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Why be a photographic image?

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Abstract

Many contemporary imaging systems share a striking quality: their output need not be limited to images. Instead the raw data such systems collect and generate can just as easily appear as acoustic signals or as text. Furthermore, of those images an unexpected proportion bears the familiar form of the photograph. These two phenomena, I argue, stem from an unconditioned bias towards images, on our behalf, and from the cognitive accessibility of photographic images in particular. This should be seen as a unique epistemic advantage. Arguably, this advantage has not diminished much in the course of the last decades. This is especially surprising given the wide anxiety about the 'end' of photography and what will, or has, come after it. Confusingly, this anxiety has given rise to the term analogue photography, which is, I argue, somewhat misguided. Accordingly I propose revised definitions for the terms 'analogue' and 'digital' in respect to photography. These facilitate an alternative understanding of what photographic images are.

Why images?

The very words, imaging technologies, seem to refer to the production of images. Those images, as is well known, may also be of objects that can never be seen in humanly inhabited existence, objects that have never been basted in any kind of light. This is the case with systems designed to 'image' the

inner organs of the human body, or galaxies in outer space. There are other examples – in fields like geology, archaeology, agriculture and law enforcement, to name but a few. Moreover, there are also cases when images may even be generated of 'objects' that simply do not occupy space and time at all – at least not in the ordinary sense of space and time as these phenomena have been popularly understood since the European enlightenment.

Yet a striking feature of many imaging technologies today is that their output does not need to be in the form of an image at all. This is certainly the case with some medical imaging technologies like MRI and fMRI and with astronomical imaging systems like radio astronomy. The raw data used to create images in these technologies is often captured numerically – that is, *not* by an optical apparatus. In a brain MRI the radio frequency signals that brain nuclei emit (after they have been subjected to high magnetization levels) is measured with a coil and mathematically processed with a computer. Even in the case of NASA's Hubble Ultra-Deep Field (HUDF) and eXtreme Deep Field (XDF) 'telescopes' – the full range of electromagnetic radiation from ultraviolet to infra-red is traced mathematically, not optically – in order to *computationally* create beautiful images.

Thus we could say that, once these images are in existence, the only thing undoubtedly 'optical' about them is that they are transmitted as optical signals through optical communication networks.

It should be noted that raw data is, by default, completely indifferent towards its content and towards the 'sensory field' within which it will later appear. In other words there is nothing 'natural' in an MRI image or a Hubble image as these technologies can offer a choice between various data display formats. An MRI scan can be outputted as acoustics signals, as encrypted text or simply as an indecipherably long numerical chain. The same is true for the 'observations' made by various astronomical instruments.

One important question then deserves to be asked: "Why *are* images the predominant output form of imaging technologies?"

Perhaps the lure of images is, in some cases, an end in itself. After all, the visual spectacle in images of distant galaxies and nebulas is undeniable. Perhaps there is something in us, which is deeply committed to vision. Committed even to the extent that we feel that observation must be intimately connected to visuality. Nowhere is this more evident than in the urge to think of an ultrasound 'image' as the first 'sighting' of an unborn baby.

Thus, even when it comes to numerical observation instruments, we maintain a bias that precludes the possibility that certain data clusters will appear as anything other than an image. The point I am trying to make here is simple – the preference for images may in fact be preventing us from fully understanding the unique form of knowledge that some images offer us.

Clearly visual representations (including not just images but also diagrams, maps, etc.) supply us with large amounts of complex information in ways that are more easily comprehensible to our human processing capabilities than raw data. This, however, does not explain another question:

'Why do such images so often appear photograph-like? Why are they taken to be *photographic images*?'

Why photographs?

Two separate explanations can account for the ubiquity of photograph-like images: historical preference and cognitive accessibility. The former explanation is probably straightforward – in the last 180 years we have grown increasingly accustomed to 'seeing' by means of photographs. We recognize no other way of understanding ourselves; we know no better way to define the world around us. Photographs area dominant form throughout our culture.

The latter explanation is slightly more complicated. Photographs are so cognitively accessible because of three separate qualities. The first reason is granularity. Photograph-like images usually maintain consistency of granularity from object through instrument to depiction. Granularity is the extent to which a system can be broken down into small parts, either by the system itself or by its observation or description. It is the extent to which a larger entity is subdivided. For example, if a room can be broken into units of centimetres then it is a system with fine granularity. If, for whatever reason, this room can only be broken into units of metres then it is a system with coarse granularity.[1]

Secondly, the data structure of photographs can preserve the visual properties of objects in a consistent way. In other words it 'breaks' those objects efficiently, it then reassembles them within predetermined, finite error bounds and it resembles them more than do other forms of data.

The third and perhaps most important reason for the ubiquity of photograph-like images concerns the mode of data preservation and presentation. The implication is that consistency of granularity and structure preservation come unencumbered. The photographic image itself preserves only certain forms of information but not other forms. Most notably it does not preserve egocentric information – that is information about the objects locale and chronology (Cohen and Meskin 2004). This information may at times be preserved by other means – previously as part of the title or label and now most often in what we call metadata (Rubinstein 2014). Either way, such means, old or new, are never a part of the photographic image itself. Thus, the cognitive accessibility of photographs provides a unique epistemic structure, which I call 'select information with no strings attached'. Such an epistemic structure is, in some cases, an epistemic advantage.

Analogue and digital

Arguably, this epistemic advantage has not diminished much in the course of the last decades. This is especially surprising given the omnipresent anxiety in discourse about photography during recent decades. Think, for example, how often expressions such as 'Post-Photography' and 'After Photography' have appeared in exhibition and book titles.

1. Granularity is always relative to some framework or purpose. In the above example the relative framework is of course human activity.

2. The first two qualities are defined by Dele-hanty, the third quality is a condition I posit (2010).

(The first such instance that I am acquainted with was as early as 1992 in William J. Mitchell's book *The Reconfigured Eye* [Mitchell, 1992]. There have since been many consecutive publication titles expressing a similar sentiment. For example: the exhibition and catalogue *Photography after Photography* [Hubertus von Amelunxen et al., 1996], the book *After Photography* [Fred Ritchin, 2009],the SFMOMA Symposium titled Is Photography Over? ['Is Photography Over?', 2010] The most recent contribution to this list is probably Joan Fontcuberta's collection of essays titled *Pandora's Camera: Photogr@phy After Photography* [Fontcuberta, 2014].)

Curiously, such expressions of concern have not appeared in reference to the processes and technologies that I previously described but rather in reference to a much simpler technology – the digital sensor and the digital camera. Purportedly it is these that have been responsible for 'the digital turn' in photography, not optical communication networks, Moore's law or anything of that sort. I would therefore like to briefly refer to the confusing terms 'analogue' and 'digital', which are commonly used in reference to photography. In fact they are used so freely that, at times, their use is simply misguided.

The term analogue of course derives from the same ancestor as the English word analogy (the Greek word *analogia*). Thus, in philosophy and in literature analogue means a condition of shared elements. This enabled Roland Barthes, for example, to argue that photography is a procedure of analogical representation (Barthes 1977). In mathematics, electrical engineering or signal processing the term analogue describes a non-quantized (continuous) signal, only *some* of whose features correspond to features in another signal. Thus, contrary to common belief, analogue information does *not* mean information accurately copied but rather that particular type of information *that can never be accurately copied*. In fact, it is within this meaning and only within this meaning that use of this term in the context of photography can be warranted.

Interestingly, it was not until the 1990s that the expression 'analogue photography' made its first appearance in literature. This happened at almost the same time, and as a direct result, of the emergence of the expression, 'digital photography'.

The term 'digital', on the other hand, comes from the word *digit*. Digital marks the creation of discrete units of things. A digital signal is a non-continuous, quantized signal. A digital instrument simply takes something that is undivided and divides it (or presents it as divided). Thus, when we discuss digital representation we refer to a system of generating divisions. True, digital systems usually require multiplicity to generate value (and that is what we call calculation) but 'digital' in and of itself does not mean anything other than divisions.

A simple yet useful way to visualize the difference between digital and analogue is to think of fuel gauges and fuel warning signs. The fuel gauge in most cars, with its needle going from full to ¾ to ½ to ¼, with infinite stops in between, is an analogue indication instrument. On the other hand, the fuel warning sign, which has only two distinct modes of display – red light off and red light on, is a digital indication instrument.

Put differently 'analogue' and 'digital' can simply be distinct manifestations of the same condition – for example lack of fuel in one's car. This is why it is wrong to understand them as definitions that are mutually exclusive. Seen in this way it should become obvious that analogue photography did not go anywhere when the digital camera was invented in 1975, or when it hit consumer markets in the mid-1990s. Similarly, digital photography did not emerge from 1970s sensor technology, nor is it dependent on it.

Accordingly, we could even say that in a certain way photography has always been digital – I see no other way to understand the faculty of a silver halide (the sensitive component in photographic emulsion). A silver halide, it should be stated, does not and *cannot* turn grey. It can only turn black or remain unchanged. Thus, if the strict sense of the term digital means non-continuous, discrete, then the silver halide *is* a digital instrument. To the extent that the colour grey exists on a given section of photographic emulsion it is there simply because silver halides are very small. In other words it is *only* the combination of black and 'white' halides (in varying ratios) that creates grey emulsion. This is just one example but there are others. Perhaps it is time to drop the use of the term analogue in reference to 'traditional' photography. The term 'digital' can stay, even though we *can* find better terms – for example coded, algorithmic or simply mathematical.

Conclusion

Accordingly, to be an image today does not necessarily entail being an *image-carrier* – a material thing in the world.[3] This is especially noticeable whenever we think about photographic images. Since photography completed its migration into the computerized habitat photographs no longer require material supports. But photographs have not only untethered themselves from their 'photographic image-carriers', they are also becoming increasingly removed from the technologies and sciences from which they emerged. In other words it is not only chemistry that has become extinct from the ecology of photography, mechanics and traditional optics may soon follow. This is why the question of *why be a photographic image?* matters today more than it did before.

What my brief comments have attempted to demonstrate is that it is increasingly more problematic to think of photography as a technology. It is complex not only because photography seems to be everywhere and nowhere at once. It is difficult because we are now realizing that perhaps photography was never the technology that we thought it to be. Perhaps it was never a technology but rather a family of technologies[4] that has always been integrated with, embedded in and part of other families, and groups. Be that as it may, it is futile to expect photographs to adhere to definitions that have previously been put forth for the medium. Much like the output of other media forms, today's

3. This term is taken from: Lambert Wiesing (2011).

4. This idea is adapted from: Patrick Maynard (1997).

photography cannot be measured and subjected to a quantitative analysis subsequent to its production processes.

The photographic images we are working with today, and the ones that will be available to us in the near future, will not comply with theoretical accounts that attempt to position them as the epitome of indexical representation. They will only be understood within a theoretical context that describes photography as an extreme form of mathematical abstraction. Such descriptions are rare, but the one that resonates most powerfully is Vilém Flusser's assertion that any attempt to distinguish the photograph from other forms of data is simply a lost cause.[5] If the photograph is anything, then it is only an image with fine granularity.

5. What do I actually mean when I say a photograph of a house depicts that house, and a computer image of an airplane yet to be built is a model? … Any way I formulate the difference between depiction and model, I come to grief … It can therefore be said of a photographer that he has made a model of a house in the same sense that the computer operator has made a model of a virtual airplane. (Flusser 2011: 42–43).

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