

Continuous tone relief prints in gelatin – The Woodburytype

Damien J Leech, Walter Guy and Susanne Klein

University of the West of England, UK

Since its inception, halftoning has provided us methods of print that have high throughput and are easily reproduceable. However, as the complexity of our printing methods increase, we can instead turn our attention to continuous tone methods, where the tone varies smoothly and the feature size is no longer limited by the dot size. The Woodburytype is a forgotten 19th century printing technique that produces a photographic level of detail in a continuous tone relief print, using a gelatin film pigmented with carbon black [1]. We reverse engineer this process, using reflectance and spectroscopic measurements to build an optical model that determines the colour and lightness of a print height/pigment load combination. This seemingly simple system reveals itself to be a competition between a highly absorbent pigment and a highly scattering binder. We then extend this toward a full colour, multi-layer printing method and explored how other methods of layering translucent films can be used to produce similar optical effects.

[1] Leech, D. J., Guy, W., & Klein, S. (2020). The optical properties of the Woodburytype—an alternative printing technique based on a gelatine/pigment matrix. *Journal of Physics Communications*, 4(1), 015018.