Are big black cameras doomed by phone developments?

You would be forgiven for thinking these two don't have much in common

Lens

Sensor

Computer

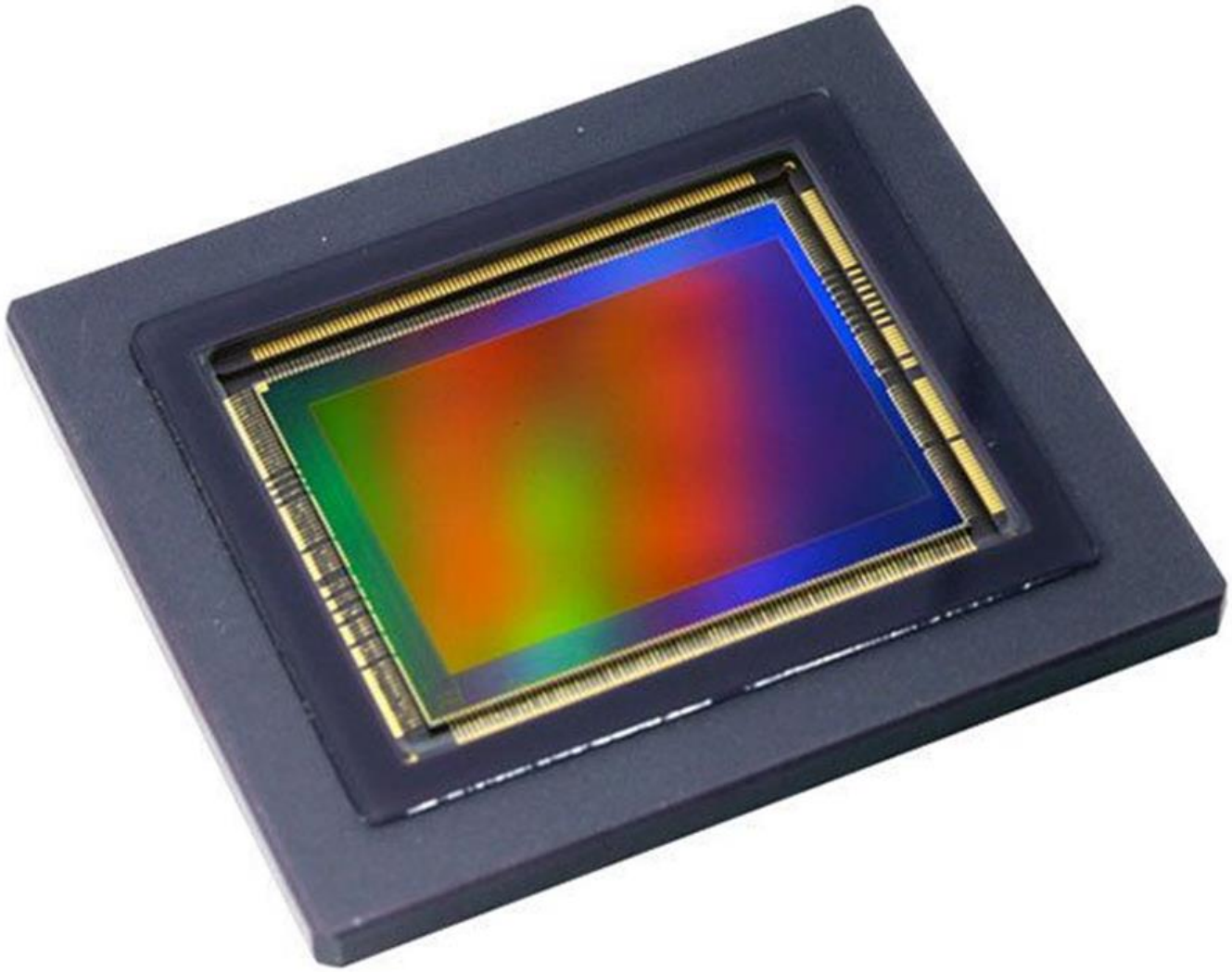
Screen

The only major difference with the big black Nikon is the lens

1. It goes in and out and has 19 elements to give optical zoom
2. It is 20 times the diameter and has 40 times the area

What about the sensor?

- 12 to 48 million pixels stuck on a plastic card
- Each pixel contains a lens, a colour filter three transistors, one diode and an electric storage device
- For our purposes they vary in size from 24x36mm (Full Frame) to 4.5x6.1mm
- In spite of its size, the Nikon has the same 4.5x6.1 sensor as a phone. Why so small when there is so much room?
- Its all to do with optical Zoom



No Optical Zoom
300grams

83 x Zoom
1 kilos

Restricted long range optical zoom

4 Kilos

Camera makers realised that phone sensor/computer technology could be coupled with their lenses to enable ultra zoom cameras a fraction of the total weight of the full frame sensor equivalent

And at a fraction the cost

This is the latest full frame camera lens from Nikon. It costs £13,000 and a Z5 DSLR body to go with it a further £1300.

Its not dust proof, not drip resistant nor capable of taking photos of anything close to you. Weight including a camera body is 4 Kilos

Meanwhile these two similar looking cameras Can focus just 25mm from the lens and then zoom to a small target at distance

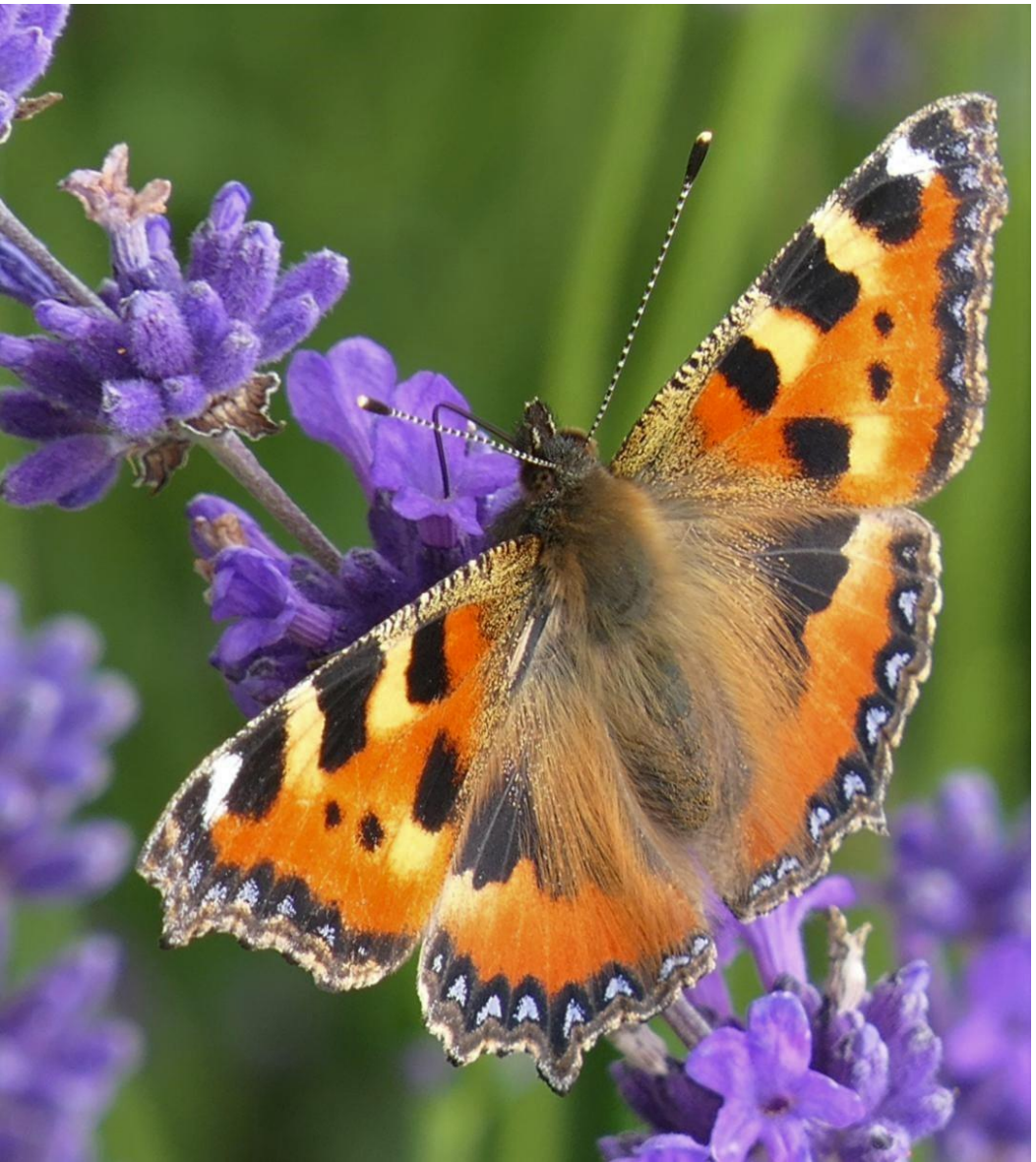
Panasonic DMC-FZ2000, 20x Zoom,
1 Kilo, **large** 25mm sensor, £700

Nikon P950, 83x Zoom,
1 Kilo, **small** phone size sensor, £800

Less zoom but does the big sensor make a difference

Is there a difference in image quality? For us, the answer is no.

Big Sensor (Zoom Limit x20)



JB Tortioseshell

Small Sensor (Zoom Limit x50)

Back to the Phones

Owing to the lack of space, camera phones had small lenses and small sensors to suit a short and fixed focal length.

Problem was - no optical zoom as there was only one lens

But Zoom requires multiple lens and movement between them

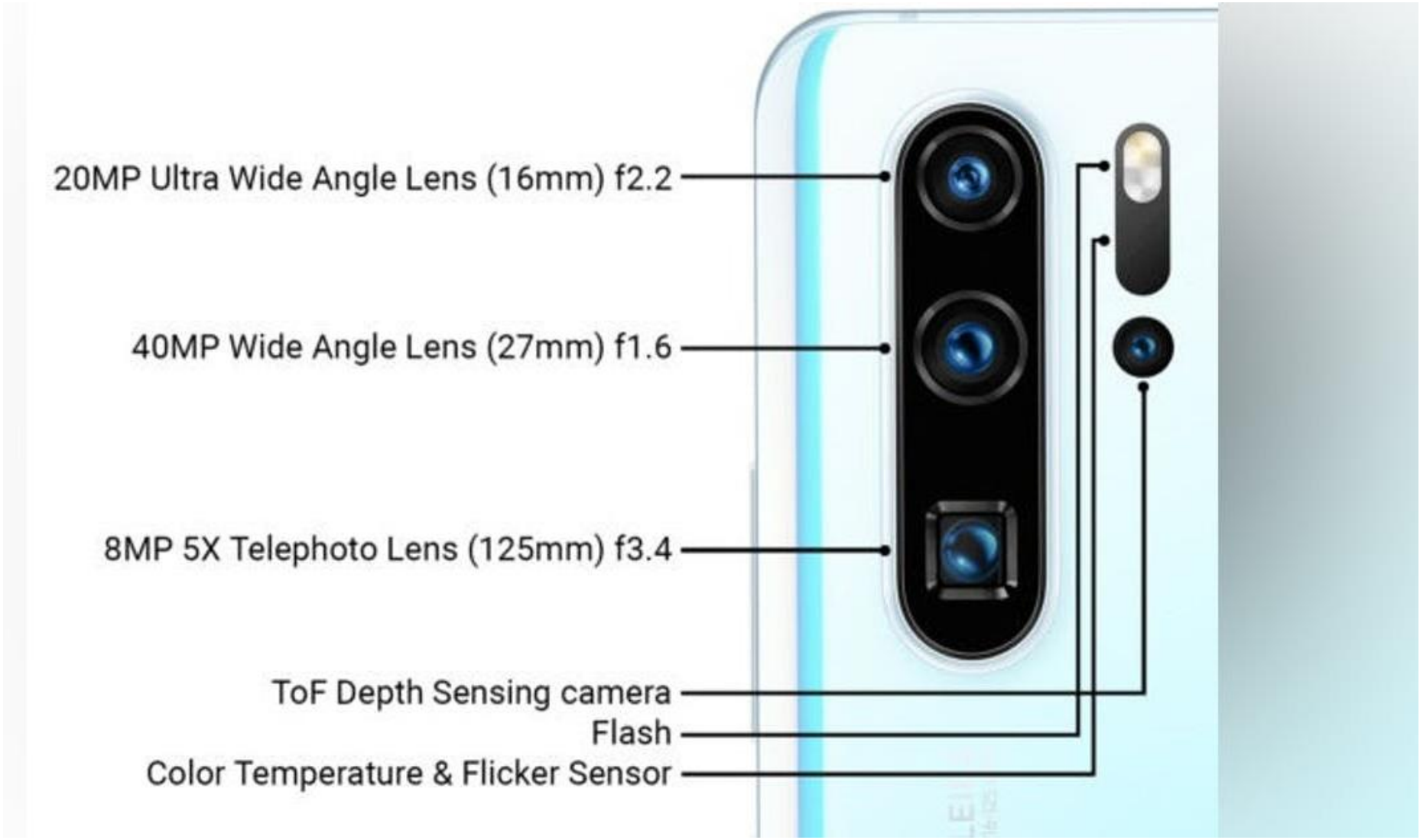
Remedy – The strap on Lens Kit

Not a great solution!

What makes one phone stand out from another?

- Primarily its the camera.
- Camera manufacturers and retailers have lost out to phones in the last decade and this may continue as phone companies invest billions in optics, sensors and software.
- The latest television advert for a Samsung Galaxy phone talks about the camera and absolutely nothing else.
- Cameras sell phones (this one is £1300)

The Phone Makers Respond



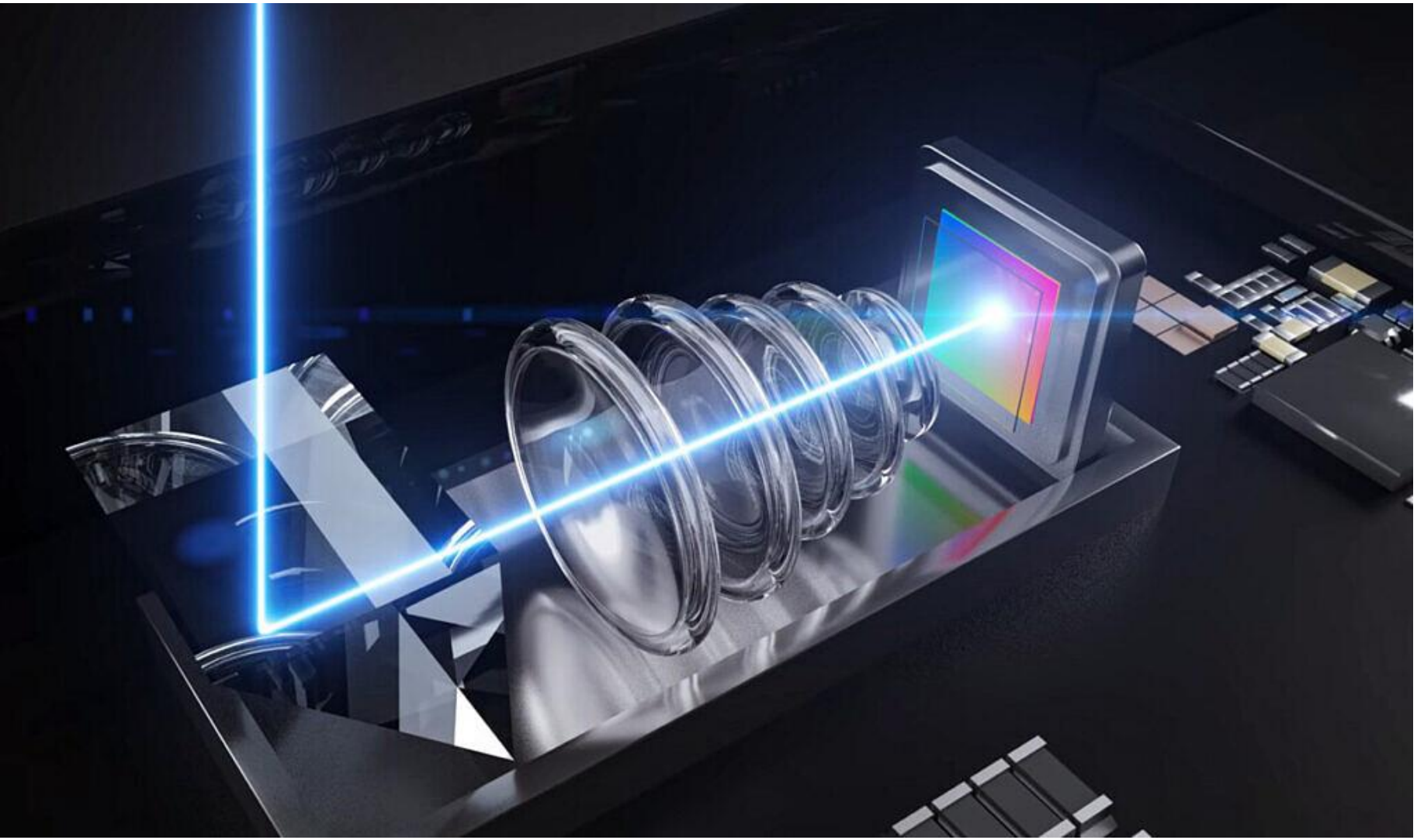
Better solution – 3 lenses and 3 sensors

Is this an old hat three lens phone?

Look again.

It’s got a square lens – or is it actually a lens?

In 2019 appeared the longer focal length phone camera whereby the light enters the phone in the usual place but is then directed by a prism 90 degrees along the length of the phone to a sensor nearer the other end (**folded optics**).



FOLDED OPTICS

Now there is room for multiple lens and proper optical zoom via lens movement

iPhone’s 2022 offering will have 10x optical zoom

Other manufacturers are up to 20x already

(Same as the Panasonic earlier)

Some phones are advertising large 25mm sensors as well. But it’s a sales thing as they can only focus on the centre!

Is it a phone or is it a camera?

This ultra slim camera from 2009 has some push button controls to make it easier to operate but no optical zoom. It died.

But think what camera manufacturers could do with this format and folded optics. Underwater zoom shots with 20x Zoom