

Re: Digital vs 35mm camera optics

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From: Jamie Carter (jacarter3_at_onebox.com)

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True, "#3" was the original thrust of this thread and I was responding to a more general comparison. However, there is no comprehensive answer to this question. I can achieve similar performance with respect to the sensor with "equivalent" requirements, manufacturing processes, and optical complexity for either sensor. Since the lens is smaller, I may save money on materials, but this is a meager fraction of the lens cost.

However, if one considers the constraints imposed by the market for size, portability, lens to sensor spacing, and weight regarding consumer grade digital cameras, then these factors influence the design more than apparent resolution. The design must use steeper (faster) surfaces and many include aspheric surfaces that require tighter element and mounting tolerance which tend to drive cost if made with "equivalent" precision. My point, now being clearly stated, is that the digital camera lens could exhibit more relaxed tolerance and complexity if the design was based (weighted) on the resolution issue alone. The additional and real (market based) product requirements negate and reverse the advantage of "reduced" sensor resolution. Thus the quality and performance of the "as built" lens for consumer digital cameras are generally poorer than the 35mm camera (scaled to the sensor) in order to minimize cost but this is transparent to the user.

My experience is based on the design of a high volume lens for a start-up in Si Valley that was to market the now ubiquitous CMOS camera. This lens had few elements and was one of the toughest designs I have yet to undertake. This was contrary to my intuition too.

Jamie

AES/newspost <siegman@stanford.edu> wrote in message
news:<siegman-554796.10585618082004@news.stanford.edu>...
> In article <4b78e1a9.0408180641.72e5e96d@posting.google.com>,
> jacarter3@onebox.com (Jamie Carter) wrote:
>
>> This discussion has moved from the optical scientist to the realm of
>> the consumer. I worked at Kodak in the (very) early 80s when the Kodak

sci.optics: Re: Digital vs 35mm camera optics

- > > *"disc" camera made its debut. Back then, Kodak still did a great deal*
- >
- > *(remainder snipped)*
- >
- >
- > *Without doubting or quarreling with an*