

# Metamorphograms – cameraless photography, memory & origami

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## Abstract

As a visual artist interested in representing neurophilosophical theories of memory and self, Alun Kirby found traditional photography, which captures a single moment in time, inappropriate. Over the last few years, Kirby has developed the **metamorphogram**, a combination of cameraless photography and origami. This process captures experience over time, and represents that experience visually. As such, it becomes an excellent analogy for memory, as well as an alternative visual representation of origami forms.

The cyanotype is an iron-based, cameraless photography technique invented in 1842. Ultra-violet light drives an oxidative reaction to produce a permanent, light-stable blue pigment (Prussian Blue). Papers suitable for origami can be coated with the cyanotype chemicals and folded into the desired forms (Fig. 1).



Fig. 1. 20gsm tissue paper coated with cyanotype chemicals and folded into a tato. Shown pre-exposure (left), exposed top (centre left) and bottom (centre right) views, and as the final developed image (right).

Initial studies used predominantly flat folded structures, such as the classic tato. By utilizing translucent papers these demonstrated how the process can reveal new patterns within familiar forms. Light passing through the upper layer partially changes the layers below. Radically abstract patterns are produced from more complex origami forms, such as Peter Engel's 'Begonia Leaf' (Fig. 2).

By looking at the exposure levels (shades of blue) in the final images, cameraless photography can quickly reveal spatial relationships in the folded form. As the paper goes through several changes in form to produce the final image, this process was named the metamorphogram.



Fig. 2. *'Begonia Leaf'* during exposure (left) and the final developed image (right).

Further study applied the process to 3D forms in non-translucent papers, resulting in a photographic process capable of capturing experience over time, as follows.

Paper is coated with chemicals which provide the capacity to 'remember', and folding gives a form. By exposing for extended periods (from hours, to several months), each form has a unique 'experience'; it may be played with, moved around, hung as a decoration, and so on. The final image is the direct product of these experiences. At an arbitrary time, the form is 'killed' by unfolding, and the image developed. The image is a visual memory of the experience gained as the form. See Fig. 3 for the example using 'Spring Into Action', by Jeff Beynon.



Fig. 3. *Spring Sprung* (2016). *'Spring into action'* as folded form (left) was played with and retained in form for over 3 months before unfolding and developing. The final image (left) is a unique memory of the form, made by the form.

The process is safe, and simple enough to be used by young children, but also fits the intended use of representing concepts of memory in visual form. As such, it has been included in several exhibitions during 2017.

In summary, this simple 'metamorphogram' process has provided a novel visual tool for artistic use, and may be a beneficial visual aid in understanding spatial relationships within origami forms. As a teaching tool, it has been used with school children to discuss history, chemistry, physics and geometry in the context of art.