

# STEVE CAPLIN'S **A** TO **Z** OF DESIGN

## X: X and Y axes

Steve Caplin walks us alphabetically through the concepts essential to success for any jobbing or aspiring designer.



### ABOUT THE AUTHOR

**Steve Caplin** is a designer and illustrator working for a range of national newspapers. His best-selling *How to Cheat in Photoshop*, now in its fourth edition, is published by Focal Press. <http://books.macuser.co.uk/caplin>

**X and Y can stand for unknown** quantities in mathematics or the chromosome difference between men and women. But it's also a way of describing an item's location in two-dimensional space in Cartesian geometry – a coordinate system devised by the French philosopher René Descartes.

Moving a layer or selection around in Photoshop, Illustrator or any layout program involves changing the X and Y coordinates of the object's location. Generally, we're unaware of the mathematics, as we are with most of the complex algorithms that underlie graphics applications' effects. But coordinates are an invaluable aid for moving items by a precise amount; rather than dragging an object we can enter numerical values for every move.

In Illustrator, pressing

the Return or Enter key when any item is selected (and the Move tool is active) will open the Move dialog box. The distance required is typed in here, and pressing Enter again (or pressing the OK button) will move the item a corresponding distance. The units

used are defined in the Preferences dialog box but we don't need to stick to them. Even though a dialog box may specify millimetres as the measurement unit, we can change it on the fly simply by typing the appropriate abbreviation – 20 px to move 20 pixels, with

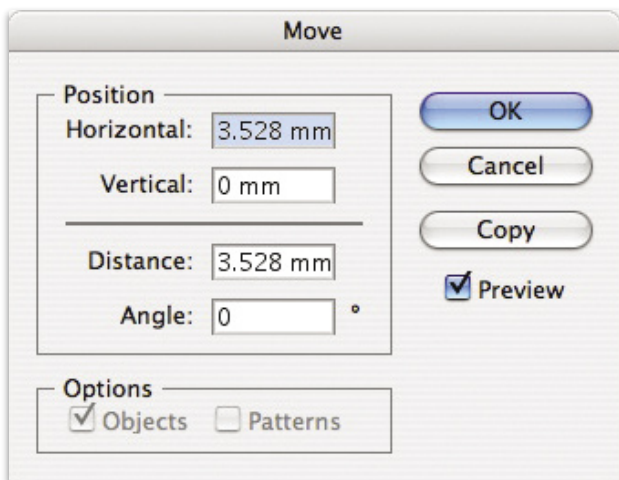
'pt' for point, 'in' for inches and so on. After typing the value in Illustrator, it will be converted into the default measurement units.

We can use the cursor keys to nudge an object one pixel at a time in either the X or Y axis in Photoshop, and one unit of a predetermined value in Illustrator – the precise value is set in the Preferences dialog. With both programs, holding Shift while pressing the cursor key will move the object 10 times the standard distance. And by using the cursor keys within the Move dialog it will be nudged up and down by one unit at a time. Also by holding Shift as we press the cursor keys, the value will change by ten times the standard amount.

In Illustrator though, as values are automatically translated into the default units, typing '1in' to move an object by one inch will turn into 25.4mm; the cursor keys will change this by 1mm at a time rather than in fractions of an inch.

There's no direct equivalent of the Move dialog in Photoshop but we can produce a similar movement using Free Transform. When we press Command-T to enter Free Transform mode, the Options bar displays X and Y coordinates of the current layer's top left corner (as well as its starting size of 100%, and rotation and skew angles of 0%). We can type the distance we want to move a layer in the X and Y fields here.

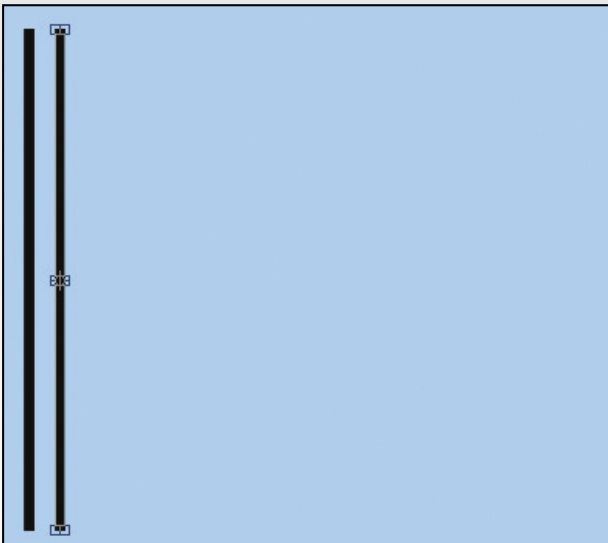
In Photoshop, however, when we type different measurement units in these fields, they're remembered – not just for the current Free Transform session but also in every Photoshop document until we quit the program. Even better, we can set different units for the X and Y axes. This means that if we're working on an image to fit a magazine layout, for example, we can set the horizontal units to millimetres and the vertical units to point measurements, and these settings will be remembered. Using



▲ Illustrator's Move dialog box allows us to specify the movement of an object precisely in the units of our choice.



▲ The Free Transform command in Photoshop enables us to specify the movement of a layer or selection in any unit. Clicking on the triangle icon sets values relative to the object rather than to the canvas.



▲ To create a grid or array, duplicate the layer or selection – then use Free Transform to copy it to the new location.

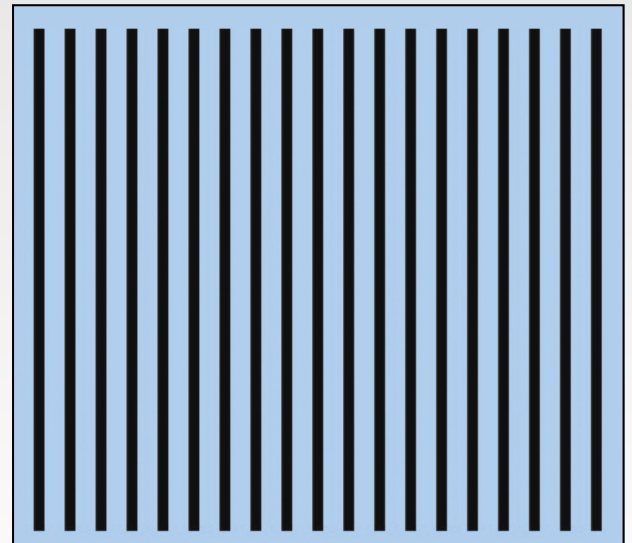
the cursor keys to increase or decrease values will of course nudge them with the current units rather than the default settings.

While typing in the numerical values in Photoshop the layer or selection will move immediately. Once the desired values have been entered we need to press Return or Enter twice – once to exit the Options bar dialog box and the second time to commit the Free Transform operation.

Once a layer has been moved with Free Transform we can repeat the transformation

exactly, using Shift-Command-T. What is less well known is that it's possible to duplicate a transformation by pressing Alt-Shift-Command-T. This will move a copy of the layer or selection, leaving the original in place. In turn, this makes it easy to set up grids in Photoshop, with precise spacing between the items.

Each time we press Alt-Shift-Command-T we create a new instance of the item, so we can keep the Alt, Shift and Command keys held down, and then repeatedly press



▲ After the grid or array has been copied across, pressing Command-Shift-Alt-T will duplicate it as many times as you wish.

the T key to build an entire array in just a matter of seconds.

When we first enter Free Transform, the position of the object is shown relative to the zero position of the rulers. By default this will be the top left corner of the document. If we click on the small triangle icon between the X and Y values in the Options bar, we're able to specify the movement relative to the object itself rather than relative to the document. The X and Y values are set to 0, so we can enter the distance we want to move it without having to add a value to the current position.

Although the absolute position is initially set relative to the top-left corner, in reality it's relative to the zero position on the rulers. We can set this zero position anywhere we choose within the document by choosing Show Rulers from the View menu (shortcut Command-R). The rulers will always show the measurement units set in the Preferences. At the top-left corner is a square ruler icon and we can drag this to any position we like within the document: this will now be set as the zero point, and all measurements will be taken as positive and negative X and Y values relative to this position. Double-clicking this ruler icon will reset the rulers to the top left corner again.

The ruler is also used for dragging guides on to the artwork. These are non-printing vertical or horizontal rules that can help to align objects or which can be set up to work in a similar way to a baseline grid in a page layout application. As well as positioning guides by hand, we can use the New Guide option under the View menu to set guides with precise numerical values.

◀ With the Rulers visible, we can drag the cross hairs from the top-left corner to set the zero point at any location within the image.

