



Text and photos
by Rico Besserdich

The aspect ratio of an image often has a noticeable effect on the visual impact and thus can be considered a powerful tool of image composition. Some aspect ratios might nowadays be considered common, some might be considered “old school,” and what may be common today could be old school tomorrow. But in photography (including underwater photography), it always pays to give image aspect ratios some deeper thought, especially when considering image composition.

What does aspect ratio actually mean?

Aspect ratio describes the relationship between the width and height of an image. The width always comes first; therefore,

aspect ratios are written in a width:height format. A 30cm (width) x 20cm (height) image has an aspect ratio of 3:2. In simple words, aspect ratios are about image proportions. The

right proportion can give the final kick to an image.

Aspect ratio is based on the camera type used. However, some newer camera models allow one to alter the aspect

ratio in camera. This, however, comes with a loss of pixels, similar to cropping an image in post-production.

Aspect ratios, as we use them today, are actually simplified val-

ues. So, a full-frame 35mm sensor (digital camera) has a physical dimension of 36mm x 24mm. Its correct aspect ratio would be 36:24, a figure that perhaps not everyone can keep in mind. To

have a more simplified and thus easier way to memorise the value, we simply divide both dimensions by 12, and then we have a 3:2 aspect ratio.

As aspect ratio is not dictated



3 : 2

Aspect Ratios

— *The History & Magic of Dimensions*

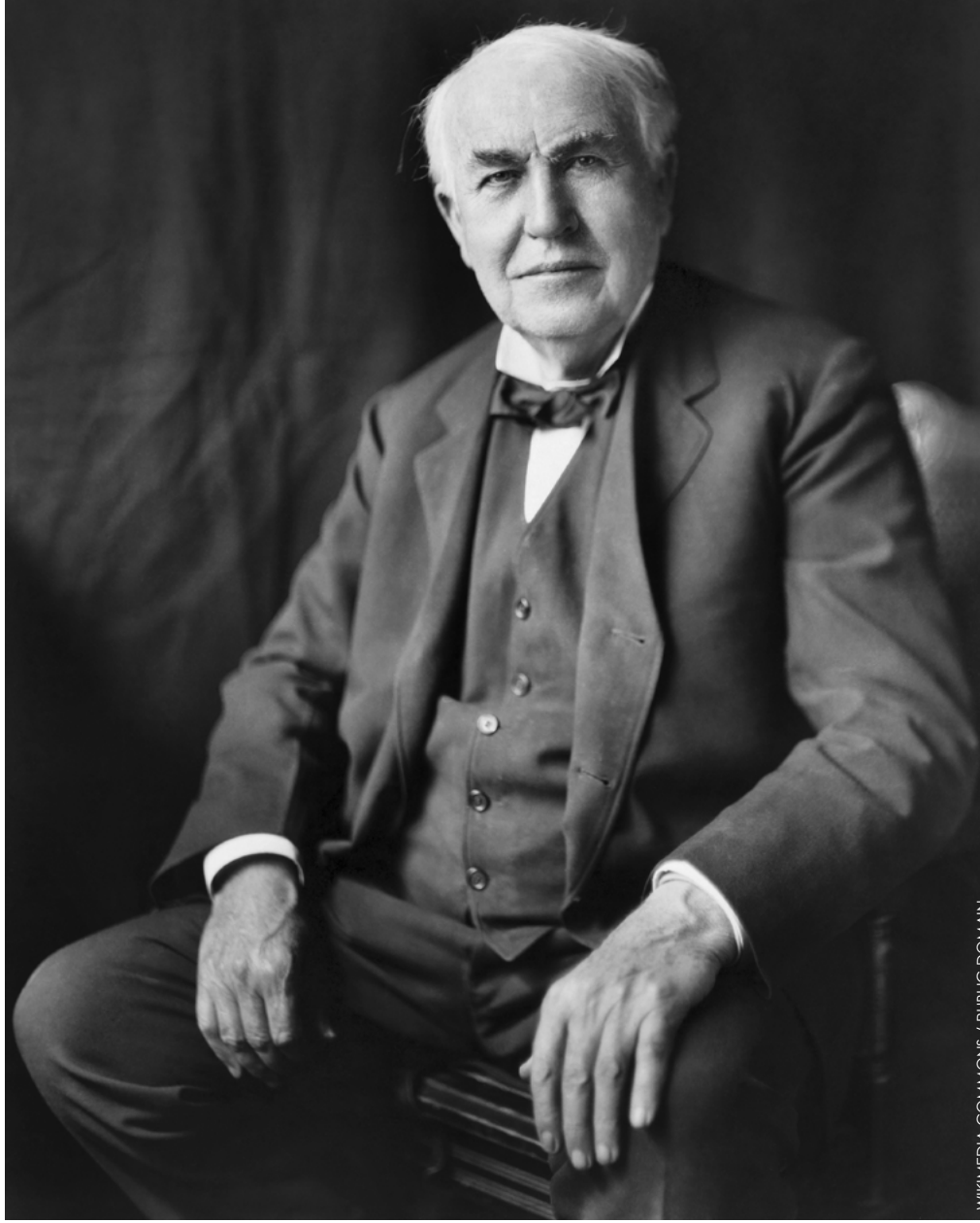


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"About like this." Thomas Edison, seen far right in this historical photo by Louis Bachrach of Bachrach Studios and restored by Michel Vuijlsteke, invented lightbulbs and the commonly used 4:3 aspect ratio. It started with a kiss—the film, *The Kiss* (by Thomas Edison, Black Maria Studios, 1886), was 18 seconds short, and the first movie ever presented for money. Shot with an aspect ratio of 4:3, this filmstrip (right) from *The Kiss* pretty much reminds one of pictures captured by still photo film cameras.



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by the size of a digital camera sensor (or film) but by its own proportions, the same story goes for sensors of crop cameras. Crop cameras have a smaller sensor—in many cases, one of approximately 22.5mm x 15mm—but it can vary depending on camera model and brand. However, these measurements conform to the 3:2 aspect ratio of the full-frame sensor: The sensor is 1.5 times as wide as it is high.

Important to know: Aspect ratio has nothing to do with sensor size or megapixels.

Let's have a look at some aspect ratios and see where they came from, why they are in use, and what Thomas Edison has to do with all of it. We will then compare different aspect ratios and their effects to underwater images.

4:3

The 4:3 aspect ratio has a long history, which goes back as far as the paintings of the old masters. But as far as it concerns the imaging world, we can say this aspect ratio was invented in the lab of Thomas Edison himself. "About like this," said Edison when he was asked what format he wanted for his

silent film, forming a shape somewhat close to 4:3 with his fingers—so the story goes.

Edison's movie *The Kiss* (1886) was one of the first films ever shown commercially to the public. In 1900, *The Magician* followed, and then in 1910, *Frankenstein*. Edison's Black Maria Studios was the first film production studio in the United States. One could say Black Maria created a standard. Of course, photography did exist at that time already. The so-called "full plates" (sometimes called "whole plates") used in Daguerreotypes had a size of 6.5in x 8.5in, which is roughly 4:3. However, when the images "learnt to walk," cinema (and not photography) did set the standard, as cinema was simply far more popular, thus beating a path for the entire imaging industry.

For decades, the 4:3 aspect ratio was the standard for television and computer screens. When digital cameras hopped on stage in the 1990s, the 4:3 aspect ratio was the first thing they adopted. Still, most digital compact cameras

(including point-and-shoot models) do use this aspect ratio, and it still remains the standard for most of the micro-four-thirds mirrorless cameras, several digital medium-format digital cameras and some medium-format film cameras, which use the 6cm x 4.5cm format.

The 4:3 aspect ratio lends images that old-school feeling, and many old masters of fine art photography would never ever use any other ratio. Some of them have absolutely nothing good to say about the aspect ratio I will introduce next.

3:2

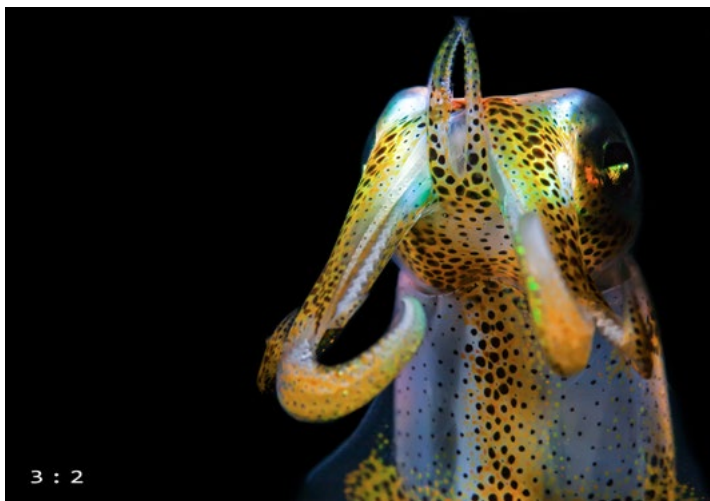
Oskar Barnack (1879-1936), the inventor of the Leica camera (yes, Leica) and of the 35mm film format, set the first stone on the path of the currently popular 3:2 aspect ratio. Barnack decided to use a

BELOW SERIES: The original image (far left) comes in a 3:2 aspect ratio. There is perhaps a bit too much negative space, one might say. A change of the aspect ratio to 4:3 (in post-production, by cropping) decreases that negative space. Cropped to the lovely "old school" ratio, the 5:4 aspect ratio, makes the image look a bit more classy, whilst the aspect ratios of 7:6, and lastly, 1:1, might be a bit too "tight."

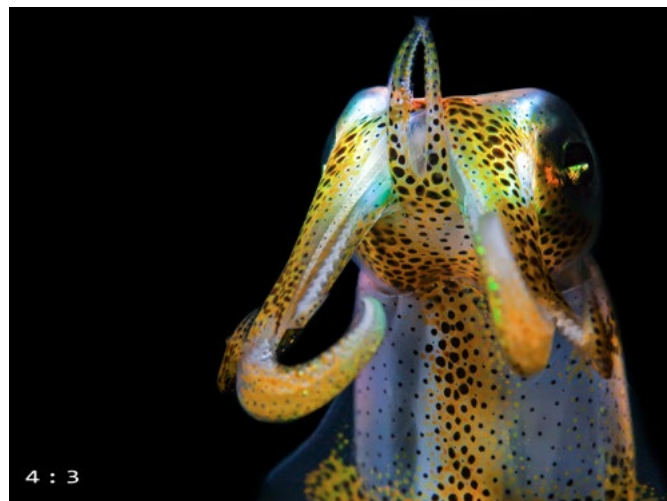


The first Leica camera had a 3:2 image aspect ratio.

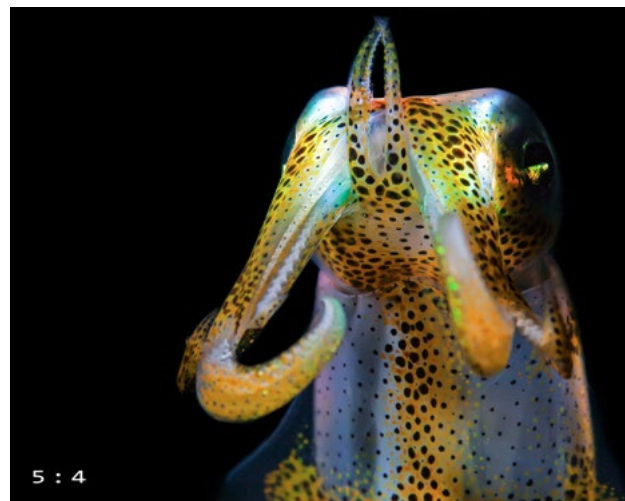
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3 : 2



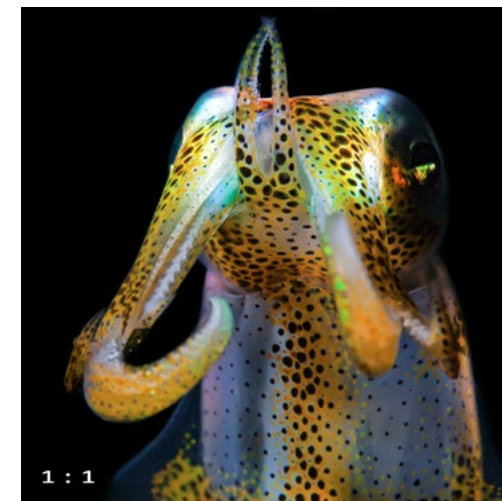
4 : 3



5 : 4



7 : 6



1 : 1



The original image (far left) has an aspect ratio of 3:2, which works just fine. A 4:3 or 5:4 ratio might perhaps help enhance the “retro look” of this scene, but that is a question of personal taste. The 7:6 aspect ratio, however, is far too tight.



double 4:3 cinema film frame, which then ended up in a 4:6 ratio—that is 3:2 when you turn it 90 degrees.

What is important to know is that at the time of Barnack, photo cameras were far from being handy. His intention and invention was the development of a camera people could easily carry with them. Therefore, he invented the 35mm format, which was widely known as the “small format.” Nowadays, digital shooters call it the “full frame format,” but its origin was the small format.

The proportions of a 35mm film, or sensor, results in a 3:2 aspect ratio, and as such, became the standard for digital crop sensors and full-frame D-SLRs, and most film cameras. Also, a few (full-frame) mirrorless cameras and some high-end compact cameras use the 3:2 aspect ratio as well.

Images with the 3:2 ratio do look a bit “wider” than those with the 4:3 ratio, which was much welcomed by nature and landscape photographers, but received not-so-optimistic opinions from portrait photographers, who thought the 2:3 (vertical) was simply a bit too “tall.” But that did not stop the success and popularity of 35mm small-format cameras.

What is important to know is that the 35mm film format, with its resulting 3:2 aspect ratio, has its roots in the early days of cinema, and with a photographer,

Barnack, who simply had had enough of carrying heavy and bulky cameras with him. Barnack suffered from asthma and was not a very sporty gentleman. The myth that pops up here and there, which states that the 3:2 aspect ratio was

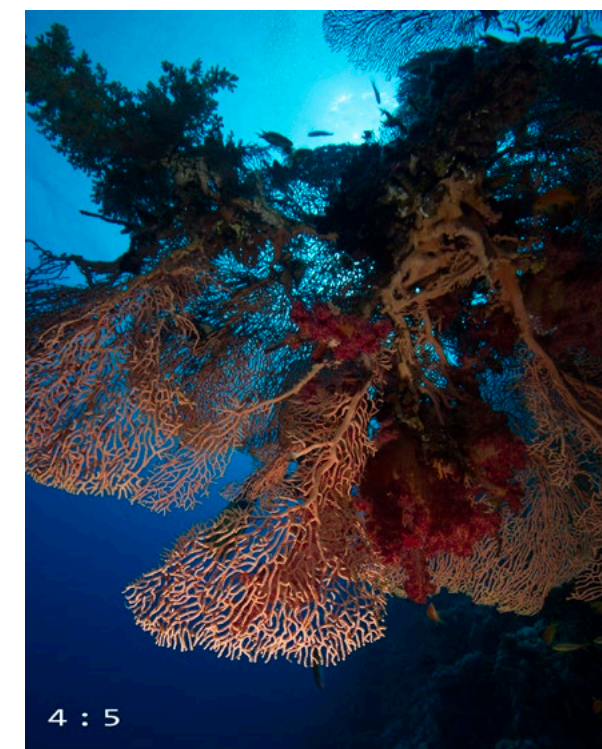
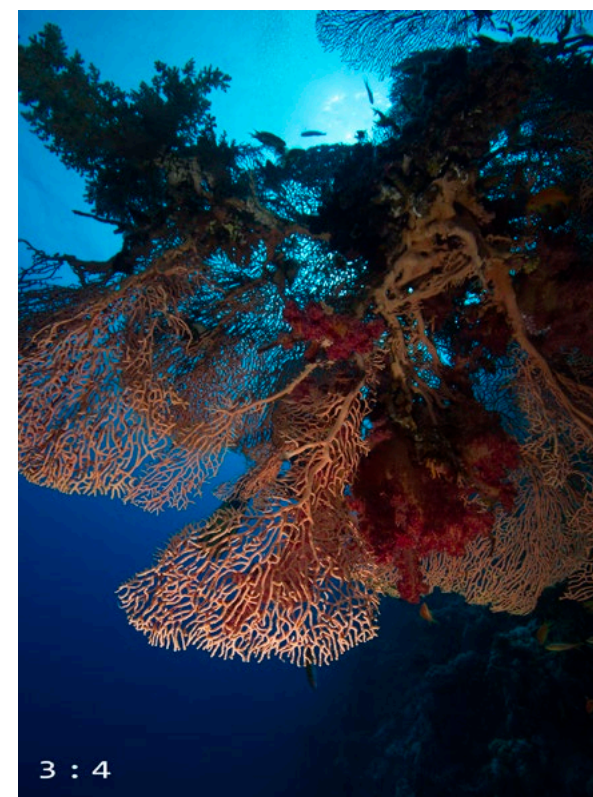
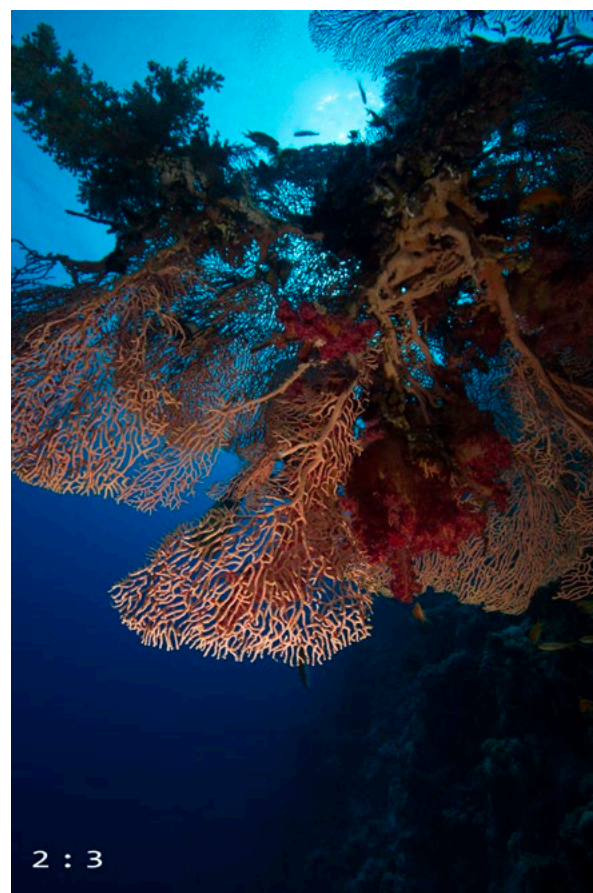
invented because it matched the mathematical proportions of the Golden Ratio of art and architecture, is simply wrong. The 3:2 ratio does not even come close to the Golden Ratio.

A sniff into history

The early days of photography and film formats were days of a lot of confusion, as film formats were arbitrary and specific to each camera model. For example, Kodak start making “pocket cameras” as



Oskar “Mr Leica” Barnack (1879-1936), the father of the 3:2 image aspect ratio



The 2:3 aspect ratio (the vertical version of the 3:2 ratio) sometimes presents a problem with the frame being a bit “too tall.” Here, it may help to go back in time: The historically established 3:4 or 4:5 aspect ratios eliminate negative space, and thus help improve the image composition.



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The camera that went with the Apollo mission to the moon, the Hasselblad 1600F, had a 1:1 image aspect ratio.



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early as 1885, but each model used a different (film) format. In 1916, Kodak had 30 different models with more than a dozen different film formats. Aside from Kodak, other camera manufacturers did their own thing as well—hence, days of confusion.

The first film cameras made by Nikon and Minolta used the 4:3 aspect ratio; but later, they changed their plans and followed the better-selling 3:2 standard.

1:1
The 1:1 (formerly 6:6, or just simply “square”) aspect is in a class of its own. It existed for



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quite a while but had its first glorious moment in 1929 when Rollei launched its first twin-lens camera, the legendary Rolleiflex TLR. A successor of this model was, by the way, the first camera ever used for commercial underwater photography by the pioneering diver Hans Hass. Some of you divers of the older generation might still remember the legendary Rollei Marine camera.

The Rolleiflex was copied many times. The first camera of mine was a Weltaflex—a Rolleiflex copy made in East Germany.

Hasselblad later followed the hype, utilising the 1:1 aspect ratio by using a 6cm x 6cm film in its model 1600F in 1948. Years later, the very first image of planet Earth

seen from space was made with a Hasselblad (model 500EL, with 6cm x 6cm film)—perhaps the most famous 1:1 photograph ever made.

From a compositional point of view, not much can be said about the 1:1 square format. The “why” of this aspect ratio might be answered with technical aspects, not with aesthetic aspects.

However, the super old-school 1:1 ratio has never been forgotten or buried. Sixty million images with the 1:1 aspect ratio are uploaded daily to Instagram, which proves that 1:1 never dies.

5:4
The 5:4 aspect ratio is the standard in large format photography. There is, as yet, no large format digital camera sensor, so film is it for now. However, large format film cameras are still produced and available on the market—for example, the Linhof Master Technika 3000. An upscaled version of the 5:4 aspect ratio is the 10:8 aspect ratio, a very popular print size and proportion.

7:6
The 7:6 aspect ratio is the classic aspect ratio of medium format film photography—namely, with Pentax and Mamiya cameras. However, modern digital medium format cameras moved away from that dinosaur. The Hasselblad X1D works with a 4:3 aspect ratio, and the Leica S-Series of cameras—despite being medium format—surprisingly work with the 3:2 aspect ratio. Fujifilm goes even one step fur-

The Rolleiflex TLR (right) had a 1:1 image aspect ratio; The Linhof Technika (bottom right) large format film camera had a 5:4 image aspect ratio; A model from the Mamiya 67 series of medium format film cameras (bottom left)

Aspect Ratios

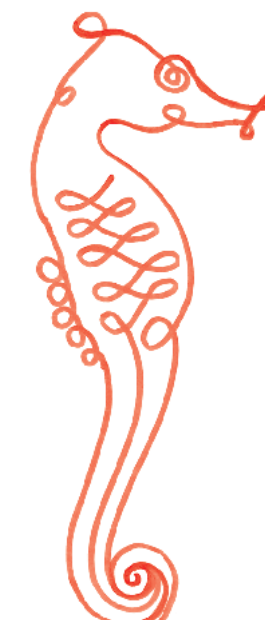


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Wide-angle scenes sometimes benefit from the 16:9 aspect ratio. Compared to the original 3:2 aspect ratio (first page), the 16:9 version simply looks "wider." Nowadays, more and more people are used to viewing images in "widescreen" proportions.



16:9

ther, offering its users seven different aspect ratios from which to choose (in-camera). However, Fujifilm's digital medium format cameras' native aspect ratio is 4:3. Different aspect ratios offered in the menu of a camera itself always come with a loss of pixels and resolution. However, with a 50+ megapixel sensor, there is a lot of ground to play with.

16:9

For decades, people have been used to viewing images in the 4:3 or 3:2 aspect ratios. This is, in some way, still the case; but in the meantime, a new player has entered the field—the 16:9 aspect ratio.

Known as HDTV Standard, this aspect ratio is now used in televi-

sion screens, computer screens and, last but not least, in all smartphone screens. But smartphones are a "critical case," as their screen aspect ratio is actually 9:16, simply dictated by users holding their smartphones (even when taking photos or movies) in a vertical position.

The 16:9 aspect ratio is also called "widescreen," and that is exactly what it is—a nice, wide proportion suitable for landscapes, and furthermore, perhaps suitable to attract the clients of tomorrow. Several early Panasonic compact cameras used the 16:9 aspect ratio, but modern digital cameras usually work with 3:2 or 4:3 aspect ratios, offering the 16:9 aspect ratio as a selectable in-camera option.

Making creative use of aspect ratios

Whether it is provided by your camera as a native or selectable image aspect ratio, or you just help yourself by cropping in post-production, an awareness of the impact different aspect ratios have will certainly improve the composition of your image. Not every image must be in a 3:2 aspect ratio, for example, just because this is what your camera provides. You often can improve composition by selecting a different aspect ratio in camera (some newer cameras support such functions) or by cropping your image in any image editing software of your choice.

You might lose some pixels, yes, and you might have a limitation in maxi-



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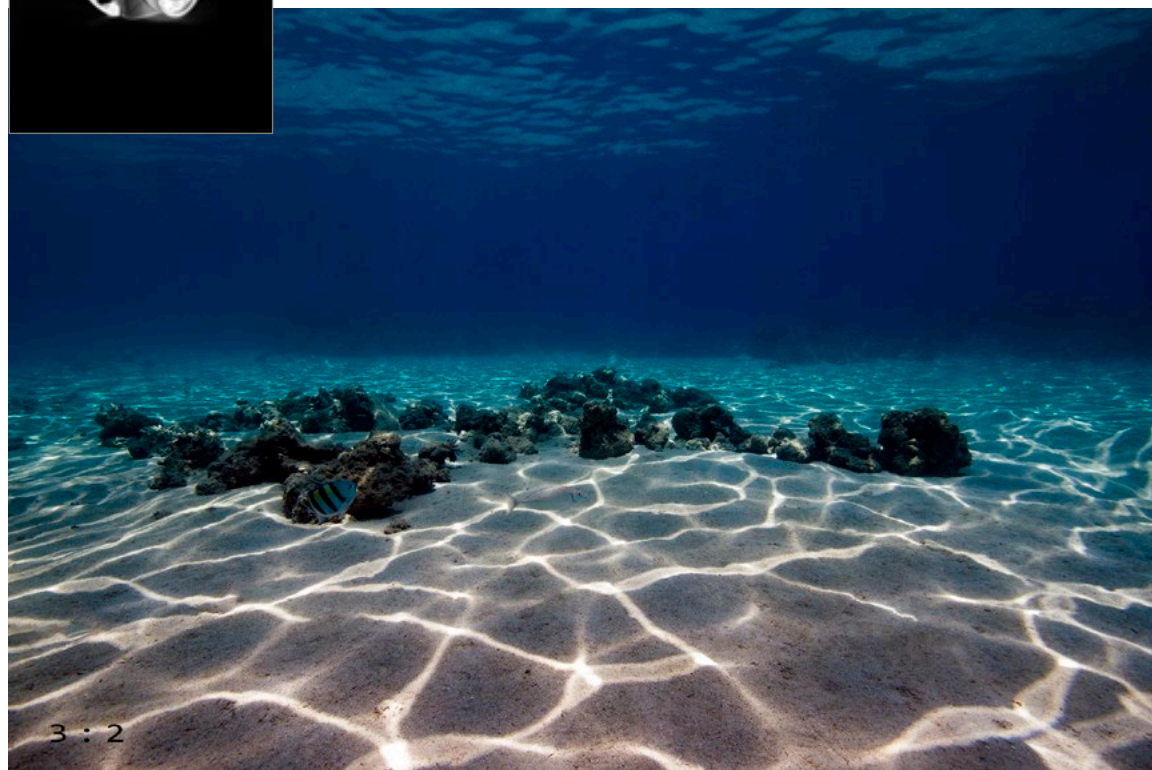
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One and the same image in six different aspect ratios actually results in six different images. However, the original aspect ratio of 3:2 (below) works just fine. The 16:9 aspect ratio (bottom left) might be a possible alternative.



aspect ratio has a sort of "compact" visual output, which makes it suitable for close-ups, macro shots and fish portraits. This is also true for the 7:6 aspect ratio.

It always pays to just give it a try. Try and check whether a different aspect ratio (other than the native one) improves your image or not. Luckily, image editing software such as Photoshop or Lightroom (and many other software programmes) offer you several common aspect ratios when you use the crop tool.

Last word

There are several image aspects ratios in existence. This article has just listed the most common ones in photography. Explore the possibilities. ■

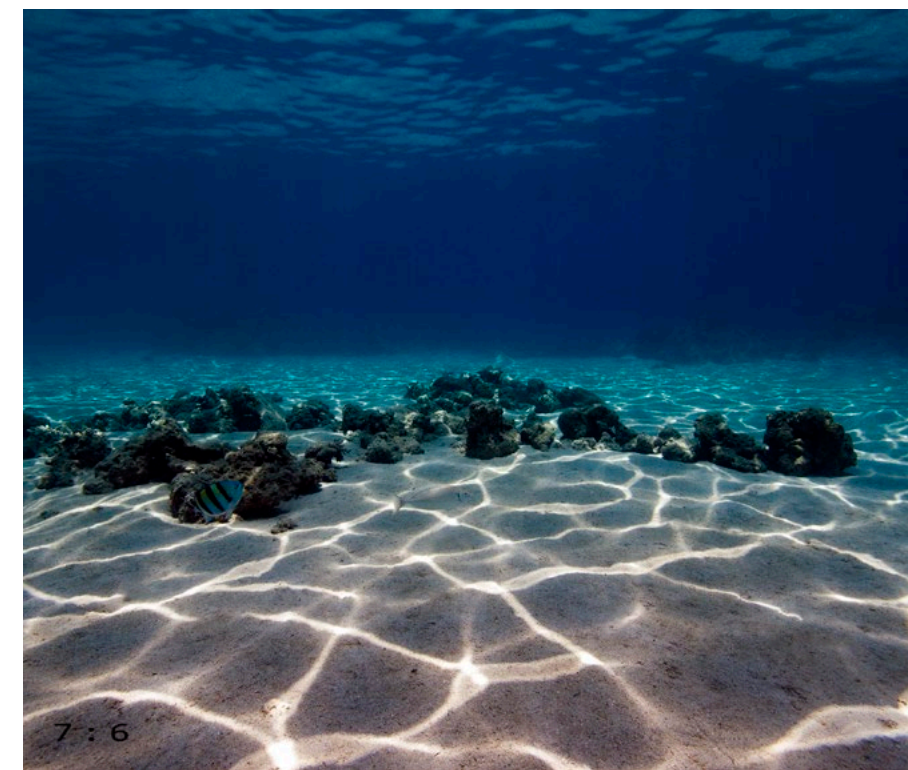
Rico Besserdich is a widely published German photographer, journalist and artist based in Turkey. For more information, visit: Maviphoto.com. See his latest book at: Songofsilence.com.

mum print size; but nowadays, where 24MP (megapixels) is considered "amateur class," 36MP is considered "mid-range," and 50MP (or more) is considered "professional," one should not worry too much. No one needs a 36MP (or even 50MP) image resolution to get a photo published full-page in a magazine.

However, when working with aspect ratios as a tool of image composition, it is generally recommended that one stick with common aspect ratios. A "fantasy aspect ratio" is, in terms of aesthetics in photography, a risky thing. It is better to stick with the standards, as these do exist for a reason.

Which aspect ratio to use pretty

much depends on the subject or scene being photographed. A 1:1 ratio might not work well with an underwater landscape scene, but a 3:2 or even a 16:9 ratio does. If a 2:3 portrait (vertical) proportion comes with slightly too much negative space, a 3:4 aspect ratio might be the better choice. The classic 5:4



SOURCES:
FEININGER, A. (1978). THE COMPLETE PHOTOGRAPHER. PRENTICE-HALL, ENGLEWOOD CLIFFS, NEW JERSEY, USA.
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Snoots for Inon flashes

The Snoot Set for the Inon Z-330 and D-200 strobes allows for six different beam coverages from approximately 20° to 80°. The set features an aluminum sleeve

that screws onto the strobes' threaded heat sink, and a telescopic rubber hood that fits onto the sleeve, and accepts either of the two included 1-inch diameter and 0.4-inch diameter brushed-aluminum snoots. Inon.jp



Remote control

When I spotted this strange-looking, boxy gadget in Keldan's booth at the Boot show in Düsseldorf, I had to inquire what it was. It turned out to be the prototype of an upcoming videolight controller with which the imagemaker can remotely adjust the output of two videolights directly from the camera housing. The principle is similar to the remote flash triggers, which are frequently used in photo studios, wherein the controller is mounted in the camera's hotshoe and used to balance various remote flashes placed elsewhere. In the same manner, this unit also controls the output of each videolight separately. The two lower dials—one for each light—simply turn the power up and down. The main difference from the studio flash controllers is that this unit controls video lights and wirelessly connects to them using ultrasound rather than radiowaves. Keldan says that the unit is currently still undergoing final developments, design tweaks and maturation for release on the market later this year. Keldanlights.com



Ricoh WG-6

Ricoh's latest top-of-the-line waterproof camera is depth-rated to 20m (65ft). It features a 20MP sensor, 28-140mm F3.5-5.5 lens and a built-in macro ring light. The six-LED ring light unit positioned around the lens allows for the use of a faster shutter speed to minimize camera shake and subject shake in macro and close-up photography. This feature also allows the photographer to choose specific LEDs to illuminate a subject more three-dimensionally and emphasize its delicate contours. The WG-6 has a built-in GPS and electronic compass, a 3-inch (non-touch) LCD, remote control receivers on the front and back and a USB-C socket. It is also capable of capturing 4K/30 video. Ricoh-imaging.co.jp

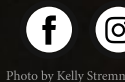


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