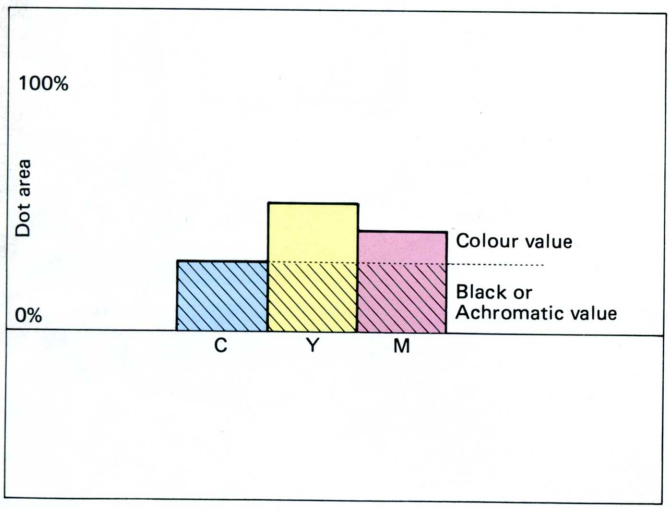
I.C.R. (Integrated Colour Removal)

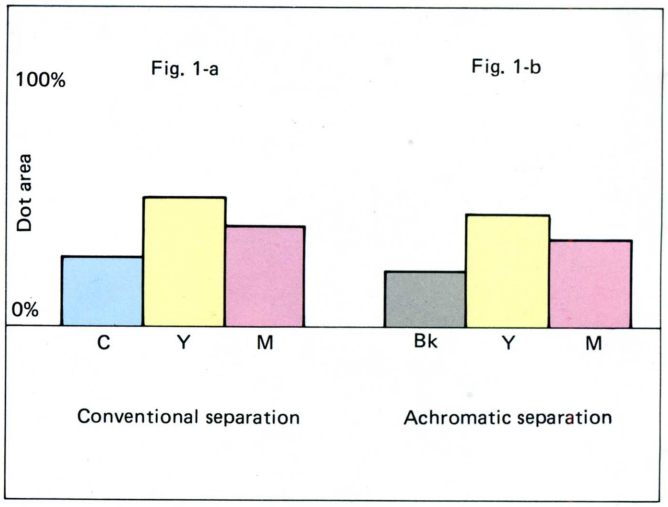
Traditionally colour printing has been based on the concept that it was necessary in reproducing colour to print Yellow, Magenta and Cyan inks, reinforcing their overprints with Black, where necessary, to give neutrality and depth of colour. In practice the three colours Y, M and C can not produce a satisfactory black on their own and the Black ink is used only to assist the colour inks.

When we print Y, M and C together we can consider this as producing two separate components: 1) a Black value and 2) a Colour value.



The achromatic theory of colour reproduction is based on the concept that it is unnecessary to use Y, M and C to produce this black or achromatic component when we can use the single colour Black. In practice we remove the colour contributing the least effect to each hue and replace it with a computed value of black. All colours are, therefore, produced by a combination of one or two of the inks Yellow, Magenta or Cyan, plus Black where necessary. The Black ink, which is far more colour efficient than the overprint of Y, M and C now plays a major part in colour reproduction.

If we compare the traditional treatment and the achromatic treatment of a Brown colour, we can show the relative values of each ink as follows:



In Fig. 1-a we can see the Brown colour, with its balance of Yellow, Magenta and Cyan, this is the normal separation of such a colour. With the achromatic separation the Cyan ink is totally removed and replaced by a computed value of Black, so that to reproduce Brown we only need the values of Yellow, Magenta and Black as shown in Fig. 1-b.

When we examine the reproduction of the neutral grey tones, we see that using traditional systems, the tones will be reproduced by using a delicate balance of Yellow, Magenta and Cyan. The balance of the grey tones must vary throughout the print run, as the various ink levels fluctuate on the press. Using Achromatic reproduction the grey tones are reproduced principally by the Black. If the grey tone has a slight bias, i. e. a warm grey or a cold grey, then only one or two of the inks Y, M or C will be present to provide this emphasis. As the principal printing ink is Black, its neutrality can not vary with ink fluctuations, only its density. If we compare the traditional separation and the achromatic separation of a Black, we can show the relative values of each ink as follows: