



Figure 3.2: A *gray-bar* commonly used in newspaper printing. The left patch is made of 33% black, the right of 30% cyan, 22% magenta, 22% yellow ink.

the amount of inks is easily detected. The approach of using the *gray-bars* for monitoring the amount of ink is to:

1. Detect an erroneous amount of one or more of the chromatic inks, seen as a colour cast in the gray balance field.
2. Detect an erroneous amount of all the chromatic inks if compared to the black ink seen as a difference in darkness between the gray balance field and the black field.

The use of gray balance fields does only reveal an erroneous relative amount of inks in respect to each other. The overall level of the inks have to be determined in another way.

A result of measuring the amount of ink on *gray-bars* is sensitive to erroneous dot-sizes. It is therefore vital that dot-sizes on the printing plates are correct. Otherwise the operator can be misled to compensate for an erroneous halftone dot-size by changing the *density*. This will cause incorrect reproduced colours in areas with other halftone dot-sizes.

Experience shows that despite the easiness for anyone to detect an unbalance between the inks it is not always easy, even for a skilled operator, to decide what action to take to reduce the deviation from the correct amount of ink. This leads to a conclusion that operator needs support in form of an instrument suggesting what to do.

3.2 CCD-camera based monitoring systems

The print quality in newspaper printing is constantly changing due to variations in the process. To reduce these quality changes the operator has to constantly monitor and