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Working with Blocks: Part 3, Block Substitution

In this tutorial we will talk about block substitution. With Autodesk® Impression software you can quickly replace DWG™ block references with stylized blocks created in Impression.

Blocks from CAD files

When you open a DWG file in Autodesk Impression you will see that Impression recognizes the geometry of the CAD blocks from that source file. These blocks are displayed just as they looked in the last saved view in the DWG. In Impression, these blocks will be on the same layer they were inserted on in the original DWG file.

To see your DWG blocks, select the In Use view in the Blocks Palette.

Note: Impression only knows the graphic value of the block. This means that neither attributes nor nested layers are supported.

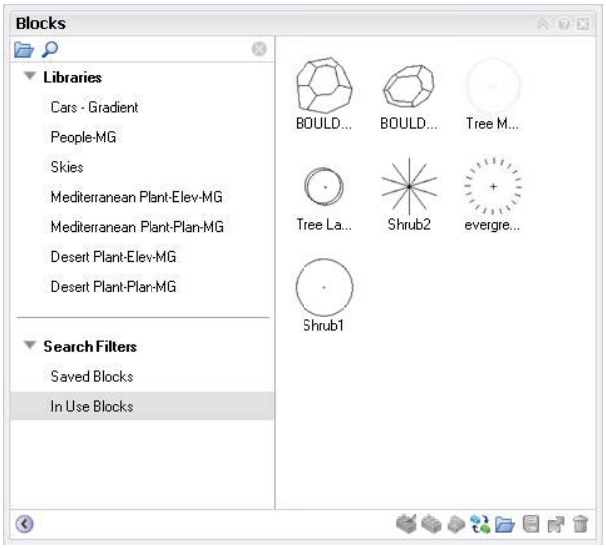

Figure 1: DWG Blocks in Blocks Palette

Block Substitution

With Impression, you can leverage the DWG blocks by using their repetitive nature to quickly stylize multiple blocks with a single action. This is called block substitution.

The power of block substitution is twofold. First, block substitution enables you to quickly replace all DWG blocks of the same name with Impression rendered blocks. This is especially useful when there are a large number of objects that need to be quickly stylized such as shrubs and trees and other natural objects. Second, block substitution saves you time when you are creating your DWG geometry. In your source DWG file, you can keep the block detail level low as the blocks will serve solely as placeholders that will be substituted with rendered blocks in Impression.

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Substituting Blocks

1. The easiest way to substitute blocks is to drag the icon of the styled block from a library in the Blocks palette and drop it onto one of the DWG blocks in your drawing.

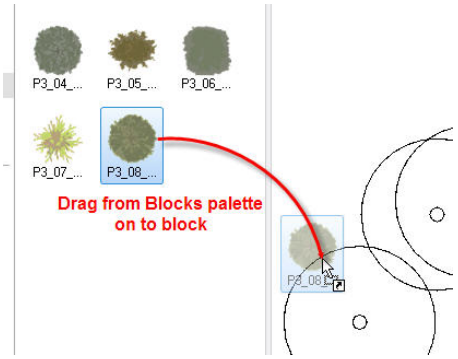

Fig. 2: Dragging a styled block onto a DWG block

During this action, be sure to pay particular attention to the cursor. It should have a small curved arrow icon attached to it. That arrow cursor lets you know you that you are going to create a substitution. If you see a plus sign icon on the cursor, you are not "grabbing" the DWG block for substitution, and instead you will only insert a single styled block onto the canvas

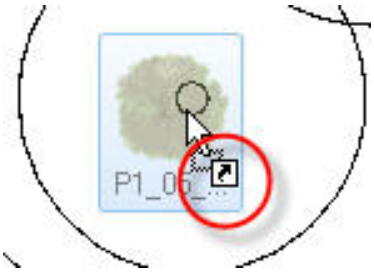

Fig. 3: Arrow icon means block substitution

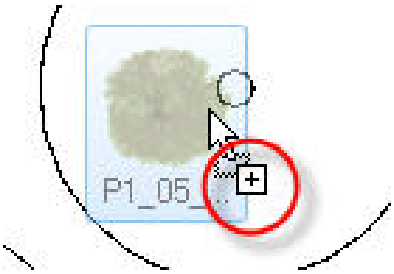

Fig. 4: Plus sign means only insert single block

2. After releasing the mouse button you will see a Substitution dialog. In this dialog, the left pane shows the original DWG block and the right pane shows the styled block that will be substituted.

Note: By default the Scale to fit bounding box control is checked. This means that the substituted block will be the same size as the original block. This also ensures that styled block will print at the correct size.

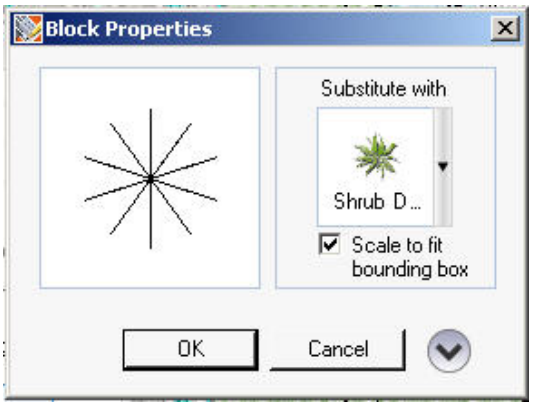

Fig. 2: Block substitution dialog

3. By clicking OK, all of the DWG blocks that have the same name as the one you chose to substitute will now appear as styled blocks.

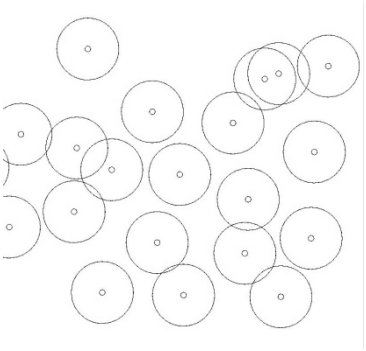

Fig. 4: Grove of non-substituted DWG blocks

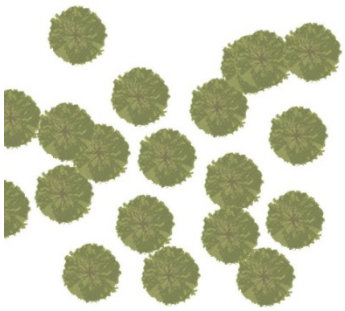

Fig. 3: Grove of tree blocks after substitution

Advanced Block Substitution

There are other properties you can adjust in the Substitution dialog. (To expand this dialog, press the More Properties arrow in the lower right hand corner.) The expanded dialog displays size and variation controls.

If you don't want to scale the styled block to fit the bounding box of the DWG block, you can adjust the width and height in the block properties dialog. Toggling the "padlock" icon will constrain the aspect ratio on or off.

There are also controls for adding variation to the size and rotation of the blocks as they are inserted. Checking the boxes next to Vary Scale and Vary Rotation will create a random variance of your blocks. For example, you can substitute a grove of trees that are all the same block name with styled trees that are all the same style, but inserted at different sizes and rotations. This helps a drawing have a more natural and random feel.

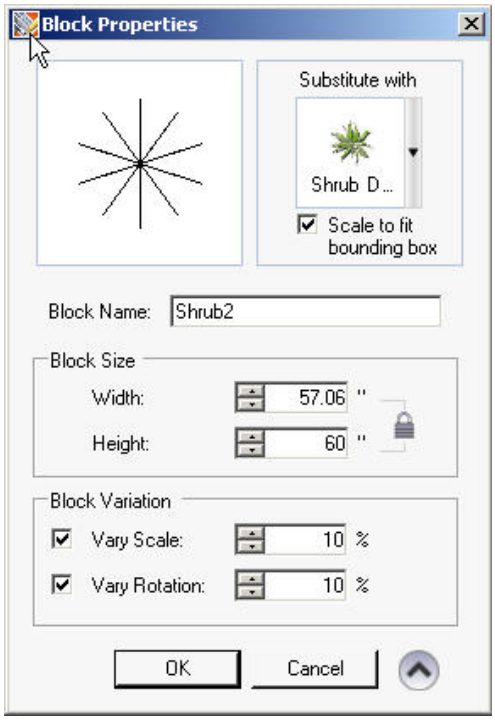

Fig. 5: Expanded Substitution dialog

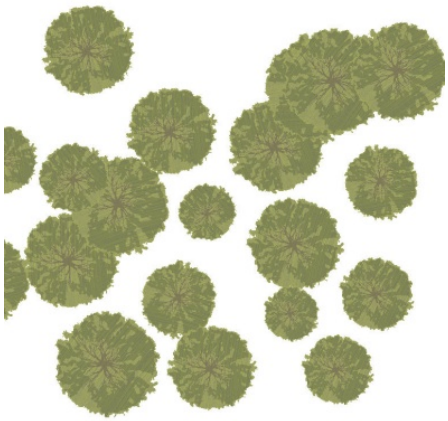

Fig. 6: Grove of trees with randomly scaled and rotated substitution blocks

Random Substitution with Multiblocks

A mulitiblock is a block that has more than one graphic value and can be substituted for a block. With a multiblock many different stylized blocks will be substituted for a single DWG block. Multiblocks are useful when substituting large numbers of blocks which require a variety of styles. In figure 9, we substituted a grove of DWG tree blocks with a single styled block that was adjusted so that the substituted instances would be a variety of sizes and at different angles of rotation. We created a look of randomness, but in the end these are all the same type of tree. If we wanted the same grove to be substituted with a variety of species of trees we could use a multiblock to do that in a single action.

Here's how you create a multiblock:

1. In the Saved Blocks list ion the Blocks Palette, select the desired blocks from the list by holding the Ctrl key and picking by clicking your mouse. [LT: What am I picking?]. (fig. 10)

2. Then, right click and select Create Multiblock.

3. A new block is created with the default name Multiblock 1. (fig. 11) If you hover your cursor over the new block thumbnail, you will see a fly out that shows all of the blocks that now comprise that multiblock.

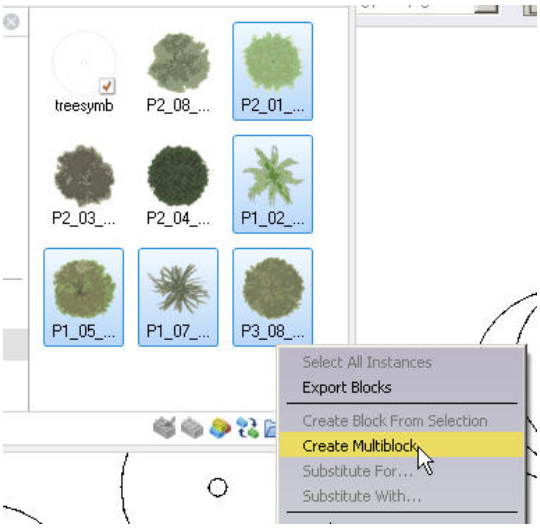

Fig. 10: Select blocks, then right click and select Create M~~m~~ultiblock

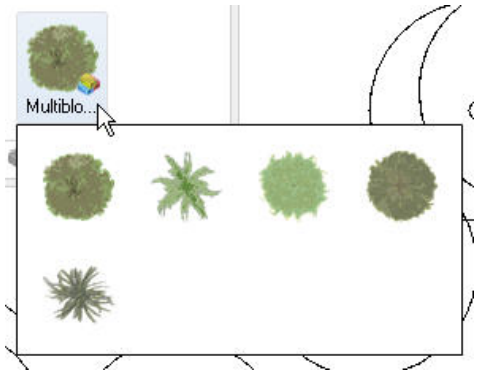

Fig. 11: Hover over the multiblock to see the blocks that comprise that multiblock

Now, when you use the multiblock to substitute a single DWG block, the DWG blocks will be substituted with a random selection of stylized blocks using the group of blocks that comprise the multiblock.

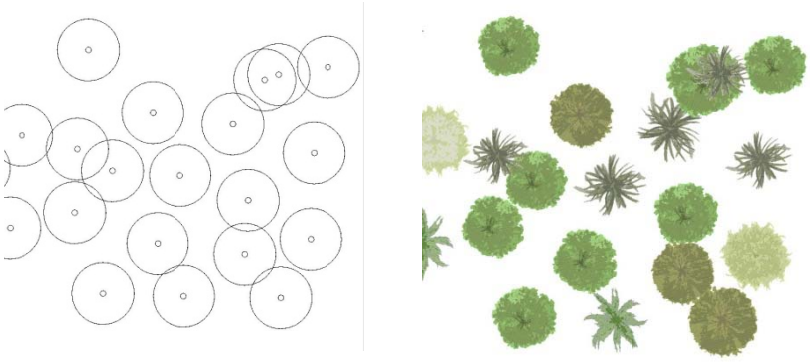

Figure 7 - Grove of trees substituted with a multiblock

Conclusion

This is the last paper in our series on “Working with Blocks.”

Blocks are a powerful time saving tool in Impression as well as in your favorite CAD program. You will find Impression blocks easy to use and an important way to streamline the creation of rendering s from CAD files.