Using a DSLR Camera to Create Time-Lapse Video

Believe it or not, you have the ability to shoot film-resolution 2K files, 1080 HD, and standard-definition video with any off-the-shelf digital single-lens reflex (DSLR) camera. For under $2000 or less, that’s a lot of capability at a great price-point. So what’s the catch? You’re limited to time-lapse photography and stop-motion techniques, but the results are nothing short of amazing. I’ll leave stop motion to other articles on the subject and we’ll explore time-lapse techniques in this outing. With some professional high-end professional DSLRs on the market, you can even surpass 2K film resolution with little effort. With some professional high-end professional DSLR image sensors (CMOS or CCD), what we will call your “raw” data taken by the image sensor (CMOS or CCD). What this brings to you is much greater flexibility in the post-production process. White balance off? No problem. Exposure slightly low? No problem. With RAW images, you can adjust image settings based on the raw data instead of adjusting the image based on an image that has already been processed, like JPEG. By doing this, you can adjust your image with much less noise as a result. It’s kind of like working with negative film and adjusting the levels before you create a print out of it. But like anything that delivers greater quality, a RAW image will be larger in file size than its JPEG counterpart. But believe me, it’s worth every extra byte.

Resolution
When it comes to time-lapse photography (AKA, “interval shooting”), there isn’t a true HD video camera on the planet that’ll out-perform the resolution, quality and control of your standard DSLR. The best HD video cameras only go up to 1080 HD (which by the way equates to only 2.1 megapixels) and the media is fairly compressed in most cases. With a DSLR, not only can you achieve 1080 HD resolution, you can even surpass 2K film resolution with little effort. With some professional high-end professional DSLRs on the market, you can even surpass 4K film resolution while paying only a minute fraction of what a Grass Valley Viper or Sony CineAlta rig would cost. It’s not just a matter of frame size that makes DSLRs so much better than HD video cameras for time-lapse. It’s also a matter of image formats.

With a high quality DSLR, you can shoot in RAW mode, which is basically the “raw” data taken by the image sensor (CMOS or CCD). What this brings to you is much greater flexibility in the post-production process. White balance off? No problem. Exposure slightly low? No problem. With RAW images, you can adjust image settings based on the raw data instead of adjusting the image based on an image that has already been processed, like JPEG. By doing this, you can adjust your image with much less noise as a result. It’s kind of like working with negative film and adjusting the levels before you create a print out of it. But like anything that delivers greater quality, a RAW image will be larger in file size than its JPEG counterpart. But believe me, it’s worth every extra byte.

Flexibility
Another great benefit of shooting with a DSLR is glass. Nothing beats picking your lens of choice for a specific shot in mind. With a quality fast lens, the large DSLR’s image sensor can obtain narrower DOF (Depth of Field); something a DV camera can only dream of.

Another interesting aspect of using DSLR versus any video camera is size. Obviously DSLR cameras are small when compared to quality video cameras, especially a broadcast SD or HD camera. I have a photography backpack that holds the camera, five lenses, a large selection of filters, flash, a nifty notebook computer compartment and miscellaneous items like batteries, CF cards, cords, etc. All of this is smaller than a CineAlta HD camera itself.

Control
There are several ways to control your DSLR. Canon has a nifty digital shutter release controller (Model TC-80N3) that works perfectly with my Canon 20D. With it, you can set interval times (minimum of one second intervals) and the remote will accurately snap away as if it were you physically hitting the shutter release button.

Another useful way to shoot time-lapse is by tethering your DSLR to a computer via USB or Firewire. Canon offers free software to its DSLR users which controls every function of the camera from the software, including time-lapse recording. You can even shoot your images directly to the computer or the camera — or both, if you prefer.

If you anticipate shooting frames over an extended period of time, then saving your images directly to a notebook computer (or even to an external FireWire drive for even more space) is a powerful option. With memory cards at the current capacity of 8 GB with 16 and 32 GB on the way, external storage may not be required. As a point of reference, I can currently get about 20 seconds worth of 24p footage on a 4 GB CF card running in RAW mode at full 8.2 mega-pixel resolution.

Speaking of “control”, I’d like to emphasize the use of shooting in manual mode, in both the camera’s shooting mode and the focus mode. It’s very important to set everything to manual or your frames may have sporadic exposure levels, white balance levels and so on. Don’t use a single auto-function on the camera at all! This means setting your ISO, your white balance, your F-stop, your shutter speed and of course, your focus setting. If you don’t know how to use those functions individually, this is the perfect time to learn (get out the manual!).

Format Options
So now that you’ve got a ton of time-lapse photos taking-up gigs of space, what do you do with them? For me, I throw the image sequence into

Five things to remember when shooting time-lapse for video:
1. Shoot in RAW mode if you have the option.
2. Shoot in manual mode, both camera and lens.
3. Format your card before you start.
4. Use a battery grip pack or external power.
5. Use a good tripod on solid ground.

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Adobe After Effects. It’s simple; you literally drag the folder containing the images right into After Effects and it knows that it’s an image sequence. If it’s an image sequence based off RAW images, then a popup window will ask you for import settings options. At this point, you have to know what frame-rate you want the sequence to be in. In Premiere 24, but you can work in 25 for PAL or 29.97 for NTSC. By default, After Effects will import the image sequence to 30 FPS, so change it to suit your own preference.

Next, which resolution do you want to work in? Obviously you can make a comp running at 2K if you have the hardware to play it back, or even better, 1080p24.

Worry about it and work in 1080p30 in 1080i60. Obviously making your temporal data. If you don’t, then you will have a 1080p30 comp, if you so desire. You can just as well make a 1080p30 or 1080i60 comp, if you desire. If you want to work in a true 60i format, you’ll need to change your image sequence (the time-lapse photo in Premiere) to 60i. Why? So that each interlaced field gets its own temporal data. If you don’t, then you will have a 1080p24 clip even though you think you’re working in 1080i60. Obviously making your clip run at 60 FPS will increase the time-lapse speed two-fold, so keep that in mind. Confused? If so, don’t worry about it and work in 1080p30 or even better, 1080p24.

Here’s something amazing...