The type specimen and the negative: the concept of the model in photography and botany

Photography's early history is intertwined with botany. Plants served as motifs for among others William Henry Fox Talbot and Anna Atkins, two British pioneers of the new medium. This study aims at highlighting some shared characteristics of botany and photography, based on the concept of the model. The comparative method and the method of metaphor will be used.

A herbarium specimen is gathered in the field, then dried and pressed and mounted on a sheet together with a label with information about the where, when and by whom the specimen was collected. It is then entered into an appropriate place in a herbarium collection, so that it can later be easily found and retrieved. A *type specimen* is a herbarium specimen which is used as a point of reference for a new species. It is associated with a scientific name given to the species, in accordance with an international code of nomenclature. These specimens are the most valued specimens, often stored in red folders to single them out in the cabinets of the herbarium. In contrast to other specimens, they are not readily sent out on loan to other herbaria institutions. Despite the fact that a type specimen is not necessarily typical or representative of a species, it can nevertheless be seen as a model for it. Using a photographic metaphor, the type specimen, also called holotype, becomes a model in its capacity as negative. It is not a negative in the sense of a negative image with inversed light and dark areas, but it is a negative in the sense that a number of identical prints can be made from it. In a herbaria, isotypes are specimens gathered at the same location and time as the holotype. These can be seen as "prints" from the holotype. A similar line of thinking is presented by Geoffrey Batchen in his book *Negative/Positive*, when he writes how sometimes Talbot supplanted worn-out paper negatives by taking a new photograph of the same object (24). In this way, he got a similar, albeit not identical image. The object itself can also be seen as a negative. Atkins, who worked with cameraless contact prints of seaweed and other algae, would use the same specimen to make several prints, which made the seaweed into a kind of negative, the negative's negative, as Batchen puts it (22).

No light sensitive material has been involved in the herbarium process, where a specimen is gathered, dried and pressed and mounted on a sheet and entered into a herbarium collection. But seen as a medium, the herbarium has many parallels with photography. The purpose in both case is representation – the herbarium as a collection is a representation of the living flora, and the individual specimen is representation of living plant.

The dried specimen is a *trace* of the living plant, which connects it to the discussion of indexicality in photo theory. Where the photographic negative is flat, the dried specimen is flattened, but never completely flat. It can also regain its form by being rehydrated in warm ethanol or boiling water. By being "developed" in this way, it becomes a three-dimensional model of its original appearance. As an index, then, the herbarium specimen has more potential than the photograph. What cannot be regained is colour. If compared to photograph, it is a black and white photograph. In the beginning, photography was monochrome, and hand-colouring was a manual practice that aimed at making the images more lifelike. Botanic researchers of the same era had to resort to botanical illustrations. Just

as in photography there was no quest for medium purity. Photographic negatives were often processed and combined, and herbarium specimen could be improved by having missing flowers and other parts drawn onto the sheet.

In the digital age, large collections of crowdsourced colour photographs of flora and fauna in the wild can be found in platforms like GBIF (Global Biodiversity Information Facility) and iNaturalist. The specimens in these image collections do not have to be gathered in the physical sense, they stay where they are and cannot be examined in the same way as herbarium specimens, but the online collections are used by botanists as an ancillary resource. Furthermore, such photographs do not follow the same rigorous scientific protocol as herbarium specimens do. When herbarium collections become digitised, their accessibility is increased, and a new layer can be added to the photographic metaphor. In this context, any herbarium specimen can be seen as a negative, not just the holotypes. All herbarium specimens are negatives in the sense of forming points of departure for mass distribution. They are the negative's negative, as Batchen characterises Atkins's seaweeds. But it is only some of these negatives, the physical type specimens, that can serve as models in botany. Also, their visual qualities are not enough, as DNA-analysis has become an important part of modern scientific botanic practice. Linnaeus' classification of nature was based on the analysis of morphological traits, but today systematic botany has been revised based on genetic codes. Samples of the physical specimen is required for making a DNA-analysis of a specimen. This means that these negatives will wear out, just like Talbot's paper negatives, and herbarium specimens will have to be gathered anew.