Marked dot enlargement occurs in middletones and not in shadow areas

It is still often and erroneously believed that a marked dot enlargement occurs in the so-called shadows. This opinion is fundamentally wrong. What actually happens in reality is that, as a consequence of dot enlargement, tone steps in the range of middletones are shifting towards shadow dots. If for example a 50% tone step in the halftone film rises to 70% in a typically thickened print, the remaining tone steps (51% to 99%) can move only between 71% and 100%. What hitherto has been considered as a dot enlargement of shadow areas, is in reality concentration of shadow dots as a result of middletone dot enlargement. Highlights on the other hand are not being concentrated as a result of dot enlargement since they can easily expand toward middletones. Their tonal intervals therefore remain constant or, at the utmost, increase slightly. When looking at the printed picture, the impression is created that highlights and middletones are not subject to fluctuations whereas shadows tend to fill up, In reality, however, dot enlargement of a 25% screen dot and of a 75% negative screen dot are identical because both dots have the same marginal area. Table 4 visualizes these proportions.

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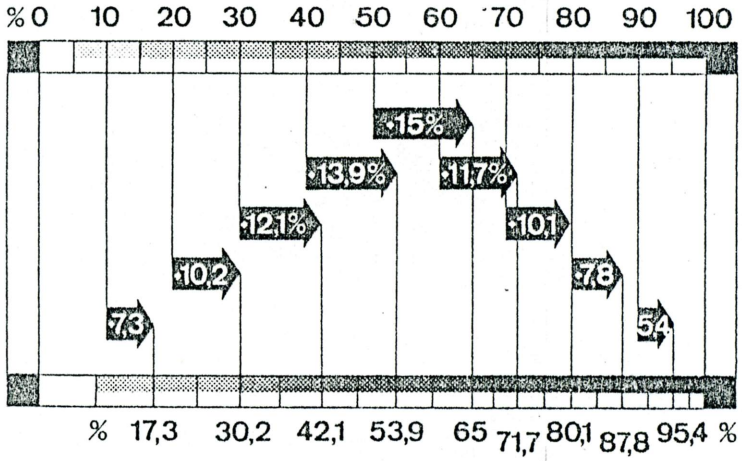

4

Representation of displacements of enlarged outlines within the entire tonal scale for the purposes of standard print quality is characterized by a 15% enlargement from 50% to 65% at the 50% screen step. Due to the phenomenon of screen dot enlargement, middletones are displaced towards shadows and are thus intensified. It is for this reason that we get the impression that dot enlargement first occurs within the so-called shadows while, in reality, it occurs at every single screen dot with outlines of equal surface.