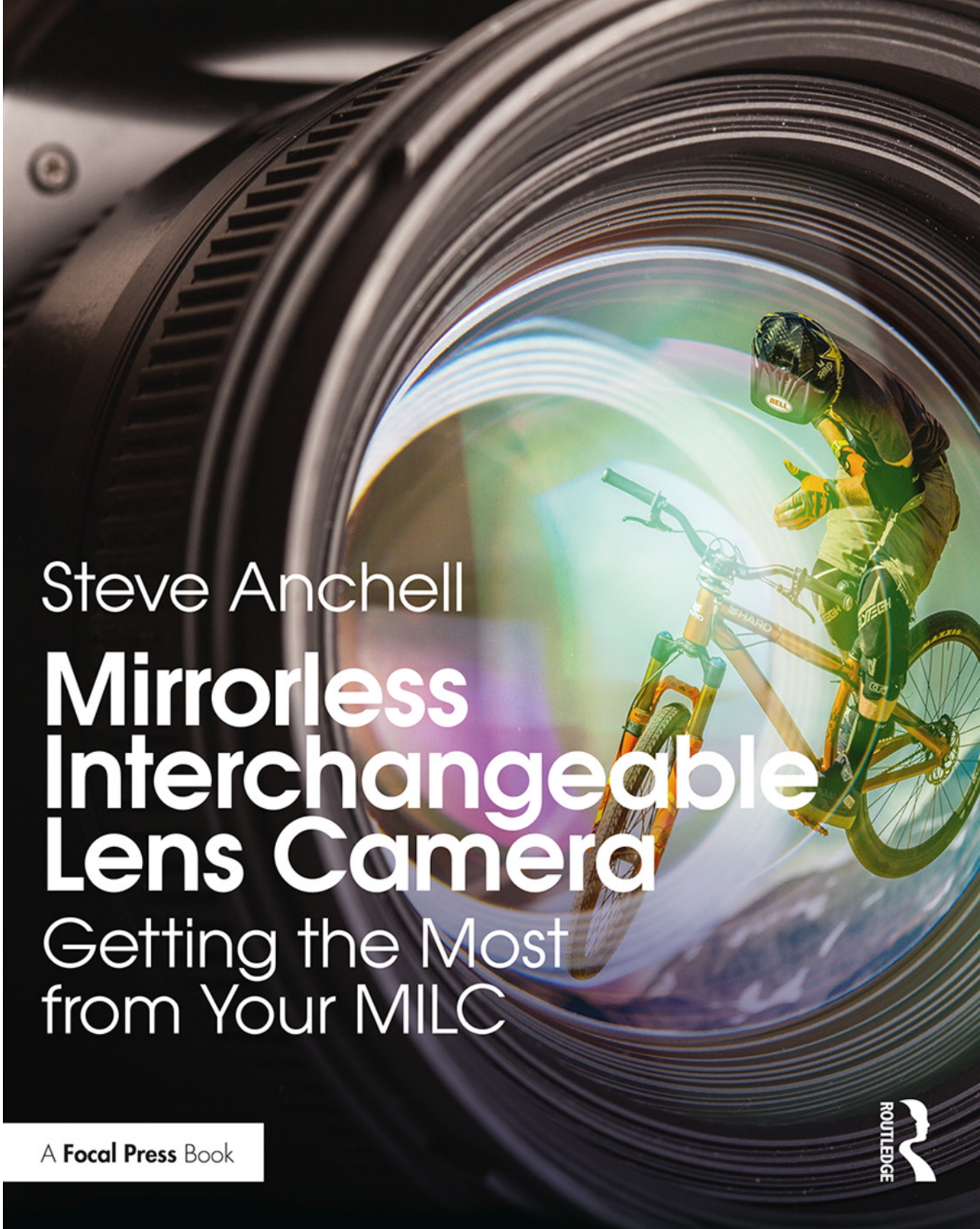


The background of the entire cover is a close-up, macro shot of a camera lens. The lens elements are visible as concentric circles and ridges, creating a sense of depth and focus. In the center of the lens, there is a circular opening through which a cyclist is visible. The cyclist is wearing a yellow and black full-body protective suit, a black helmet with a red visor, and is riding a mountain bike. The cyclist is in a dynamic pose, leaning forward as if taking a turn or jumping. The background seen through the lens is a blurred landscape with green hills and a blue sky, suggesting motion and action.

Steve Anchell

Mirrorless Interchangeable Lens Camera

Getting the Most
from Your MILC

A Focal Press Book

ROUTLEDGE


Mirrorless Interchangeable Lens Camera

Mirrorless interchangeable lens cameras are changing the way images are captured, being far more in line with modern photography trends and sensibilities. With *Mirrorless Interchangeable Lens Camera: Getting the Most from Your MILC* you'll learn why this is happening and how to get the most from your mirrorless camera. This guide covers everything you need to know about the difference between a mirrorless camera and a DSLR, apps, lenses, video recording, and picture profiling features. You'll learn how to use your mirrorless interchangeable lens camera for different genres of photography including landscape, travel, low light, street photography, portraiture, and more.

Written by expert and skilled instructor **Steve Anchell**, this book includes 198 inspirational and instructional images with 154 in full-color, with insights and photographs from 9 professional photographers. It's the perfect guide for established photographers not yet aware of the wealth of benefits mirrorless interchangeable lens cameras offer and for beginning photographers just starting their career.

Steve Anchell is an internationally published writer, photographer, and teacher with work exhibited and shown in sixty-one exhibits. He has taught photography for Oregon State University, Santa Fe Photography Workshops, International Center of Photography in NYC, and many others, and is a member of the Freestyle Photographic Board of Advisors. Steve has four books on photography in print, *The Darkroom Cookbook*, *The Film Developing Cookbook*, *The Variable Contrast Printing Manual*, and *Digital Photo Assignments*. He is the former editor of *Photovision: Art and Technique* and *Focus Fine Art Photography* magazines and has written and worked as contributing editor for numerous photography magazines.



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Mirrorless Interchangeable Lens Camera

Getting the Most from
Your MILC

Steve Anchell

First published 2019
by Routledge
52 Vanderbilt Avenue, New York, NY 10017

and by Routledge
2 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN

Routledge is an imprint of the Taylor & Francis Group, an informa business

© 2019 Taylor & Francis

The right of Steve Anchell to be identified as author of this work has been asserted by him in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

Trademark notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

Library of Congress Cataloging-in-Publication Data
A catalog record for this title has been requested

ISBN: 978-1-138-30801-5 (hbk)
ISBN: 978-1-138-30812-1 (pbk)
ISBN: 978-1-315-14281-4 (ebk)

Typeset in ITC Stone Serif
by Swales & Willis Ltd, Exeter, Devon, UK

For Bob Hautala, Western Oregon University, beloved by his students and
a selfless friend



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Table of Contents

<i>Preface</i>	<i>viii</i>
<i>Introduction</i>	<i>ix</i>
CHAPTER 1 The Mirrorless Revolution	1
CHAPTER 2 Knowing Your Camera	12
CHAPTER 3 MILC Components in Depth	22
CHAPTER 4 Beyond the Basics	39
CHAPTER 5 MILC Custom Controls	73
CHAPTER 6 Lenses	93
CHAPTER 7 MILCs in Practice	107
CHAPTER 8 Post-Processing	141
CHAPTER 9 Video Capture	156
<i>Appendix 1 Camera Preferences and Defaults</i>	<i>168</i>
<i>Appendix 2 Trusted Web Sites</i>	<i>193</i>
<i>Acknowledgments</i>	<i>196</i>
<i>Index</i>	<i>197</i>

Preface

There are many expert and knowledgeable people online writing about photography and technique. Because of this, nearly everything found in this book can be found through online searches. What cannot be found is my fifty years' experience as a photographer in nearly every genre from aerial to fashion, from landscape to wildlife, from documentary to architecture.

What I have done for you is research the information you need, culled through countless pages of reviews, articles, videos, and how-tos; discarded some bad advice and misinformation, and combined it with my experience. In these pages, I have left out a lot that you simply don't need to be a successful photographer and included what I feel will be of most benefit. I've organized it in a way that you can easily find just what and how much you need to know without being overwhelmed by the wealth of information to be found on the web.

It's not necessary to read this book cover to cover. Instead, you can use this book as you would an owner's manual. If you want to know about something specific to do with an aspect of photography or MILC go to that section and you'll find I've broken it down to the essentials for you.

Introduction

Photographers tend to be traditionalists. They find something that works for them and tend not to change. Film photographers often spend days, weeks, months to find the right combination of film and developer that works for them. Once they find a combination to their liking they're slow to change, as change would require more days of testing, and what they really want is something that works so they can concentrate on recording images. Often, they'll have one combination for landscapes, one for portraits, one for studio assignments, and so on. Ansel Adams falls in this category. Other film photographers have only one combination for most of their career. Edward Weston, Imogene Cunningham, and W.E. Smith, fit this category.

Digital imagers have similar constraints. A digital imager can spend days, weeks, or months learning a new piece of software, such as Adobe Photoshop (PS). And within their chosen software there's a tendency to create a workflow that they apply to most, if not all, of their images. It could be a certain amount of color correction or sharpening. Perhaps they apply HDR (high dynamic range) to every image. If a new software comes along why would they want to spend more time learning how to use it when they already have a perfected workflow in another program? After all, the point is to spend time creating images, not learning new software.

Where digital imaging and film photography part company is the ability digital cameras have to preview images (image preview) at the time of capture. No matter how good a film photographer may be, they never know for certain if their images are being recorded, and if they are if they're being exposed correctly.

Mirrorless interchangeable lens cameras (MILC) with high-quality electronic viewfinders (EVF), take the image preview feature one step further. As you change your exposure settings you are able to see a preview of your exposure in real time. This is something even the most expensive

There's a story told about the great fashion photographer, Richard Avedon. A friend convinced him to take a day off from his studio routine that involved using an 8 × 10-inch large format view camera mounted on a sturdy tripod, and have fun photographing outdoors with a handheld camera. After a day of photography using a 35mm single lens reflex (SLR), Richard returned to find he had forgotten to put film in the camera.

What happened to Avedon doesn't happen with digital capture. Not only can you not fail to notice if you forget to insert a media card in your camera (the camera tells you), digital cameras have two features that help make certain you're both recording the image and exposing it correctly, histogram and image preview. These two features alone make digital imaging a superior means of recording for professional photographers, as well as non-pros.

digital single lens reflex (DSLR) using an optical viewfinder (OVF) cannot do. High-quality EVFs have come so far it's nearly impossible to tell them from an OVF, see Chapter 3, Viewfinder Types: Eye-Level Viewfinder: Optical. This one feature of MILC is so remarkable it would be worth switching from a DSLR.

In this book, I will highlight and explain many of the advantages of using a MILC. If you're just starting out in photography, you'll learn why I recommend you invest in a MILC system. If you're a seasoned pro, I think you'll be convinced.

CHAPTER 1

The Mirrorless Revolution

THE REVOLUTION HAS BEGUN

There's a revolution happening in photography. While not as dramatic as the move from film to digital, it's nonetheless every bit as important. The revolution is not how we record images, but what we use to record them. It is the change from the near universal use by professional and serious photographers of digital single lens reflex (DSLR) cameras to mirrorless interchangeable lens cameras (MILCs).

As Kenji Tanaka, Senior General Manager of Sony's Digital Imaging Business Group was quoted as saying in a DPReview.com interview on March 16, 2018, "If cameras are going to develop, manufacturers have to develop mirrorless technologies."

By mirrorless technologies Mr. Tanaka is referring to compact cameras that don't have mirrors that flip out of the way when an exposure is made, as do DSLR cameras. And though similar to compact mirrorless cameras, the distinguishing feature is the ability of MILCs to interchange lenses.

Through the fusion of modern design and technology, MILCs are capable of outperforming DSLRs in almost everything from quality to continuous shooting, with enhanced focus, exposure control, and monitoring. MILCs also have major advantages when it comes to video capture, an increasingly important part of professional practice.

The one major objection to MILCs will be all but overcome by the time this book has been published: limited lens selection. Not only are the major players, Fuji, Olympus, Panasonic, and Sony, adding new focal lengths to their line of lenses, but Tamron, Tokina, and Sigma, makers of third-party lenses, are rushing into the market with professional quality glass.

Whether they know it yet or not, before long most professional photographers will be working primarily, if not entirely, with MILCs.



FIGURE 1.1 *The Zeiss Ikon VEB Contax S film camera introduced in 1949 was the first mass-market SLR. The design of the pentaprism soon became universal with all SLR manufacturers.*

What Is a Mirrorless Interchangeable Lens Camera?

Mirrorless cameras have been around since the beginning of photography. In fact, all 35mm cameras were mirrorless until the introduction of the Zeiss Ikon VEB Contax S film camera in 1949, Figure 1.1. This camera featured an eye-level optical viewfinder (OVF) that with the aid of an internal mirror allowed the photographer to see through the lens. Seeing through the lens was not new to photography, it's how you used a view camera dating back to the 1830s. But seeing through the lens of a handheld camera was revolutionary.

The modern style of 35mm handheld camera became known as the Single Lens Reflex camera (SLR). The use of the word “reflex” in the name has nothing to do with the mirror flipping out of the way the moment the shutter is released. Reflex is a physics term for reflecting light, so the word refers to the mirror itself, which is why it also appears in the name of Twin Lens Reflex cameras (TLR), in which the mirror doesn't move.

Prior to the Contax S, photographers either composed and focused on the back of a large format view camera using a magnifier; or composed and focused through a viewing lens mounted above the taking lens on a TLR camera, Figure 1.2, or composed and focused through a window to the side of the taking lens in a viewfinder camera, Figure 1.3. By viewing through the lens of the Contax S the photographer could accurately see what they would record.

The immediate precursor to the current MILC was the Epson R-D1, developed by Seiko Epson and Cosina Voigtlander in 2004 (Figure 1.4). The R-D1 was a cross between a rangefinder-style camera, using digital capture and manually focused Leica lenses, and a current generation MILC.

There were two limiting factors in the R-D1 and subsequent early attempts at MILCs. The first factor was the exclusive use of contrast detection autofocus (CDAF) that took about twice the time to acquire focus compared to phase detection autofocus (PDAF).



FIGURE 1.2 *Rolleiflex TLR camera.*

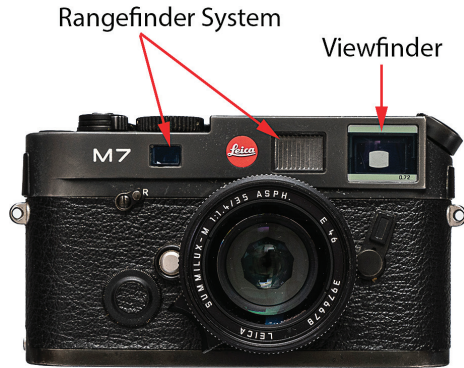


FIGURE 1.3 Leica M7 viewfinder camera with a rangefinder focusing system.



FIGURE 1.4 The R-D1 was a cross between a rangefinder-style camera, using digital capture and manually focused Leica lenses, and a current generation MILC. Image Source: The Online Photographer.

Professional photographers covering sports, street photographers, or anyone photographing action of any kind were unable to effectively use these cameras. With the introduction of hybrid autofocus (hybrid AF), combining CDAF with PDAF pixels built into the image sensor, MILCs are now able to offer fast and as accurate continuous AF as DSLRs.

The second limiting factor was the lack of an EVF with the resolution, clarity, and response of direct optical viewing found when using an OVF. EVFs found on less expensive MILCs and most compact mirrorless cameras still suffer these effects. But today, those found on high-end MILCs, such as the Sony a7RIII, Nikon Z 6 and Z 7, Fujifilm X-T2, Panasonic Lumix GH5S, and the Leica SL, are nearly indistinguishable from an OVF with additional advantages, such as the ability to overlay real-time information in the viewfinder window such as histogram, focus peaking, and Zebra, as well as being able to preview exposure adjustments in real time.

Until these two obstacles were overcome DSLR cameras ruled the professional and “serious” photography world. Not that DSLRs ever outsold compact digital cameras aimed at the “Mom & Pop” market, they didn’t. The market for inexpensive point-n-shoot family-style cameras far outnumbers the market for pro cameras and always has. But for anyone serious about image making, the MILC has changed the game.

MILCs versus DSLRs

DSLRs use the same design as 35mm SLR film cameras. A mirror inside the camera body reflects the light coming through the lens to a prism and into the viewfinder allowing you to see directly through the lens, Figure 1.5.

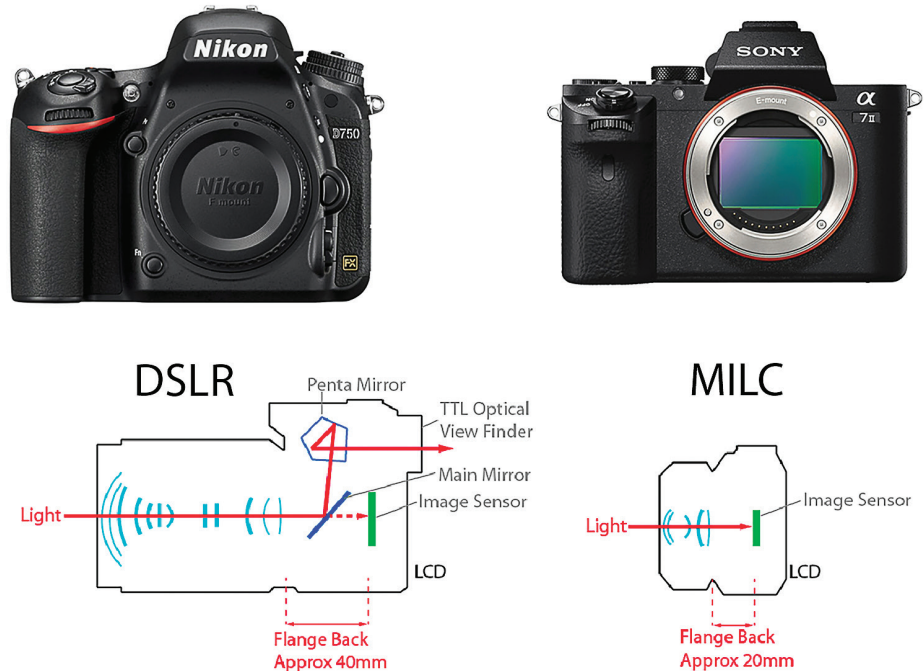


FIGURE 1.5 SLR cameras have a mirror that flips out of the way so that light can reach the sensor. Because MILCs don't have a mirror mechanism or an OVF they can be made smaller, lighter, and quieter. Image Source: The Online Photographer.

When you release the shutter, the mirror flips up, the shutter opens, and focused light strikes the image sensor, recording the image.

With a mirrorless camera, light passes through the lens and directly onto the image sensor, there is no mirror or prism. A preview of the image is either displayed on a rear LED screen, known as Live View (LV) or on a second eye-level EVF screen. Due to their lack of a mirror, the mechanism necessary to move it out of the way, and a pentaprism, MILC cameras can be made smaller, lighter, and mechanically simpler.

A MILC camera also known as a Compact System Camera (CSC), can do anything a DSLR can do; but a DSLR cannot do everything a mirrorless camera can. The only thing that holds mirrorless cameras back is the choices made by the camera makers. The lack of a feature or an inadequate function, such as slow AF has more to do with poor design choices or keeping cost down than the lack of technology. This is one reason it's always a good idea to check out current camera reviews

on reputable web sites such as Camera Labs, DPReview, TechRadar, or Imaging Resource.

How Are They Alike?

Both MILCs and DSLR cameras have these things in common:

- Image stabilization (IS) for low light and handheld photography. IS can be found in either the camera body, known as In-body Image Stabilization (IBIS), or in the lens, simply known as IS, and sometimes it can be found in both, depending on the system used. Most MILCs now have some form of IBIS.
- There are two types of AF: phase detection and contrast detection. When MILCs were first introduced they relied on slower but more accurate contrast detection, whereas DSLRs mostly used phase detection. It didn't take long for faster focusing phase detection to be introduced into MILCs. Most MILCs and some DSLRs now have "hybrid" AF systems combining contrastAF with phase-detection pixels to further refine focus.
- Both systems can achieve excellent still-image quality, it's all in the size and quality and design of the sensor, and the number of megapixels, with more not necessarily being better.
- Both systems, DSLRs and MILCs, are capable of producing high-definition (HD) and 4K video. However, DSLR makers currently are only incorporating 4K into their high-end pro-line cameras, whereas 4K is not only in top-of-the-line MILCs but is rapidly making its way into less expensive models, such as the Sony a6500 and the Fujifilm X-T2.

In case you're wondering, there's no reason 4K can't be used in any camera, it's just that DSLR makers use 4K as one of the methods to differentiate their pro cameras from their mid-range enthusiast cameras.

- Image and video playback, along with image sharing, is equivalent between DSLRs and MILCs. Both camera types can display images on their screens or using an HDMI output. Many now include Wi-Fi for sending images to smartphones for quick image sharing with clients and all your best new friends on Facebook. The Nikon Z 7 can connect the camera to your computer via Wi-Fi, something even the flagship Nikon D850 DSLR can't do.

The Advantage of MILCs over DSLR Cameras

MILCs are still in a relatively early stage of development. As mentioned, any apparent lack has more to do with poor design or cost cutting than a fault in the system. Unless you're into conspiracy theories and believe that the major players are holding back technology to sell new model cameras every six months.

Two examples of faulty design are the one mentioned above, poor AF performance in the original MILCs that relied entirely on contrast detection and slow frames per second (fps), and small buffers (burst speed).

All three issues have been successfully addressed. With the introduction of hybrid phase and contrast detection focusing systems MILC AF can be faster and as accurate as any DSLR.

EVFs allow for the inclusion of features to enhance exposure and focus that cannot be included in a DSLR OVF due to technical limitations. EVFs can also simulate the exposure and white balance the camera will record.

The body of a DSLR must be bigger so the mirror can flip up without scraping the back of the lens. Removing the mirror and the mechanism that goes with it helps to significantly lighten the size and weight of the camera.

Because there's no mirror to flip out of the way, MILCs can expose more fps than DSLRs. Whereas DSLRs have hit their ceiling at about 12fps, the 20MP Olympus OM-D E-M1 Mark II can expose 18fps with continuous AF tracking. While other MILCs are not yet as fast, it's just a matter of time before they catch up.

Also, because MILCs don't have a mirror, the AF points can be located directly on the sensor, allowing extremely accurate, continuous follow-focus. With only a few exceptions, DSLR PDAF points are located on a separate sensor, making it difficult or impossible to follow focus when using video mode.

Camera shake, due to mirror slap, is eliminated by MILCs. Even without 5-axis sensor-shift IS, a MILC can be used handheld at slower shutter speeds than the most advanced DSLR.

For the pro with a lifetime investment in lenses, perhaps the single most important feature of MILCs is that with an inexpensive adapter they can accept lenses from virtually any known lens company.

Many MILCs now have 100% silent shutter release capability. The ability for completely silent shutter release has the obvious advantage of incognito street and surveillance photography but is highly desirable on motion-picture sound sets, at certain sports events such as golf tournaments, concerts (where the photographer is in close proximity to the stage or musician), and any place where the click-clunk of the DSLR would not be desirable.

Disadvantages of MILCs

Online forums and magazine articles, both in print and online, are quick to point out the limitations of MILCs cameras. But in the articles and reviews that I have read, it boils down to four things: battery life, lack of accessories, limited lens selection, and poor continuous AF tracking.

Battery Life

Measuring how long a battery will last between charges is more than just how many images you take. Viewing, scrolling, changing menu options, powering on, the EVF, having the LCD (liquid crystal display) screen set for high definition viewing mode, Wi-Fi mode, all use juice.

Because of their smaller size, MILCs tend to have smaller batteries with less storage capacity. Because it's the only area in which MILCs appear to be technically lacking a great deal of nothing has been made about this by die-hard DSLR users. The reason I say it's nothing is the reason it's a problem in the first place: the batteries are small.

The Sony a7RIII is rated for as many as 530 exposures and the Panasonic Lumix GH5S is rated for 440 exposures. Six small batteries would be good for approximately 3,000 exposures with either camera. That means instead of carrying three spare large batteries for a DSLR in your pocket or camera bag, you'll need to carry six small batteries, Figure 1.6. I've been carrying extra batteries in my pocket since my first DSLR camera. When I'm practicing street or travel photography I never turn my camera off to avoid power-up lag time, and rarely go through more than two in a day, even with the older version Sony a7RII that I use.

And, of course, there's always the option of using an add-on battery grip. A good battery grip can double the amount of time and images you're able to record.



FIGURE 1.6 *If you're concerned about battery life, carry more batteries. The three Nikon D750 DSLR batteries, at the top, are collectively rated for approximately 3,690 exposures, while six Sony a7RIII batteries are rated for approximately 3,000 exposures. Because the MILC batteries are smaller they don't take up much more room than the larger DSLR batteries and are easier to distribute in your pockets. In any event, anyone who makes more than 3,000 exposures a day on a regular basis needs to seriously work on their technique.*

Lack of Accessories

Some photographers decry the lack of accessories for MILCs—though I have yet to see any of them list an accessory that’s lacking. I went online to find out exactly which accessories are missing. The first site I visited, 25 Essential DSLR Camera Accessories, <http://list25.com/25-essential-dslr-camera-accessories>, lists among other things, white balance cards, flash reflectors, lens pen, microfiber cloth, extra batteries, UV filters, Sto-fen flash bouncer, and a Pocket Rocket. Obviously, that’s not the list I wanted.

Next, I visited the Nikon site to see what accessories weren’t available for MILCs. I found the following:

1. An impressive array of battery packs for different model DSLR cameras. It should be noted that many MILCs have accessory battery packs available.
2. Under “Brackets, Adapters, and Couplings” I found a hot shoe adapter. In addition, there are thirty-nine eyepieces shown, primarily eyecups for different model cameras. There is, however, a Rectangular Right-Angle Viewfinder. I owned one that I used with a Nikon F2 film camera mounted on a vertical copy stand in the 1990s. And although this accessory fits the description of something you can’t purchase for a MILC it’s also something you don’t need, as MILCs have tilting LCD screens, which film cameras didn’t have. In fact, Figures 1.2, 1.3, and 1.6 were made using a MILC mounted on a Nikon vertical copy stand with the cameras and batteries lying flat on a white card. I used the tilting screen on the MILC to compose and focus—a Rectangular Right-Angle Viewfinder was not necessary.
3. There were also twelve miscellaneous accessories available. For example, I found a UF-8 Connector Cover for Stereo Mini-Plug Cables. Not a clue what it does but it’s good to know I can get one for my Nikon D750 should the need arise.

Beyond that, I found cables, cords, releases, microphones, and even “Extended Service Coverage” offered as accessories. So, where are the vaunted accessories only available for DSLRs I’ve read about on dpreview.com, techradar.com, tomsguide.com, and in *Digital PhotoPro* magazine?

Limited Lens Selection

The third criticism of MILCs is the limited range of lenses currently available (see Figure 1.7). This may have been a valid complaint in the early days of MILC development, but it has long since ceased to have validity. Every



FIGURE 1.7 This collection of Olympus Zuiko lenses, which doesn't even include the after-market MILC lenses being made, puts lie to the argument that MILCs have a limited lens selection. Because the Olympus Olympus E-M1 uses the Micro 4/3 standard it has a crop factor of 2.0, see Chapter 2: MILC Body Styles: Crop Factors. This means the 300mm f/4 prime lens shown on the left is equivalent to a 600mm lens on a full-frame camera, with the added advantage of being smaller and lighter. Olympus also makes a 1.4x teleconverter creating the equivalent of an 840mm f/5.6 lens. Because Olympus and Panasonic Lumix share the same lens mount system Leica lenses made for Panasonic Lumix will fit the Olympus MILC. Photo courtesy of Olympus Imaging America.

camera maker that offers MILCs is rapidly fielding new lenses for their cameras. Not only that, but third-party lens makers, including Rokinon, Sigma, Tamron, Tokina, Samyang, Voigtlander, and Zeiss, are rushing to fill the demand for lenses with dedicated mounts for Fujifilm, Olympus, Panasonic Lumix, Sony *et al.*

Not only that, but by using lens adapters, lenses made for other cameras can be used with many MILC cameras, expanding the available lens selection beyond anything previously dreamed of by photographers using film or DSLR cameras.

The takeaway is this: The MILC is capable of being a fully functional professional camera without the added baggage and weight of a mirror mechanism and pentaprism, and there are already camera models that meet or exceed professional expectations, with more to follow.

Death of the DSLR?

Hardly. Canon and Nikon are both too heavily vested in DSLR-style cameras to let them go quietly into the dark night. Both companies are desperately trying to match technology innovations with MILCs even though it's a losing battle. The fact is there's no longer any advantage for a professional to use a DSLR, except perhaps for having an OVF, and with modern EVF technology that's no advantage at all.

When one considers the many advantages of MILCs, and the advances in technology and functionality Fujifilm, Olympus, Panasonic Lumix, and Sony have made, it becomes clear that if you aren't already it's just a matter of time before you'll be using a MILC.

On August 23, 2018, while this book was still in production, Nikon unveiled their first serious attempt at MILCs, the full-frame Z 6 and Z 7 (see Figure 1.8). In almost every way the Z 6 and Z 7 are knockoffs of the Sony a7III and a7RIII. It's as if Nikon took every feature of the two Sonys and, with a few exceptions, upped the ante ever so slightly. For example, the Sony a7RIII has a 42 mpx BSI CMOS sensor versus the Nikon Z 7 which has a 46 mpx BSI CMOS sensor. The difference is hardly worth noting.



FIGURE 1.8 *The introduction of the Nikon Z-series is perhaps the most significant event in the brief history of MILCs. Along with the new Z-mount line of lenses and an adapter to retro-fit F-mount lenses, the Z-series heralds that Nikon is now taking MILCs seriously.*

The single most significant difference between the Sony A-series and Nikon Z-series is the redesigned lens mount for the Z-series. Nikon has used virtually the same lens mount with a 44mm diameter opening (throat) since the 1950s, Figure 1.9. In fact, while many camera makers, notably Canon, regularly upgraded their lens mounting systems by enlarging the throat, obsolescing their previous system to the chagrin of photographers, Nikon has made it a point of pride not to change the throat size. With the new Z-mount lenses introduced for the Z-series Nikon has enlarged the throat to 55mm. This will allow Nikon greater flexibility in lens design including extremely fast lenses for low light, and better in-camera IS. To keep their promise not to obsolesce older Nikon lenses Nikon has created a Mount Adapter FTZ adapter for F-mount lenses to work on Z-series cameras.

Barely ten days after Nikon's announcement of the Z-series of cameras, Canon camera let leak news of the imminent launch of their first serious foray into MILCs, the full-frame Canon EOS R. The 30 mpx EOS R appears to be a

half-hearted challenge to the 24 mpx Sony a7III, but at least it is an attempt on Canon's part to enter the market.

It appears that Nikon and Canon are finally taking MILCs seriously and in a big way. Is this the death of the DSLR?



FIGURE 1.9 *The lens mount throat diameter is the measurement in millimeters of the diameter of the mount. Nikon F-mount lenses measure from the inside of the mounting lugs for a throat of 44mm.*