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The Divisive Moment

When is a photograph not a photograph, only to turn out to be a photograph, after all? Amidst the unprecedented and exponentially growing mass of photographs being produced through contemporary networked infrastructures, 2019 will be seen to orbit around a single image that splits the history of images into a before-and-after, at least according to the astronomers of the Event Horizon Telescope project who revealed in April this year the first image ever taken of a black hole. The released image provoked a debate in some circles on whether it was accurate to describe it as a "photograph", as the EHT team (ehtelescope, 2019) and many news outlets did (including The Independent, CNN and NBC), when technically it was a visual translation of radio waves aggregated from data captured simultaneously by a globally array of eight telescopes dispersed across four continents. Despite the order of magnitude – it took two years and customized software to collate the multi-petabytes of data into a single image – any misgivings about its assembled nature would seem misplaced in an age of automated HDR, panoramic stitching, gigapixel resolution and post-focus latency delivered by multiple lenses found on most smartphones these days. However, the point of non-visible radio waves producing what should rightly be called an "image" and not a "photograph" would seem to be logical at first. Yet even the most conservative bracketing of the medium would struggle to exclude photographs made at the outer fringes of visible light, with most film stocks and digital sensors being inadvertently sensitive to ultraviolet light in one direction of the spectrum, and some designed to access infrared light in the other direction. Indeed, Talbot had already proposed a kind of photography that would utilize only the invisible spectrum of light (Talbot, 1844, pp.29-30). And zooming out further still reveals visible light to occupy but a small fraction of the spectrum that makes up all electromagnetic radiation, and that this spectrum is continuous should pose a productive challenge to the question where a photograph begins and where it ends.

Within many of the sciences that simply isn't a question at all. As Michael Doser, research physicist at CERN, explored in an article for this journal, the anthropocentric register of visibility that is at the core of photography both propels the making visible of something as elusive as antimatter to a human observer, whilst this visibility itself obscures the fact that photographs, along with all matter in the universe, continue to be exposed indefinitely to cosmic radiation: to think of photography in cosmic terms, then, is less about capturing an a

priori subject but rather about intervening in the electromagnetically sensitive surfaces of the universe. (Doser, 2016, pp. 139-154) We may find a concrete application of this in the emerging field of metamaterials, which promises to re-engineer, or physically programme, matter from the nano-scale up to respond to electromagnetic waves in predetermined ways that overcome conventional behavior found in existing surfaces. Perhaps more directly relevant to the photographic, photonic or optical metamaterials represent the subset that specifically respond to visible wavelengths in ways that can absorb, enhance or manipulate refractive angles toward a quasi-animate conception of the world in which matter takes on a form of agency in its own visual representation.

These novel technologies of programming matter promise to disrupt the indexical contract that for many continues to lie at the heart of photography, relying as it does on the constancy of light, toward a world that is increasingly manipulated in photoreflexive ways, not as a subject to be imaged, but as the very image itself. This, in turn, should give rise to photographic practices that are not simply lens-less but actively intervene in the socio-political economies of light as they structure the world. Oliver Sutherland's 2014 project, *Arabidopsis Thaliana Flammeus (ATF14)*, featured in issue 7.1-2 (pp. 161-170) proposes a genetically engineered weed whose visibility is contingent on a future technology that is able to bio-print the genome which contains a fluorescing pigment. Being made aware of the lack of such a mode of representation in our current circumstances, as speculative practices do, we are simply left with the genetic code as the latent image.

If these forays are reminiscent of the early eighteenth-century proto-photographic experiments of Johann Heinrich Schulze's stencils on silver nitrate, then it is precisely this historical arc that should remind us of the technical, cultural and rhetorical operations of scientific positivism that continuously inscribe themselves, whether physically or metaphorically, in the production of the visible. If, on the other hand, Bruno Latour proclaims '[t]here is nothing visual in scientific images. There is literally nothing to "see"', (Latour, 2016, p.36) then this is because contemporary scientific images legitimize their "realism" through a chain of operations in which each iteration gives rise to a subsequent image, and the longer this chain, the closer the resultant image is assumed to be to its object of representation. This is diametrically opposed to the conventional "realism" of images, with their mimetic and iconic functions relying on an idea of proximity, with the least amount of intervention seemingly guaranteeing their representational fidelity. This discrepancy is perhaps exemplary of what Lorraine Daston and Peter Galison describe as the "trained judgment" model of scientific objectivity in images that would supersede the "mechanical objectivity" of the nineteenth-century photographic paradigm (Daston and Galison, 2007), albeit operating not successively within the history of a discipline, but concurrently across contemporary boundaries between the specialist and non-specialist production and reception of images.

We may come to think of the black hole image, then, as photography's divisive moment, in the sense that it lays bare the contested and contradictory forces at work when an image travels from its scientific milieu to its vernacular reception, when that direction of proximity is reversed or collapsed altogether, with the "image" *becoming* a "photograph" precisely in its migration through affective and discursive operations that develop and fix an image onto its (assumed) teleological substrate, disciplining visual phenomena into a regime such as the

photographic. The image of the black hole then reaches us not only from the outer fringes and deep time of the visible universe, but carries within itself a particular historiography of the scientific image and its claim to objective veracity, embodying in its multiple operations that lead to it becoming visible an accumulation of different visual epistemes akin to a cultural blockchain, a ledger that holds within its visual codes a transcript of all preceding transactions of legitimization. A ledger is nothing without a bookkeeper, and it is significant in this respect that Peter Galison should feature as a core member of the collaborative authorship of the EHT, an encouraging sign of the group's willingness to critically interrogate the visual epistemologies embedded within its output. While this ledger would likely include the recent designation of the Lovell Radio Telescope as a World Heritage Site, the invention of the radio telescope and the discovery of radio waves themselves, it might also trace the calibration of eight telescopes to the principle of celestial parallax first implemented by Giovanni Cassini and Jean Richer in 1672 measuring the distance to Mars by comparing simultaneous observations from Paris and French Guiana. The EHT is thus only the latest articulation of a planetary imaging apparatus that emerged in the early modern period when the rise of scientific observation intersected with empire. Lorraine Daston and Elizabeth Lunbeck remind us that this eighteenth-century enterprise of forging an image out of disparate instruments spread across the globe not only saw the emergence of 'synchronic communities' of observers but crucially that the heterogeneous recordings of this distributed apparatus required calibration through socio-political regimes in order to produce a consensually visible image. (Daston and Lunbeck, 2011) Beyond the technical mobilization of a global infrastructure such as that of the EHT, then, it is the cultural calibration of the planetary apparatus that appears as the image of the black hole emerges.

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