speed and would shout "speed" to let the director know it was okay to record. This term may be out-of-fashion, but some camera operators still use it. You can use either "speed" or "rolling"; it's up to you.

- **"Slates":** This is the cue for the person with the clapperboard to introduce the scene and take number. (See the nearby sidebar, "Using a clapperboard.") (See Figure 1-11.)

Figure 1-11

- **"Action":** This is the last instruction to be called before the scene begins. It instructs the actors to start acting. (See Figure 1-12.)

Figure 1-12

- **"Cut":** This instructs the camera and sound operator to stop recording after the actors have finished the scene. It's important not to shout this too early: You may need the extra video footage later, when you're editing your film.

After many of the instructions called by the director, the crew is expected to respond — to confirm, for instance, that the sound

Using a clapperboard

You may be wondering why a clapperboard is used in filmmaking. A clapperboard is used when you record video and sound separately, usually on bigger film productions. Details of the film and scene will be written on the clapperboard so it's easier to organize when editing. In the past, the information was written onto the clapperboard in chalk, but these days marker pens are used. When the operator stands in front of the camera and claps the clapperboard, the sound recorded and the video of it closing can be synced together when editing (if you're recording sound separately).

and camera are rolling. Even if I'm filming on my own, I tend to call out the instructions as a reminder to myself and also to let people around me know that I am filming. It's good to get into this habit for when you work with a larger film crew.

Importing your footage from your camera can be done in two ways, as explained below:

- **Importing directly from the camera:** This involves connecting your digital video camera to the computer directly via a USB or FireWire cable. Your camera instructions will be able to show you where the USB or FireWire connection is on your camera. (See Figure 1-13.)

  Your editing tool should recognize when the camera is connected and you can import your footage from the camera.

  This will be covered in more detail in Project 5 as you import and edit footage from your camera.

Figure 1-13

- **Importing from the media card:** This involves removing the media card from the camera and inserting it into a media card reader connected to your computer. (See Figure 1-14.)

  Your editing tool should recognize the media card when it's inserted and you will be able to import the video clips from your media card.

  I use this method because I always remove the media cards after filming to make sure I don't record over them or lose them. Some film projects require many media cards so I put them into a case and name them, which makes it easier to sort through footage when editing.

Figure 1-14

Try It Out Yourself

Now that you're armed with some knowledge about the different types of cameras available, and a basic understanding of how to record and import footage, it's time to get to know your camera in

the best way possible — by getting out there and recording with it. Don't film anything too complicated to begin with; try filming things around the house or in your garden or local park. This will help you get familiar with the functions and features on your camera so you'll be ready when you begin shooting your first film project.