Integrating Autodesk Impression Into Your Workflow

Ged Trias – Larson and Darby Group

DV-218-2　　　Autodesk Impression is one of the newest additions to Autodesk's array of design visualization tools. It allows users to quickly and easily add character and impact to their Autocad drawing files. Integrating it into your workflow is a quick and easy process, in some cases, as quick as clicking a button in Autocad. However, careful preparation in Autocad and Impression can make this process even easier and can allow for even more "Impressive" results. In this class, we'll look at some of these best practices and delve in to other intricacies such as custom style creation and doing 3d work in Impression.

About the Speaker:

Ged is the Associate Director of Design at the Larson and Darby Group, a A/E firm in the Northern Illinois region and has been involved in a large number of projects, some of which actually get built. He's been using Autocad since version 2.62 and is proud to say he still types in quite a few of his commands. His design work has used the full range of Autodesk products and most recently Autodesk Impression.

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I.   In a Photorealistic 3d Rendering world – why Impression? Or "Why should I spend money on yet another software package." Some Thoughts (not a comprehensive list and in no particular order):

Ease of Use – Works inside and outside of Autocad product workflow. Users can get really good results at all skill levels.

Benefit – A little less "Can you color up this site plan/floor plan/elevation for me?"

Emphasis on Process – Cad drawings look too "set in stone" makes client feel that there is no further latitude for exploration.

Benefit – looseness for both Designer and Client – more freedom for exploration.

Impressive - (sorry about that.)

Benefit - More "Did you draw that by hand ?" -"Yes and I stayed up all night too.- here's my bill"
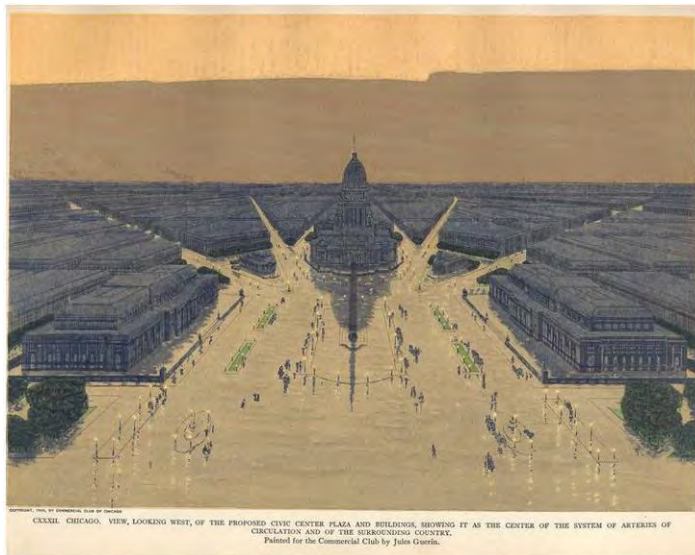

Fig 1. - Tradition

Tradition - There are a multitude of drawings throughout history that dramatically transform our perception of the things they depict. In some cases they become iconic in their own right. The effort to artfully apply that character taps into that tradition. Which leads to:

Impact – Impact is what separates mere drafting from delineation and illustration. It can have a profoundly different character different from other methods of presentation, and in some ways atypical. Everyone's doing renderings these days- What's different about yours?

Benefit - Reminds Client there is more than a machine involved in their Design and it's not just pressing the "Create Great Design" Button on your keyboard. (Little Known Fact: – That button is actually Shift - F11 on your keyboard!)

Speed/Flexibility – Production can be fast and changes can be even faster.

Benefit – you can actually have a life again – or not.

It's actually fun

Fun – at work? Impossible..

II.   Impression Basics - Things to consider:

Turn off anything you don't need. The file brought into Impression from Autocad should look as close to how you want it to look for final output as you can. Freeze or turn off any extraneous information you don't want to bring over.

Layering is Important - A consistent layering standard both inside and outside of Impression. The speed with which you can create and apply styles is amazing. For most drawings this isn't a big issue, but this could get out of control if you aren't careful especially on potentially very complex drawings such as site plans. Being disciplined about this can help in the translation of style maps between drawings and make a fast process even faster.

Linework Layers vs. Filled Style Layers. Instead of applying Filled Styles to Linework layers, I like to keep them separate whenever possible as a matter of control. That way, I can change the style of the lines with out having to affect the base style and vice versa.

Autocad CTB's are readable in Impression. A great deal of setup time can be saved by using your Autocad .ctb file during import. It will translate your layer styles to their corresponding lineweight in Impression. You also have the option of selecting a stroke type at Import which will also save you even more time time.
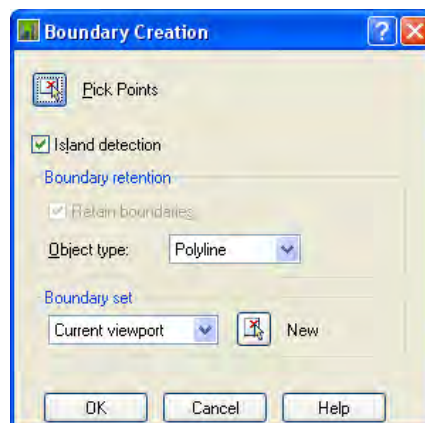

Fig 2. - Autocad's BOUNDARY command

Instant Plines. Decide how you're going to create your fill areas – as Plines within Autocad? Too time consuming? This is actually a lot quicker than you think if you use Autocad's Boundary Command. It's

not really a one or the other decision either. It can save you some time to create some general color areas as a pline in Impression and then create detail layers within Impression.
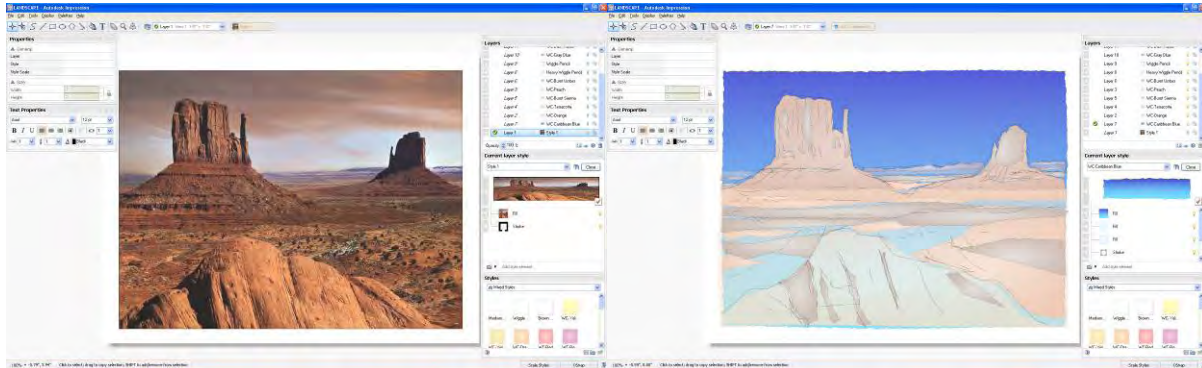

Fig 3. - Tracing is your friend.

Don't forget about tracing. In addition to supplementing poor drawing skills ☺ , there are those instances where you've got an area or boundary "that just won't fill right" using the Area Fill tool. Depending on the looseness of your drawing, it might be just as easy to trace a complex object or boundary than to muck around in Autocad or adjusting gap tolerance tying to fix it, especially if you're in a hurry.

You don't have to pick every little closed area to fill. You can turn layers on and off when filling layers – While Area fill is fast when filling simple small areas, in can mean a lot of picks and clicks, or it can bog down on more complex boundaries. It might be just as easy and fast to turn off a few linework layers if possible and then fill the overall area that way.

Use the Stack Position to your advantage. Stack position of layers or within styles themselves are a universal tool for tweaking, from things like cutting holes in filled areas with other styles, or to achieve effects either in styles or in the overall look of a drawing.

The 35-MPH Test. It's called Impression right? The potential looseness of Impression is one of its' best benefits. You don't always have to take the time to be as detailed as you might need to be with a straight Autocad drawing because a block or a style can take up the detail slack for you. Didn't draw brick lines in your Autocad elevation? No problem, just add them to your style. Also, if people see that it's a colored pencil or otherwise styled drawing, they don't necessarily expect to see the kind of detail you'd expect in a cad drawing. Excruciating detail is great, but only where appropriate.

TEXTURE FILL

MARKER STYLE

COMBINATION MARKER STYLE W/ TEXTURE FILL

Fig 4. - Image and Media Style

Image Styles vs Media Styles. I tend to avoid mixing styles in a drawing unless I have a really compelling reason. Translation: I break the rules only when I have to ☺. The detail of images in styles can sometimes be overpowering to all the other media type styles in a rendering. If I do use an image based style, it's usually as part of a layer that is turned way down in opacity with another media type style applied above it.

Consider your position. Where are you in the design process? Are you just producing a finished rendering or is this some concept stuff that may or may not undergo a multitude of changes or multiple options. This can play a role in how disciplined you need to be in the production and setup of your file. – No, this is not a license for sloppiness, but can be an indicator of how to proceed. If you are producing an number of design options – creating consistent plines in Autocad can be a better approach for getting consistent styles to an array of design option files or elevations of a single building. Or, if it's a final presentation drawing of a single elevation or individual elevations on a single sheet, you might just treat the drawing as linework only and apply your styles via area fill entirely in Impression.

II. Importing/Exporting in Impression Some More Things to Consider

Related to the last note in the previous section, this can be a critical question also because of setup factors. Are you outputting Jpegs or PDF's or DWF's. How do you envision future changes or occurring down the road? I'll take 2 methods I've found in my workflow.

Option 1 Autocad - Impression:

Direct import of.dwg into and straight printing from Impression.

Pros: One stop shopping, less prep time.

Changes confined to 1 file – easy updating.

Cons: Complex layering if layout is complex w/ multiple viewports and xreferences.

Xclipping not supported.

Printing can sometimes be flaky w/ memory errors.

SHX fonts & other font properties not entirely supported.

Complex files equal longer load times.

Viewport import behavior can sometimes be a little erratic, especially with perspectives.

Option 2 Autocad – Impression- Autocad:

Stripping out individual drawing components in Autocad (where required) for import into Impression. Output to Jpegs or other image formats PDF, PSD etc. Reintegration into Autocad when required via IMAGE command.

Pros: More flexibility – can be used in a number of applications.

Potentially simpler files to handle.

Can ignore Xclipping- When required, clip in Autocad using IMAGECLIP command.

SHX problem can be avoided by generating text in Autocad.

Cons: A lot of files can be created. A lot of files must be kept track of.

Scaling of imported image files required when reintegrating in Autocad.

Setup time can be increased.

Conculsion; While each have their drawbacks. Option 2 offers more flexibility and fewer program issues in exchange for potentially more setup time. Some problems like occasional printing problems from Impression can be avoided altogether. Whatever method is chosen, it would be wise to allow sufficient time to troubleshoot any workflow difficulties.

Other Programs-

Revit

There is not currently a direct path to Impression from Revit. However, perspective or other views can be set up as sheets in Revit for export as dwg files that can then be opened in Impression

Some issues to watch out for are the extensive numbers of Layers that can be created upon export to dwg which can make for a very crowded layer box in Impression. More advanced Revit users can create layer mappings for Revit objects to simplify the export of objects into dwgs. One method of dealing with this layer complexity with this is upon import, grouping the layers created from a Revit export together and treat them purely as linework layers. Then color styles can be created as new layers in Impression and applied as area fills. Some Revit components are also converted to blocks once imported into dwg's which can come in as blocks in Impression. This can cause some headaches when trying to adjust or apply styles in Impression if a base style is not selected on import. You can explode these blocks in Autocad or Impression. This will almost certainly cause issues if continuing updates of the drawing are required.

As an alternative in Revit, 2d DWF's of orthographic and perspective views may be published that can be imported into Impression. However, no additional layers are brought into Impression besides a DWF layer, so that level of layer control is lost without some additional work once in Impression. This may be preferable than dealing with the multitude of information generated with a direct dwg export. Some other things to look out for are some instances of Revit detail not making the DWF translation. Zooming in at the level of those details and then publishing the DWF is one workaround. Also, take note of the shademode in which the DWF is published. If published in a 3d shademode, the model will import only as an image of the view and not as 3d linework that you can manipulate in Impression.

The same cautions about preparing dwg files to look as close to your final output also apply to the setup of Revit files for output as dwg's or for publication of DWF's destined for Impression as well. The Impression help file also suggests the creation of a separate .rvt file to avoid accidental manipulation of the base file.

Sketchup

Sketchup will export to directly to dwg, but no views are saved, so some kind of view setup must be accomplished in Autocad before import into Impression.
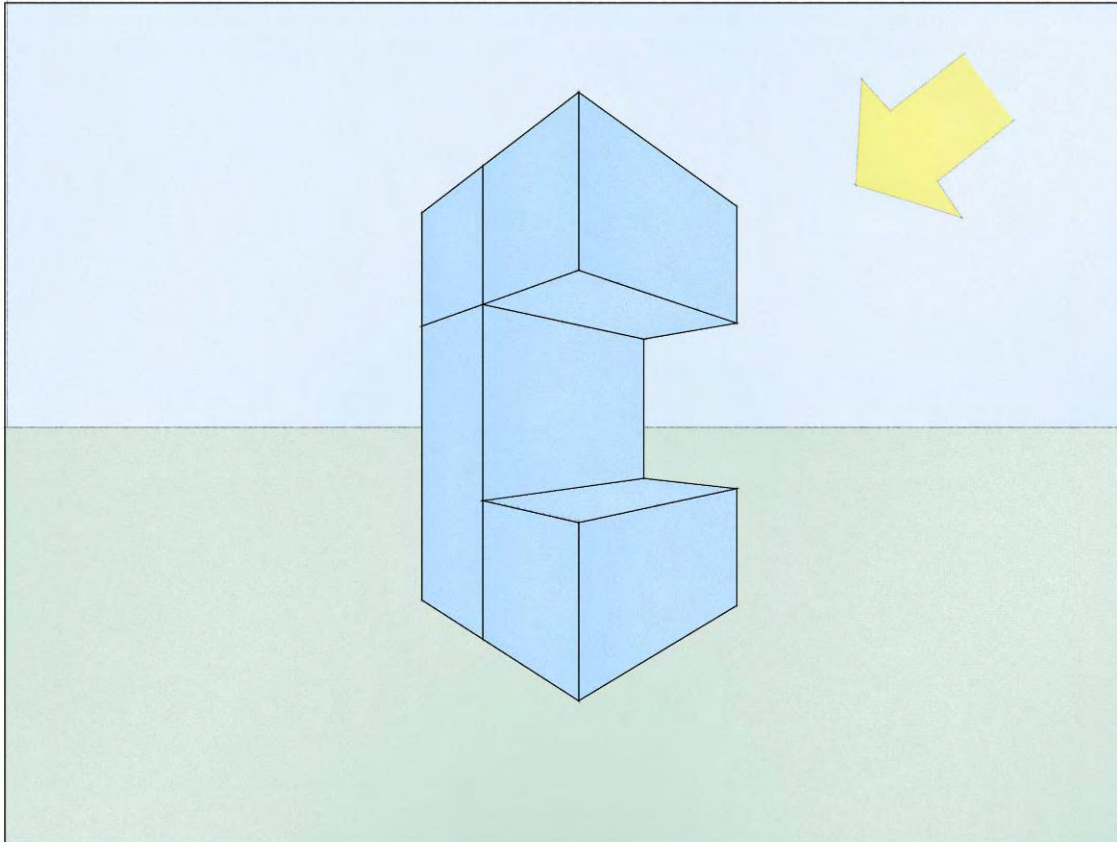
IV.   3d Rendering in Impression

Fig 5 – Straight import w/ colors applied.

3d renderings in Impression are simply locked off views of your 3d model set up in your .dwg file and imported into Impression. Navigation of the model and view setup are things for you to do in Autocad not Impression. For the most part, as with 2d rendering in Impression, the same goes for 3d: You get what you put into it. Impression can give you some fantastic transformative effects when you just import a drawing. It takes a good cad drawing and gives it some character.

FOR MULTI FACETED OBJECTS
CREATE ADDITIONAL
SHADES AS REQUIRED TO
LIGHT FACES OF OBJECT

SHADE 1

DIRECTION OF LIGHT

DARKEST FACE
SHADE 2

SHADOW

LIGHTEST FACE
(NO SHADE APPLIED)

OVERALL COLOR APPLIED TO
ALL FACES

ADJUST GRADIENT FILLS IN SHADES TO MATCH DIRECTION OF LIGHT
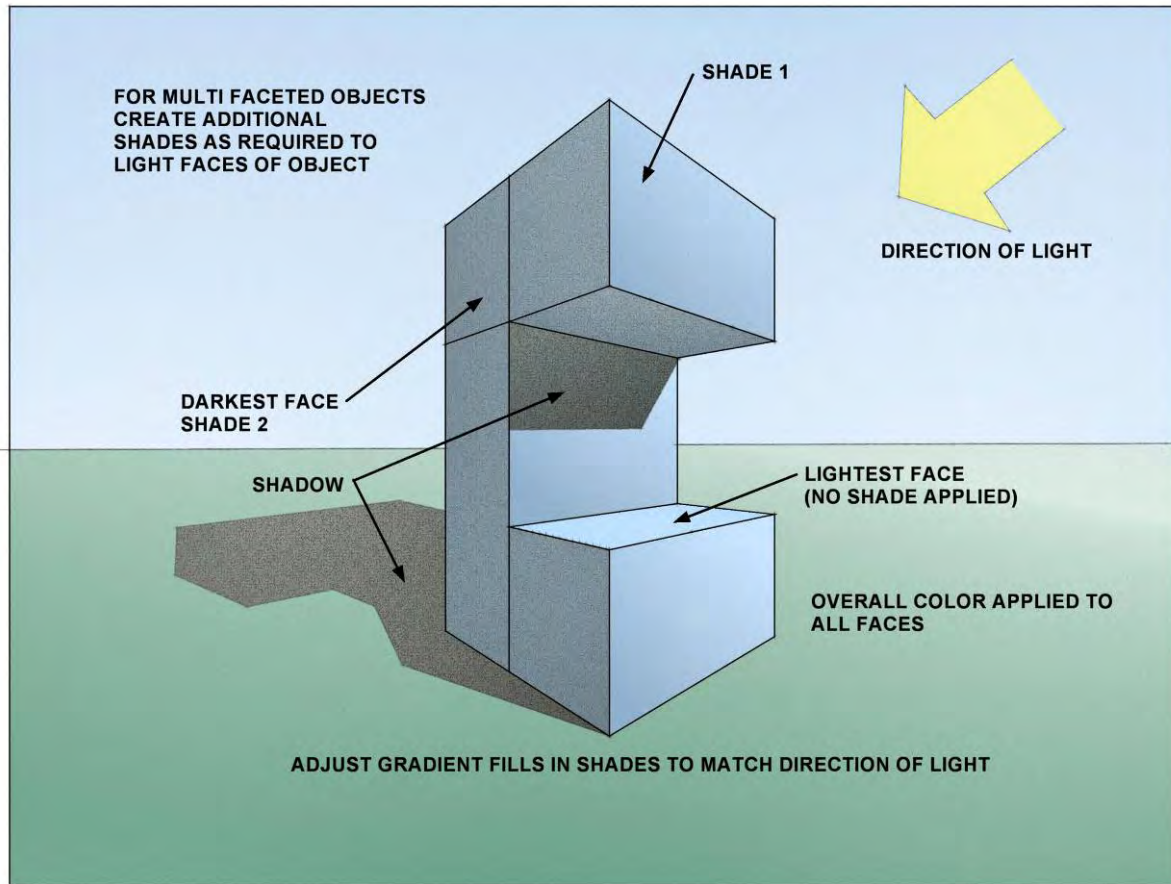
Fig 6 – With a little more effort…

But, to take it to the next level, you should be prepared to spend some time at least initially, to really work on the drawing to give it some punch. Once you have these techniques down, the process can go very quickly.

The keys to powerful rendering in Impression lie with the following concepts and how they are used to depict light on the surfaces of the object(s) you are depicting.

Shading/Shadowing

Shading refers to the idea that light falling on a 3d dimensional object will illuminate that object differently depending on the face that the light hits and also cast a shadow onto adjacent surfaces.

Designers of a certain age will remember the sometimes excruciating shade and shadow exercises performed in school. Well, now this is when the chickens come home to roost. Shade and shadow are the single biggest contributors to the "pop" of a plan or elevation and perspective drawing. I'll often create a shadow layer and freehand and copy shadows for my more complex objects in elevation. The realtime shadows in Autocad are a great guide for this sort of thing. But, when applicable, the drop shadow F/X is the biggest time saver. Don't forget they can be internal and external. The Impression Readme has some

cautions about using drop shadows excessively. It can slow your system down. But for those with robust enough systems, it can also be a key to some other amazing effects… if you dare… (more on that later)

Opacity

Opacity refers to how the intensity of base colors are modulated to give the above Shading effect. On a 3d rendering in Impression, these are basically Shade layers of different opacity applied consistently over a 3d object. Lighter or no shades are applied on surfaces closer to the light source and Darker shades are applied to those faces further away from the light source.

Gradients

Gradients refer to the way the intensity of light can fall off on a surface depending on the distance from the light source. In 3d renderings in Impression this is used to counteract the "flatness" of the standard styles to give a more 3d dimensional effect. This can also be used in 2d plan or elevation views to give more depth.

Gradients can also be used to depict light itself emanating from an object, or further depict the modeling of a surface such as curves.

Fig 7. – Lighting and curved objects using gradients

Linear Materials in Perspective

One thing that is difficult to do in Impression is depict linear materials such as brick or stone as they recede in perspective. The only sure-fire way to address this can be rather brute force in nature and actually done outside of Impression in your source file.

In your Autocad 3d model actually create the lines or hatches that depict the material you are trying to show. This can go quickly if you are building a simple model using blocked out pieces of your elevation drawing or you can use hatch patterns especially in the case of coursed stone where the vertical joints are important. It can add to your modeling time, but is really the clearest way to depict the material.

Remember to put the material lines or hatches on a different layer so you can assign them a different material type.

In this case, Revit users have somewhat of an advantage because of the automatic application of some of the material patterns to the faces of their model, coming into Impression as blocks. Working with that linework may require you to explode it and send it to new layers either in Impression or in Autocad. Be prepared for additional work to clean up or otherwise deal with the imported linework.
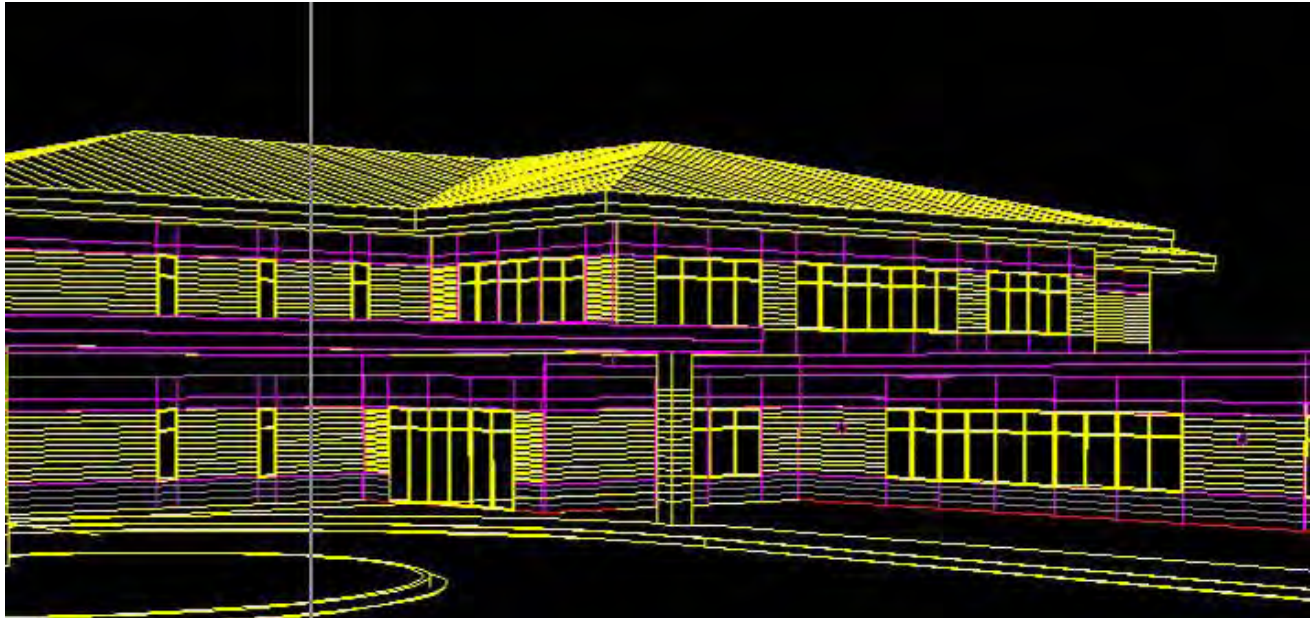
Fig 8. – Linear materials in perspective

V.   Stock Styles Are Good. Your Styles Are Better.

The libraries included in R1 of Impression are comprehensive enough for you to start being productive right out of the box. But since one of the selling points of Impression is rendering in your own style, you'll want to start building a library of styles that you've tweaked to your liking, whether they are single colors or ranges of colors.

Traditional Rendering Techniques

Traditional hand renderings utilize a battery of techniques to achieve their respective ends. Some of these are easily duplicated in Impression right out of the box. However with just a little experimentation, the battery of potential techniques available to you can be greatly expanded even further, offering even more flexibility and greater speed in your rendering efforts.

Stipple Stroke
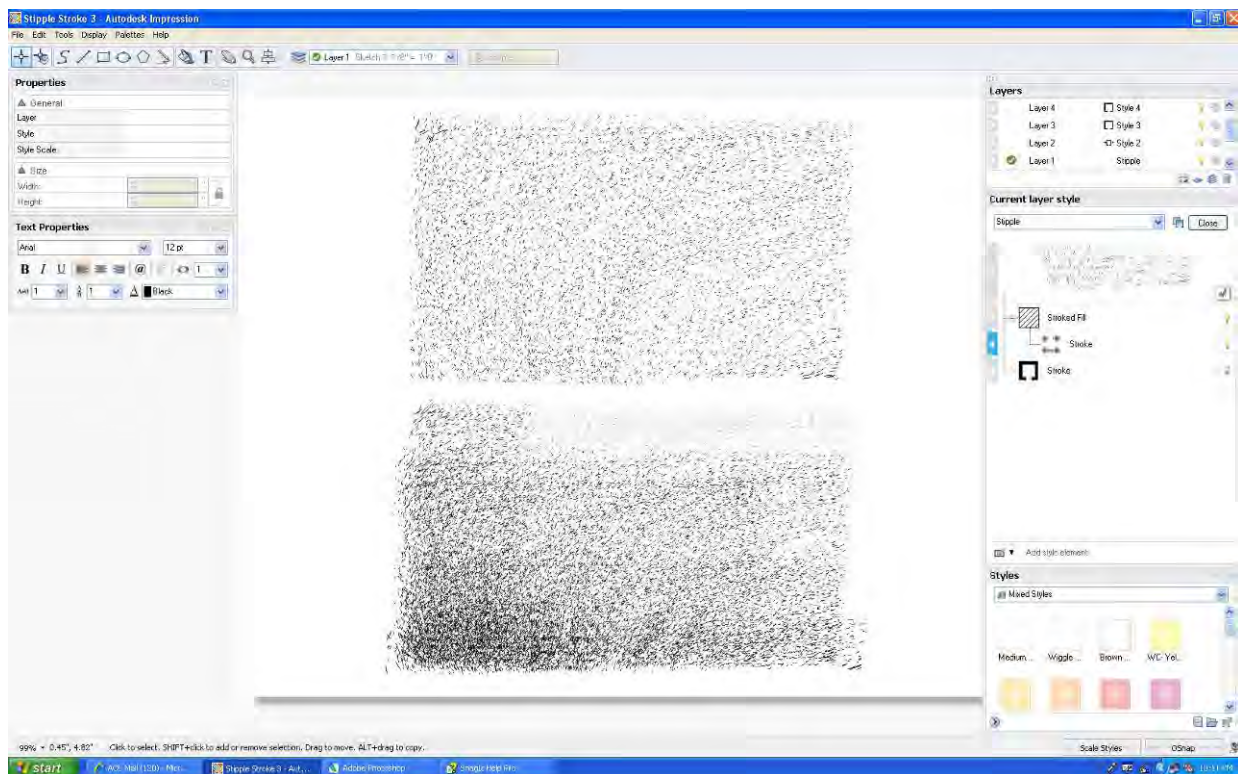
Stipple Stroke – This is a useful stroke that can help break up an otherwise flat expanse of color or be used as a rendering method in its own right.
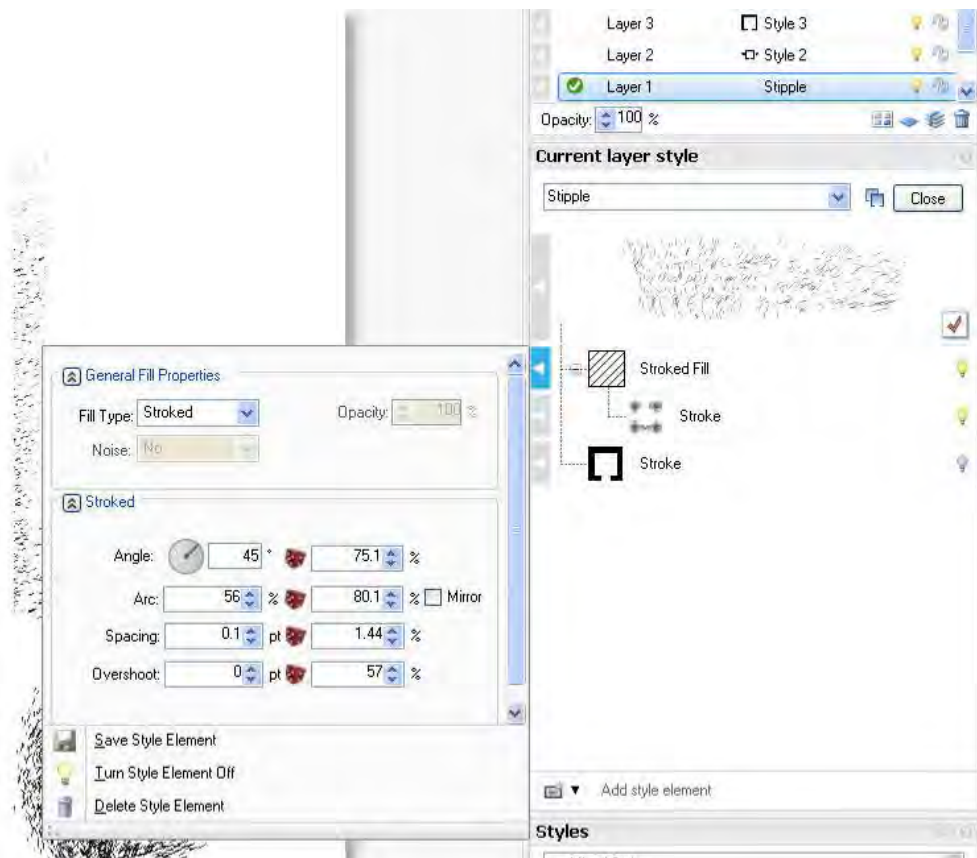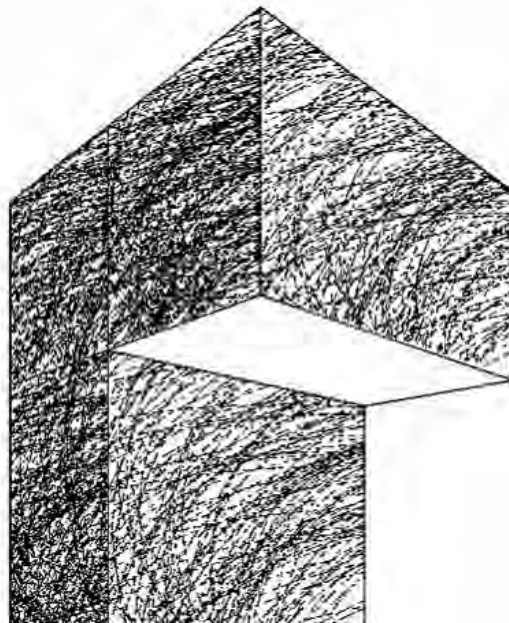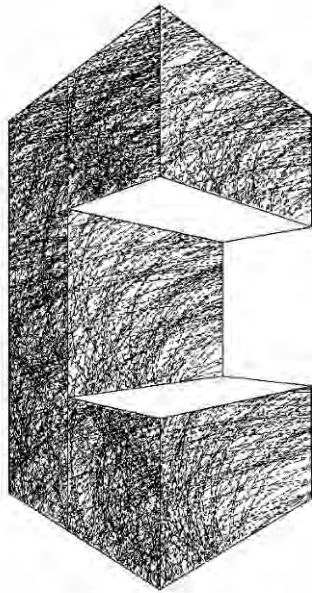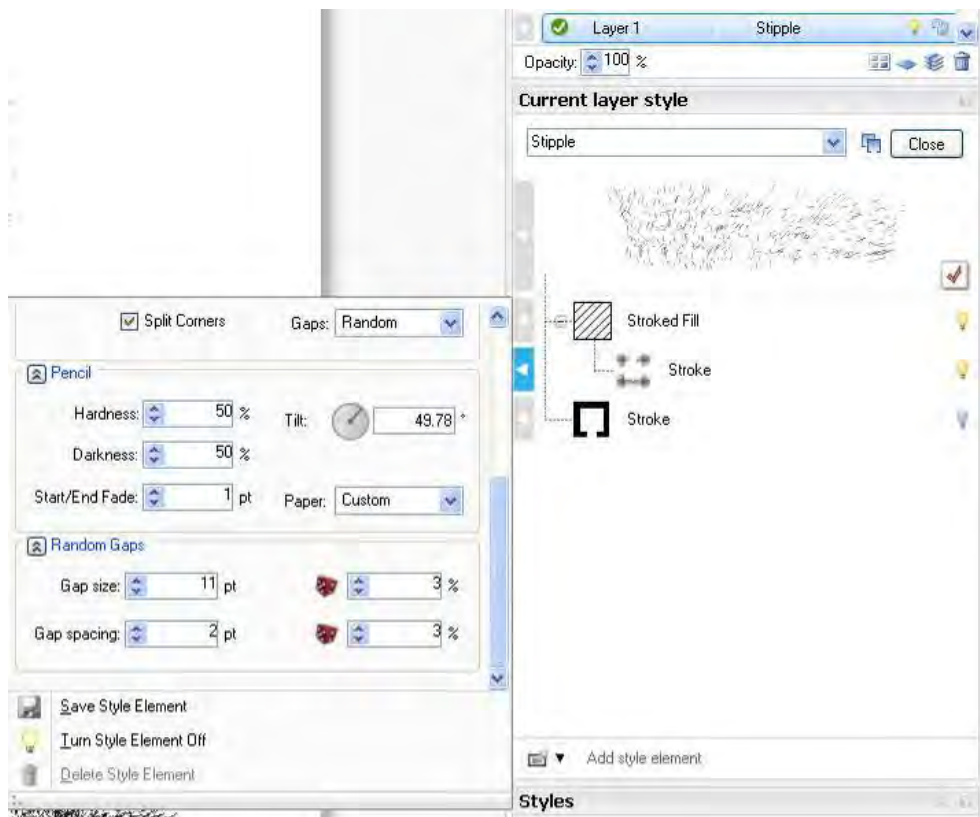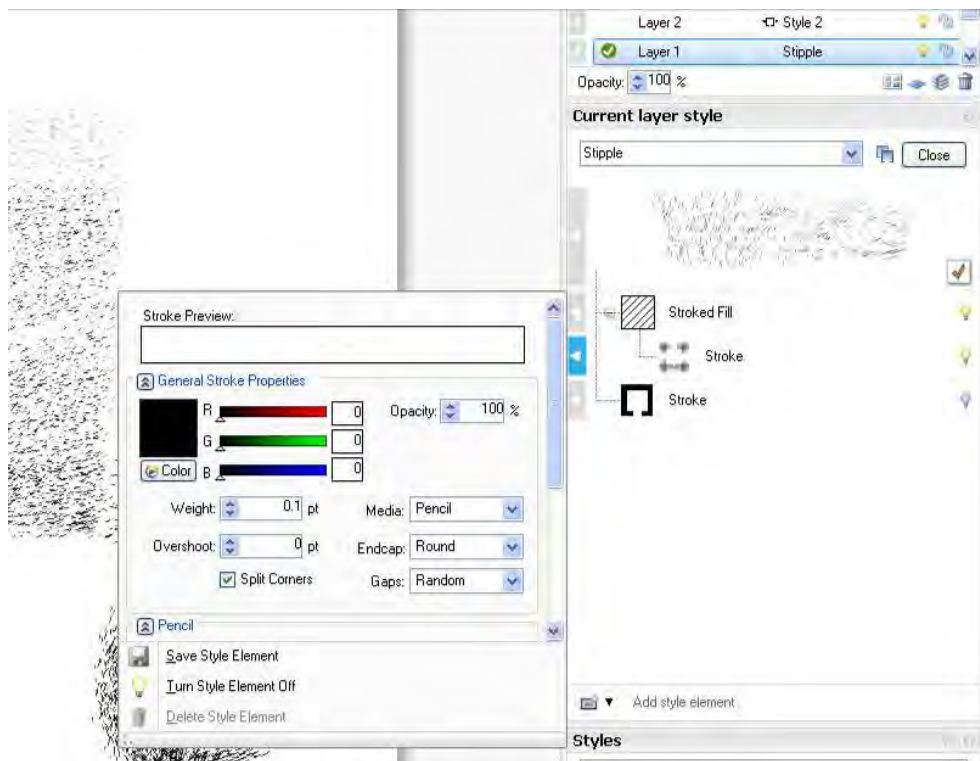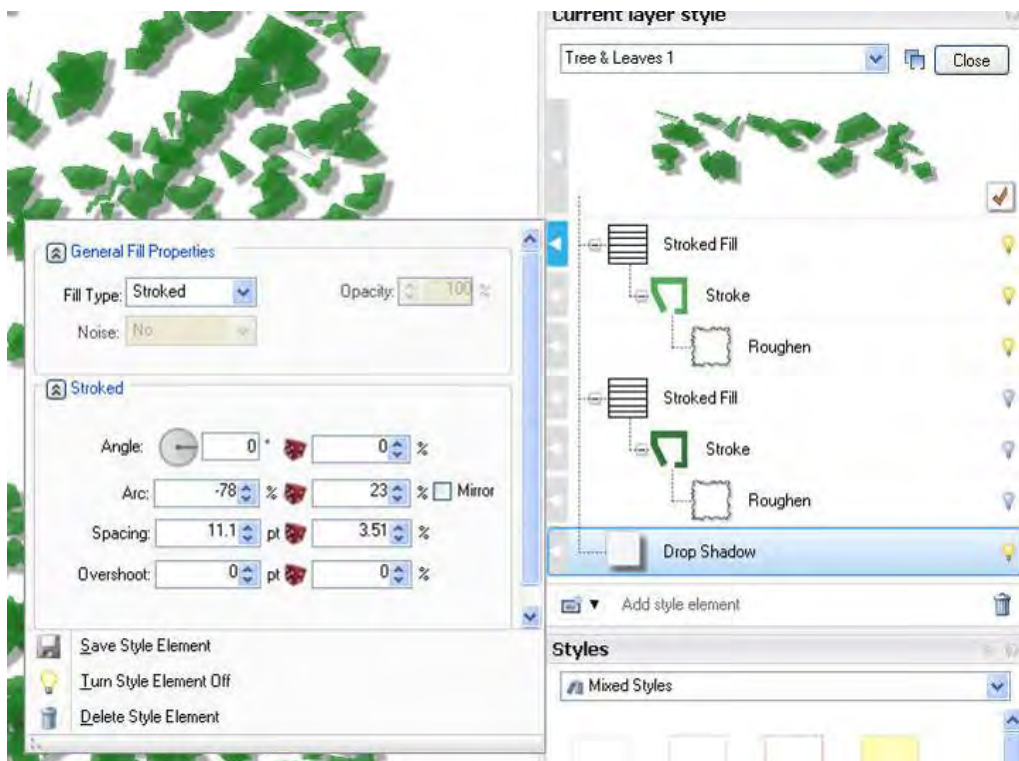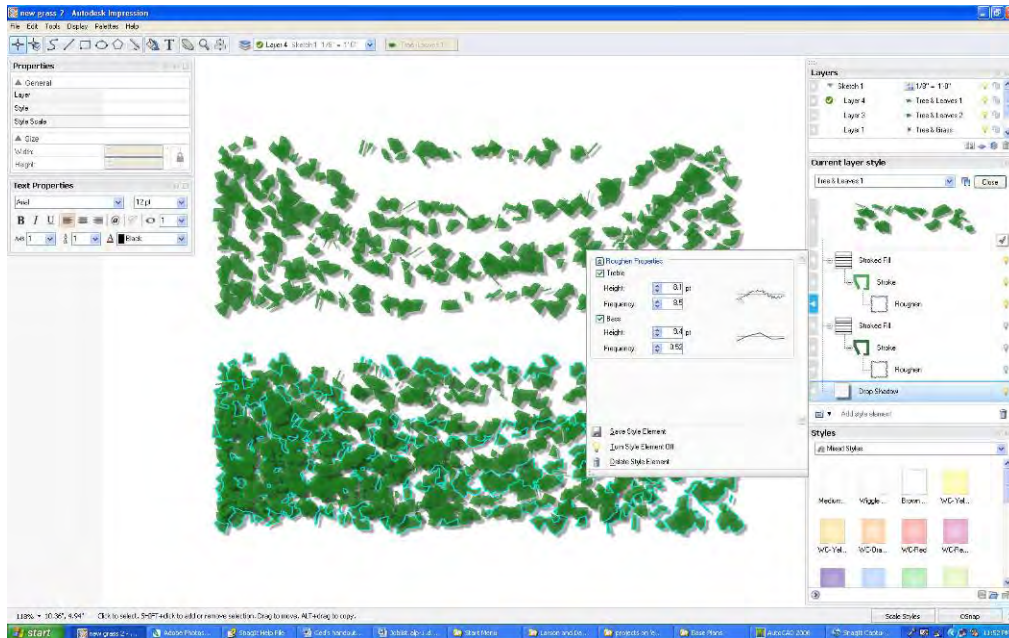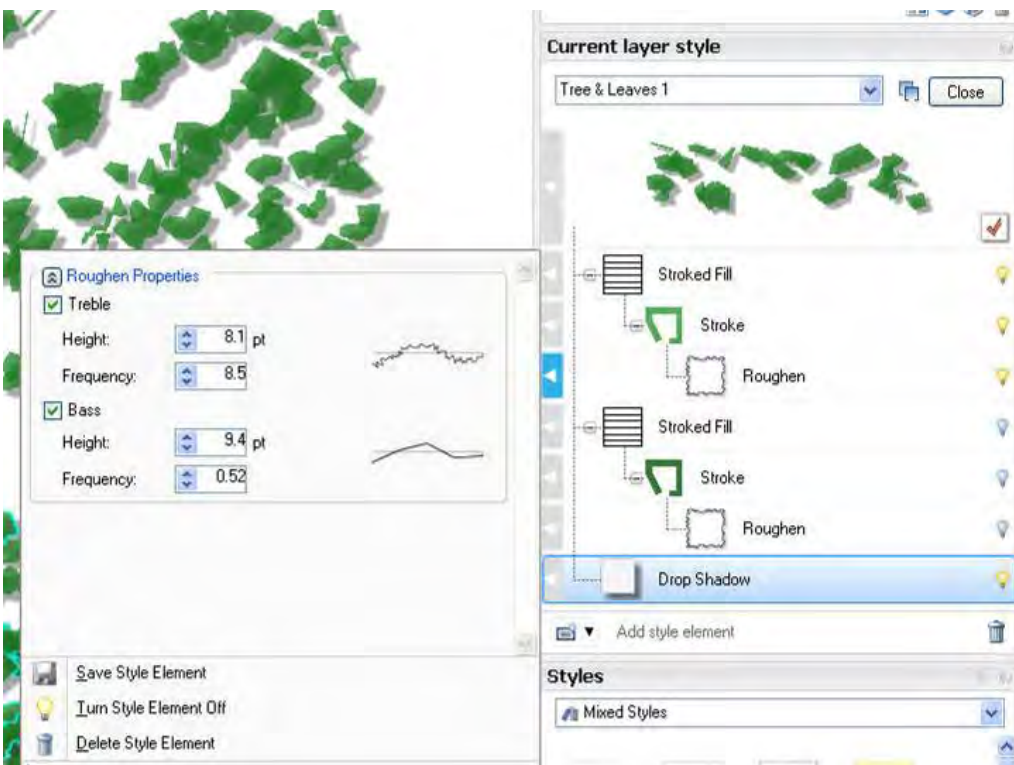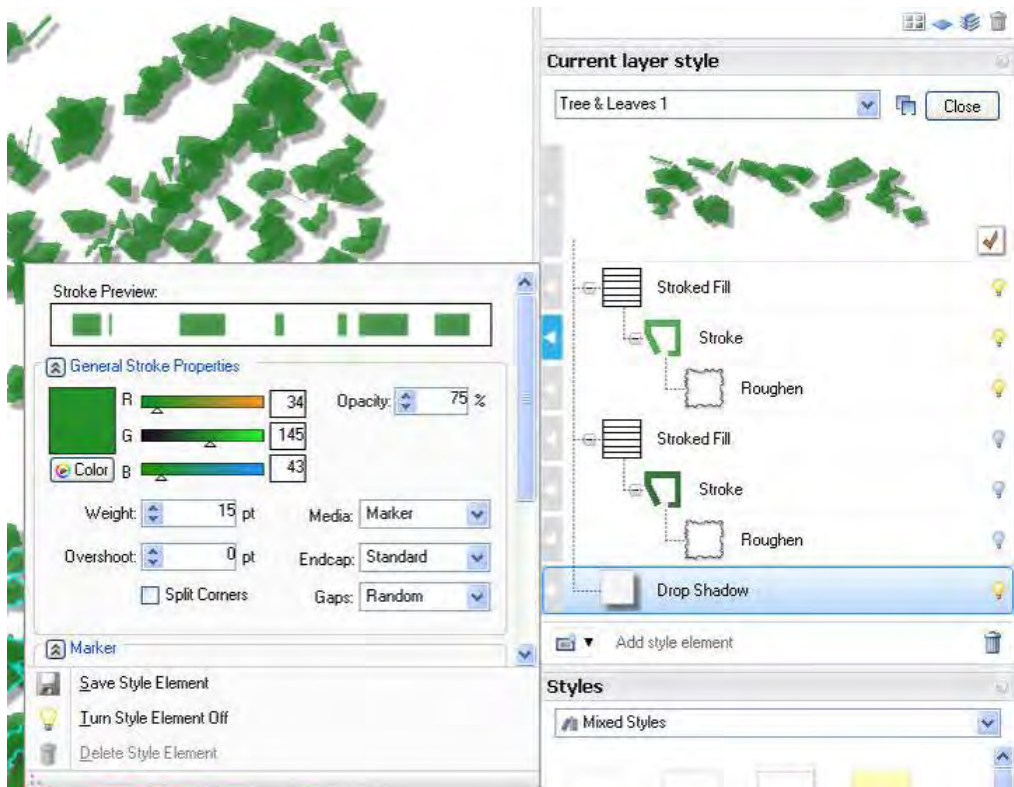
Randomness and spacing are central in the creation of this stroke. Once mastered, this approach can be used as the starting off point for other types of styles, including:

Shrubbery/Foliage

Once a base stroked fill is generated, copy the stroked fill again and adjust the values to get more randomness in the stroke and a slightly darker color green. Then apply a drop shadow to the whole style.

WARNING – Besides the duplicated stroked fill, of particular note in this style is the use of the drop shadow. The Impression readme file warns against the overuse of some effects because of the system resources it chews up in generating them. It gives the style some needed depth but this can cause less than robust systems to run out of video memory.

This rendering technique can also be used as the foundation for the creation of style based entourage that can be used and adjusted to match whatever presentation type you are rendering.


Fig 9. - Style Based Trees

VI.   The Annotated Essential Library

Until the definitive Autodesk Impression book is published there are a number of essential references that should be in your library. If you are lucky, you or someone in your office from the late stone age has them already:

These are all traditional media resources, and should serve as a source for techniques and the development of your own styles.
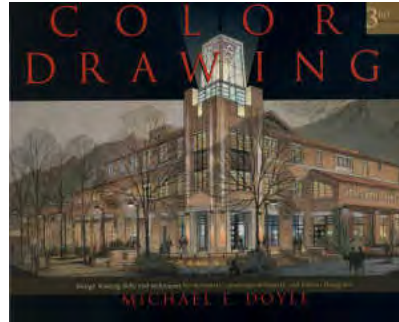
Michael Doyle. 2007. **Color Drawing.** New Jersey: John Wiley and Sons.

One of the cornerstones of any rendering reference library.   In it's 3ʳᵈ edition, it continues to offer a good translation and application of the colored pencil and marker medium into the digital age. The use of Impression will knock more than a few steps out of some of the methods shown in this book.

Helmut Jacoby. 1971. **New Techniques of Architectural Rendering.** New York: Prager.

Another venerable resource with some fine examples of B&W rendering techniques.

Jim Liggett. 2002. **Drawing Shortcuts.** New Jersey :John Wiley and Sons.

Presents the continuing evolution of some of the techniques pioneered in Color Drawing. Delves more deeply into their integration into practice. Good examples and discussion of the "Tradigital" process

Mike Lin. 1985. **Architectural Rendering Techniques – A Color Reference**. New York: Van Nostrand Reinhold.

Despite it's age, an excellent resource for rendering techniques to emulate in a wide variety of media. Some examples also give completion times. Watch yourself blow those times out of the water with Impression!

Richard McGarry Greg Madsen. 1993. **Marker Magic.** New York: Van Nostrand Reinhold.

A little known resource for marker techniques that have application for the marker styles in Impression.

Tom Porter, Sue Goodman. 1991. **Design Drawing Techniques for Architects, Graphic Designers, & Artists.** New York: Charles Scribner's Sons

A good resource for black and white / pen and pencil rendering techniques.

Thomas Schaller. 1999. **Architecture in Watercolor.** New York: McGraw Hill.

The essential reference for this type of media. Great examples and techniques to emulate.