

Lens Talk:

Film vs. Digital
(Talk #4)

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This is NOT about the mediums of film vs. digital but rather as it relates to the lenses for the 35mm format or more commonly known as SLR (single lens reflex) and DSLR (digital single lens reflex) cameras.

As a precursor, if you have only picked up an SLR for the first time since the introduction of digital or are using a full frame pro level camera then stop here. All the chatter after this only matters if you have used the 35mm format with film first and are converting over to digital AND are using a small format sensor in a consumer or 'prosumer' type camera.

This whole discussion is brought about by the fact that all of the camera makers make digital sensors smaller than the old standard 35mm film size. Film had an image size of 24mmx36mm, and I guess when the camera manufacturers started to make the digital sensors, cost was a really big factor so they made the sensors smaller to make them cheaper. Canon used 15mm x 22.5mm, and Nikon used 16mm x 24mm. This sounds like a small difference but it generates the different 'crop factors' of 1.6:1, and 1.5:1.

The old lenses are still just like they were on our old film cameras, but these new camera models capture a smaller portion of the view that the lens is capable of and in effect have a narrower field of view than their full frame brothers. Camera manufacturers have used this smaller sensor size to their advantage and marketed their lenses with an equivalent longer focal length. As in a 200mm telephoto lens with a 1.5:1 factor applied to it gives you a $200 \times 1.5 = 300$ mm equivalent lens, or $200 \times 1.6 = 320$ mm equivalent lens. All of the properties of the lens are still based on the 200mm focal length but the field of view is 'as if' you used a 300mm lens. So with advertising like this the smaller sensor gives you a larger magnification on the lens and you get a 'free' longer lens. How could you go wrong with a deal like that?

In the film days, the sensitivity and resolution of film was relatively constant, so if you wanted clearer and sharper prints you used larger negatives. Now with digital sensors they are offering us smaller sensors and telling us they are better. (then why is the Hassleblad medium format sensor \$30,000?) A bigger sensor is still better but that is another discussion.

Back to our new longer lenses.....Has the lens changed just because the image collecting device behind the lens changed? NO. The lens is still exactly like it was before and it still projects the same inverted image on the inside of the camera. The special place inside the camera where the image is in focus is still the same too. The only difference is that the image collecting device is smaller than it used to be and therefore records a smaller portion of the image that the lens projects. This would be the same effect as if you made an 8"x10" print from film and then cut out a 4"x6" print from the centre of the big print. You have used a 'crop factor'. Now this new print would look as if you had used a longer lens to shoot the photo than you really had.

In short, all of the basic properties of the lenses you put on your camera are the same as they used to be, but the smaller image collecting devices just capture a smaller part of the image. In essence it is 'As If' you had used a longer lens.

Now at the other end of the lens line-up are the wide angle lenses. This is where the small sensors show their weakness in size. Now in a full frame film camera your 24 mm lens used to capture a wide angle view of the world, and now the digital sensor only captures a small part in the centre of that big view. The view is 'as if' you used a 35mm lens. So most of the manufacturers have made some new 'Super Wide' lenses with focal lengths in the range of 10mm to 12 mm. These new models no longer project an image circle as large as the older standard 35mm film format lenses and are only useable on the digital camera models, but they do regain the field of view we used to enjoy with lets say a '16 or 17mm lens' with film.

If you boil all this down, it comes to: if you like the format...keep it and use it as it is and don't both converting. Just like going metric; it is what it is, learn it as it is and don't think full frame and convert.