

Visual Portals of Reality: User Agency and Remote Sensing of Post-Processing Photography

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Most contemporary photographic practices are characterized by a high degree of computational involvement with the process of image-creation, raising fundamental questions concerning the degree of user or technological agency. For instance, the built-in sensors of smart devices, which include gyroscopes and accelerometers, generate a “sentient” understanding of the immediately surrounding space of image-capture, situating the photographer and the camera within it. They effectively produce a form of “computational proprioception” which enables the device to identify, respond to, and even induce a range of embodied user actions. This allows some smartphone photo applications (such as iPhone Pano and Google Street View application photo tool) to instruct the photographer to move her or his body and arms in a specific manner, determining the formal features and even the technical permissibility of a captured image.

However, algorithmic intercession and computational sentience may come into effect at several points after image-capture, including *post-processing* of the image on a computer. Primarily associated with professional and semi-professional practices implemented by dedicated software, *post-processing* capacities can be fruitfully compared with historical precursors from chemical photography. Ansel Adams, for instance, famously outlined the critical role of the darkroom in his books *The Negative* and *The Print*. Contemporary post-processing digital techniques such as Photoshopping offer the user opportunities for explorative trial and error that appear to resemble the analog workflow, especially because of the photographer’s inability – in both chemical and digital contexts – to view the outcome of the capturing process until reaching the “darkroom”.

Despite this seeming analogy, digital post-processing procedures can have radically different consequences for the balance of agency between users and technologies. For instance, *Structure from Motion* (SFM) is an imaging technique for creating 3D structures based on 2D photographs. For SFM software to create a virtual 3-dimensional structure, the photographer needs to “scan” an area of real space using horizontal and vertical movements, capturing a series of sequential photographs in manner dictated by the photographer’s *internalized knowledge* of the software’s operating procedures (see Figure 1). In the event that the photographer does not follow these operational procedures, a 3D structure will not be produced, and the image-capture process will have been in vain. Hence the software remotely senses and acts via the body of the photographer. It does so twice: first, by directing the photographer to capture the images in a certain way for later use, and second, by virtually reconstructing a spatial model based on the registration of the user’s motion *off situ*. Thus the photographer acts as the visual gateway of reality in a two-stage process that is both pre-structured by software and reconstructed by that software. With SFM, the user’s fluid, playful relationship with the device that is thought to characterize the “fifth moment of photography” (Gomez Cruz & Meyer, 2012), has shifted into a highly pre-planned, non-negotiable relationship based on software directives.



Figure 1 – 3D model of Church Agios Nikolaos, Crete - screen capture of SFM software *Agisoft Metashape*. The blue squares represent the visual content and approximated spatial location of images captured.