Compositing: What is it Good For?
An Introduction to Compositing

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Learning Objectives

At the end of this class, you will be able to:

- Explain the principles of compositing.

- Render individual layers form 3ds Max and 3ds Max Design.

- Define critical layer types that are crucial for maximum compositing flexibility.

- Begin using the high dynamic range OpenEXR image format image format instead of traditional JPEG or TIFformat.

About the Speaker

Marcus Kim is a Business Consultant for Autodesk Consulting with over 15 years of industry experience and has spoken at AU in 2011 and 2010. Prior to Autodesk, he has served as the BIM Manager at the Chicago office of Skidmore Owings and Merrill on many early BIM projects and has held lead roles at other Chicago AEC firms for competitions, design visualization, design architecture, and technical architecture. At Autodesk, Mr. Kim provides enterprise-level BIM consulting BIM and design visualization training, and has mentored his customers throughout every critical phase of a project. Outside of Autodesk, Mr. Kim volunteers his time to chair the Chicago Chapter of the Computer Graphics Society, a non-profit organization, whose mission is to mentor professionals and students in the latest design visualization techniques both 2D and 3D. Mr. Kim has a BA in Architecture from the University of Illinois Chicago, and an AAS isn Digital Media from the American Academy of Art in Chicago.

1   General Overview: Compositing

Many years ago when I bought my first DVD and had access to DVD's, I was amazed when I saw the included "Special Features – Making of the Movie" specifically the 3D digital compositing. I was mesmerized what it took to add the digital Visual Effects on to live images, and wondered how in the world are they able to accomplish that. I wanted to learn more about it, but could not pursue it due to the high cost of hardware and software. In the current day, both software and hardware has become very affordable, and in the case of 3DS Max users, a compositing workflow is already available to you. Many people do not realize that with the installation of Autodesk 3ds Max / 3ds Max Design, the installation includes:

- Autodesk Composite
- Autodesk Matchmover (Used for Camera Tracking)

In the case of Autodesk Composite, it is a capable compositing program that integrates many toolsets utilized in compositing workflows today such as: blending modes, color correction, tracking, motion blur, depth of field to name a few.

The class assumes that the audience has a fundamental understanding of 3ds Max / 3ds Max design and is capable of rendering images. This course will outline the fundamental principles of compositing and give you a crash course in Autodesk Composite and rely on a combination of Power Point and a live demo to show the compositing techniques. This document will only outline the key bullets made in the presentation.

2   What is Compositing?

By definition, compositing is the combining of visual elements from separate sources and unifying them into a new visual element. The purpose of compositing is to either enhance the overall look and feel of a visual element, or to create an illusion that visual elements from multiple sources are in the same scene. At its heart the simplest way of describing the process behind compositing is a layering workflow. If you've utilized a program like Adobe Photoshop, the concept should be familiar to you. Many architectural firms use basic compositing techniques to enhance their renderings such as adding entourage, or making basic color corrections in order to change the look and feel of their renderings. Though these leverage compositing techniques, throughout my travels, I am often amazed that they do not leverage a more comprehensive compositing workflow that is inherently available in 3ds Max.
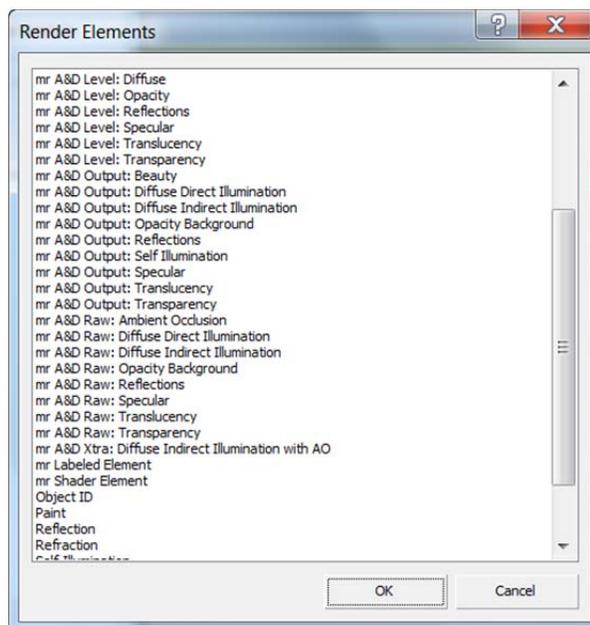
3   Rendering to Layers / Render Elements

There is a powerful feature in 3ds Max called Render Elements and is available in the Render Setup of 3ds Max.
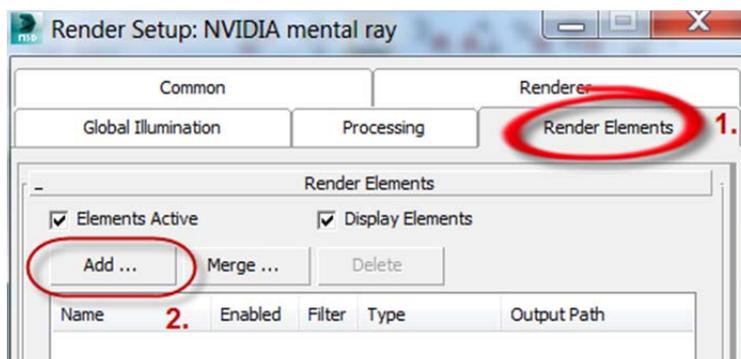
1. This tab is often overlooked by many basic to intermediate users today when executing their renderings and is an incredible missed opportunity. This tab controls 3ds Max's ability to selectively separate a rendering and generate raw visual elements that can be later composited together in most post production software.

2. Clicking on the **Add** button will access the list of available render elements.

3.1.1   Critical Rendering Layers

Within this list many Render Elements are available but for compositing beginners, the following render elements can be easily leverages to enhance renderings.

- Alpha (Renders out the Alpha Channel)
- Background (Renders only background element)
- Diffuse (Base diffuse color of materials)
- Lighting (Renders the effects of direct lighting hitting an object)
- Self Illumination (Only renders object containing self-illuminated materials)
- Z Depth (A grayscale representation of an image that can be leverage for compositing application to understand depth. Typically utilized for Depth of Field in Post production
- mr Shader Element (this element can assign a general material to all model objects within a Max Scene. Often times used to quickly created an Ambient Occlusion Rendering)

4   OpenEXR image format

OpenEXR is a high dynamic-range (HDR) imager file format first developed by Industrial Light & Magic (ILM) for use in computer imaging applications. ILM has made the OpenEXR file format open source and is available in 3ds Max as an available output format. Modern imaging and compositing applications such as Autodesk Composite, Adobe Photoshop, Adobe After Effects, can read the file format.

The biggest advantage of OpenEXR is that it is a multi-resolution and arbitrary channel format which translate to a single file that can store multiple channels such as RGB, diffuse, specular, alpha, and many others. This drastically aids in the compositing process because it takes away the need to have multiple files, i.e. the file is already layered with all required elements.

The OpenEXR option is available in the Render Output File window.
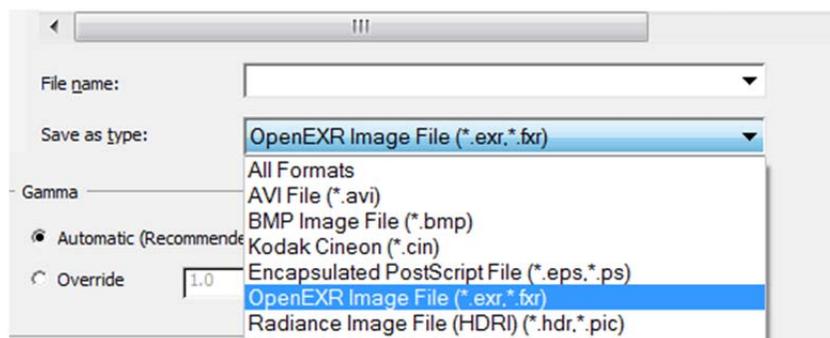
5 Autodesk Composite

Composite is an interactive solution for film and image compositing. It brings compositing and visual effects tools to high-end 2D artists working at HD, 2K, 4K or above, in film, television, and design. It features a full High Dynamic Range (HDR) pipeline, next-generation 3D compositing, high performance interaction at extremely high resolutions, and advanced integration with 3DS Max.

Note: Due to the intricate nature of Autodesk Composite. Explanations to the interface and workflows will be covered in the Power Point and the Live Demo.

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