3ds Max 2010
Architectural Visualization

Advanced to Expert

3DATS

3ds Max 2010 Architectural Visualization

ISBN-13: 978-0-9792811-2-9

ISBN-10: 0-9792811-2-1

Printed in China

Distributed to the book trade worldwide by 3DATS, LLC, 1195 Ford Lane, Dunedin, FL. 34240

3DATS is a subsidiary of 3DAS.

Phone 727-953-3903, fax 1-866-258-5534, e-mail 3dinfo@3das.com, or visit www.3dats.com.

The downloadable content for this book is freely available to readers at www.3dats.com\books.

Credits

Project Manager
Brian Zajac

Lead Editor
Brian Smith

Contributing Editors
Carol Heskett
Padhia Romaniello
Jon Seagull

Compositor
Dina Quan

Proofreaders
Sakina Gerhard
Kelly Winquist

Foreword
Tom Hudson

Front Cover Image
Uniform

Lead Technical Reviewer
Mark Gerhard

	Authors	**Technical Reviewers**
Chapter 1 - Color Management	Jeff Mottle	Pierre-Felix Breton
Chapter 2 - Composition	Ernest Burden	Michele Bousquet
Chapter 3 - Advanced mental ray Shaders	Joep van der Steen	Jeff Patton
Chapter 4 - Advanced Unwrapping	Lukas Dubeda	Taylor Leach
Chapter 5 - Texture Painting	Leigh van der Byl	Laszlo Molnar
Chapter 6 - Physically Based Materials	Pierre-Felix Breton	Zap Andersen
Chapter 7 – Exposure Lighting Analysis	Tod Stephens	Steve Sanderson
Chapter 8 - Render to Texture	Louis Marcoux	Mike McCarthy
Chapter 9 - Advanced mental ray lighting	Darren Brooker	Jason Addy
Chapter 10 - reactor	Mir Vadim	Brian Kitts
Chapter 11 - Particle Systems	Pete Draper	David Duberman
Chapter 12 - Rigging	Michele Bousquet	Beau Perschall
Chapter 13 - Revit Integration	Scott Rosenbloom	Tod Stephens
Chapter 14 - Advanced Poly-Modeling	Tod Daniele	John Stetzer
Chapter 15 - Managing Large-Scale Projects	Spine 3D	Nils Norgren
Chapter 16 - MAXScript	Markus Boos	Lukas Dubeda
Chapter 17 - Camera Matching	Mike Merron	Jon Hey
Chapter 18 - Green Screening	Smoothe	Alex Menendez
Chapter 19 – Digital Compositing	Gary M. Davis	Glen Whelden
Chapter 20 - Video Editing	Kim Lee	Alan Skinner
Appendix A – Cloth Modifier	Danny Jones	Brian Smith

Contents at a Glance

PART 4 Animation

PART 5 Workflow

PART 6 Post Production

Appendixes

Contents

PART 3 Lighting

PART 6 Post Production

Appendixes

About the Project Manager

Brian Zajac received his B.F.A. from Bowling Green State University in Ohio and began working in the field of 3D in the mid 90s. At that time, a typical workstation cost as much as $100,000 and ran at a fraction of the speed of today's computers. He left 3D and turned his sights towards a career in web design where he wouldn't have to wait so long to see the fruits of his labor. In 2002, Brian started his own company EyeMagination (`www.eyemagination.us`) with the goal to build the best possible web-based solutions and internet marketing for small businesses. Brian has worked with several high-profile organizations, such as the PGA, American Golf, and the New York Yacht Club.

After establishing his web-based business, Brian noticed that the 3D world of technology had become much faster, produced better results, and was finally cost-effective. So, along with his business partner Brian Smith, he formed 3D Architectural Solutions (3DAS)—a 3D architectural visualization facility specializing in the production of architectural renderings and animations. He also co-authored the world's first-ever 3ds Max book written for 3D architectural visualization and is currently co-authoring additional books in the architectural visualization area. A portfolio of his work can be seen at `www.3das.com`.

About the Lead Editor

Brian Smith graduated from the U.S. Military Academy at West Point with a major in aerospace engineering. He served on active duty, and later in the Florida Army National Guard, including two years as a Battery Commander, responsible for a short range air defense battery of over 100 soldiers. Following 9/11, he served in Washington, D.C. as an Air Defense Artillery Fire Control Officer, working closely with the U.S. Secret Service, the U.S. Air Force, and the FAA to provide air defense coverage of our nation's capital. In recent years, he has deployed numerous times with the National Guard to provide humanitarian relief to hurricane victims.

Brian Smith began his 2D and 3D CAD studies at West Point in the early 90s, and following his active duty service he worked as an animation specialist in architectural, engineering, and landscaping firms in southwest Florida. He started his own company in 2001, specializing in the production of architectural animations and renderings, and a few years later teamed up with business partner Brian Zajac to cofound 3D Architectural Solutions (3DAS) in Sarasota, Florida. Shortly thereafter, both partners began the subsidiary training company 3DATS, one of the world's leading 3D architectural visualization training companies. He divides his time between production and training and is currently an instructor for 3DATS and VisMasters, where he teaches 3ds Max, AutoCAD, and V-Ray. A portfolio of his work can be seen at `www.3das.com`.

About the Contributing Editors

Padhia Romaniello is an artist and graphic designer who stumbled upon the 3D world in 1997. Immediately entranced by the infinite possibilities of using 3d as a medium, she pursued a Bachelor of Science in computer animation and completed an intensive course at Mesmer Animation Labs, an Alias Wavefront certified training center.

Although she was originally focused on character design/animation and the creation of digital sets using Maya, she began concentrating on architectural visualization and transitioned to 3ds Max. Wanting to work on a variety of different types of projects, she founded avocado digital design inc., in 2001. Success involved several years of what she refers to as "mental boot camp" learning not only business strategies, but also web design, commercial print, and many related software packages.

In addition to working as a strategic partner with 3DAS and 3DATS, Padhia has worked on the 3D production, branding, web design, and marketing materials of projects across the country and abroad. Her work can be seen at `www.avocado3d.com`.

Carol F. Heskett is an experienced educator who has taught both high school and college English. Carol's expertise and passion come from her love of teaching students to become excellent writers. Her teaching took place at Independence High School and Baldwin-Wallace College. Carol earned her Bachelor of Arts degree from Muskingum College in New Concord, Ohio, and her Master's degree from The University of Akron. In addition, Carol did graduate work at the College of St. Teresa in Winona, Minnesota, and the Bread Loaf School of English in Middlebury, Vermont. After several years of teaching, Carol was named a Martha Holden Jennings Scholar. She has edited an antique automobile magazine, *The Bulb Horn*, as well as dissertations for aspiring Ph.D.'s. In her spare time, Carol enjoys sports, film, gardening, and her sassy, little Shih-Tzu, Izzi. Ms. Heskett is presently employed by Baldwin-Wallace as a College Supervisor for clinical practitioners.

Jon Seagull has been a professional 3D artist and trainer since receiving his bachelor's degree from Sarah Lawrence College in 1998. He began his career as lead artist for the New York rendering studio that eventually became known as Seventh Art. In 2000 he left to pursue a freelance career working both directly with clients and as a subcontractor for rendering firms.

Jon's work has appeared in numerous architectural magazines, monographs, books, museum exhibits, a handful of Hollywood films, and on the front page of the Sunday *New York Times*. He served as treasurer of the New York Society of Renderers from 2003-2009.

In addition to his rendering work, Jon has been training architectural 3ds Max users since 2000. He taught 3ds Max to undergraduate and graduate students at Parsons The New School for Design from 2000-2005, and currently trains and consults for a number of private clients and resellers. He was a contributing author on New Riders' *Inside 3ds Max 7*, and is active in the online 3ds Max support community.

You can view Jon's work, download free maxscript utilities, and contact him through his website, `www.jonseagull.com`.

About the Lead Technical Reviewer

Mark Gerhard is a 3ds Max Guru. He teaches design visualization and 3d animation, blogs, creates courseware, demonstrates software, and does production jobs as well as product support. He has worked with 3ds Max since its inception as 3D Studio in 1990 and was one of the first artists hired to test the software while collaborating with the original development team including Gary Yost, Tom Hudson, and Dan Silva. He was one of the first 3D Studio instructors, training most of the original resellers and educators around the world. While working for Autodesk, he served as product manager for the 2D Animation program, Animator Studio, and was one of the first Autodesk Application Engineers devoted to 3ds Max. He spent 6 years as a Senior Technical Writer, and was the lead writer for the 3ds Max tutorials for versions 3 through 6. He is currently a Forum assistant for The Area. In addition to his work at Autodesk, he has been a technical editor and co-author for numerous books on 3ds Max including the Inside 3ds Max series for New Riders, the Mastering Visually series for Wiley/Sybex, and each architectural visualization book by 3DATS. He has authored chapters in books on 3ds Max, including Focal Press' Foundation series, *Learning 3ds Max 2008*. He holds a degree in painting and sculpture from UC Berkeley and has worked in the field of design visualization, graphic design, and commercial art for over 30 years. He has taught countless individuals 3d animation at institutions such as Napa Valley College, Santa Rosa Junior College, Academy of Art University, and Sonoma State University. He is also the author of the children's book, *The Elf of the Shelf Sees Himself* (Push Press, 1983). He lives in California with his wife Rhonda, the joy of his existence for the last 26 years. He has four delightful children and one excellent grandson.

About the Authors

(listed alphabetically by last name)

Markus Boos combines his programming background with 3D animation. He graduated in 2006 with a Master's degree in Computer Science from the University of Applied Sciences in Mannheim, Germany and was hired immediately afterwards to work as a 3D generalist and technical director for Tronic Studio in New York City. At Tronic, he was involved in projects fusing art, design, VFX, animation, and architecture. While working on architectural films for clients such as Studio Daniel Libeskind and Herzog & DeMeuron, he pushed the boundaries creatively as well as technically.

Markus developed a MAXScript tool suite that not only streamlined his own workflow, but increased productivity within the studio, as well. Since early 2009 he has been freelancing as a VFX Technical Director. His website is `www.projectgemini.net`.

Michele Bousquet is an Autodesk Certified Instructor who has been using 3ds Max since its first beta version in 1990. After several years in the international production environment (including a long stint at the Australian Broadcasting Corporation), Michele went solo and settled into regional television in New England. Her animation work has led to numerous awards, the most recent a Bronze Remi at the 40th Annual Worldfest Film & Video Festival. Michele, who has authored more than a dozen books on 3ds Max, is one of the foremost authorities on rigging, skinning, and Biped. She is currently employed at `TurboSquid.com`.

Pierre-Felix Breton is senior software designer and lighting consultant specialized in the field of physically based and artistic lighting simulation. His professional background includes electrical engineering, computer programming, and theatrical lighting.

He has been employed by Autodesk Media and Entertainment for the past 10 years. He participates in the creation of products such as Autodesk 3ds Max and Revit with a focus on the integration of the mental ray rendering engine and daylight simulation technologies.

Pierre-Felix consults regularly on various lighting design projects as a designer, technical coordinator, and simulation specialist where he is involved in the entire lighting design and specification process.

Among recent projects, he worked on the realization of the Scottish Parliament Building, the New York Times Building , the Washington Air Force Memorial and the "virtual luminaires" catalogue of ERCO.

Darren Brooker has over a decade of experience as an artist, specializing in texturing, rendering, lighting, and compositing for post production, games, and architectural visualization. He has worked at a number of UK studios, including Cosgrove Hall Digital, Pepper's Ghost, and Red Vision, where he was part of a team awarded a BAFTA for Best Visual Effects in 2004. Darren is the author of *Essential CG Lighting Techniques* published by Focal Press, and currently works as a product specialist for Autodesk's Media & Entertainment division in London. His work can be seen at `www.stinkypops.co.uk`.

Ernest Burden III is both a commercial and fine artist. He has worked as an architectural illustrator for thirty years for such clients as Kohn Pederson Fox, Robert A. M. Stern, and Tihany Design. His drawings have been published in the *New York Times*, *Architectural Record*, *Progressive Architecture*, *CADence*, as well as in numerous books on architecture and rendering.

Ernest is active in the online architecture and rendering communities. He is a member and President Emeritus of the New York Society of Renderers, and has been involved with rendering organizations for almost twenty years. He has taught 3D drawing at Parsons and The New School for Design and has been a featured speaker at rendering industry conferences including the ASAI annual convention and VisMasters DMVC.

Working under the studio name Acme Digital, Ernest has built on his decades of 3D modeling and traditional drawing to transform his renderings into a unique media. The goal of this technique is a new visual style, blending the feel of both hand-drawings and photo-realistic digital rendering. Ernest is also working on a new pencil drawing series, *The Prisons*, after the work of Piranesi, based on organic architecture and modern social themes. His rendering work can be found on his website, `www.acmedigital.com`.

Todd Daniele is a self taught 3D artist based in the New York City area. Todd developed a strong 3ds Max skill-set through the use of books and online tutorials while continually practicing his craft. In 2004, he built a website showcasing his 3D modeling and rendering skills. A short 6 weeks later, Adobe Systems hired him as a 3D consultant. Todd formed an ongoing relationship with Adobe that continues to this day, producing content for the Acrobat 3D product line, and more recently Photoshop CS4.

In 2006, Todd's consulting business continued to grow as his strong online presence brought his work to the attention of more and more people in all areas of 3D. Email and phone inquiries increased, and as a result of these new connections he began to create 3D content for television and new media advertisements. Todd has since created content for a long list of notable clients and worked in numerous New York City production houses and studios.

Today, Todd continues his journey, constantly learning new applications and techniques. Recently he released his first 3ds Max book *Poly-Modeling with 3ds Max: Thinking Outside of the Box*, and is a contributing author to educational publications for 3DATS. His portfolio and online store can be seen at `www.toddDaniele.com`.

Gary M. Davis began his career in 3D after receiving a BFA in Computer Graphics from Bowling Green State University in 1992. Since that time, he has been heavily involved in visual effects and motion graphics for numerous clients in television, film, video game, and architectural visualization. After spending nearly six years developing ride films and digital photography systems for theme park venues, he formed **visualZ** at the turn of the millennium to serve the entertainment and design visualization industries.

In addition to his production work, Davis served for over three years as the only independent worldwide certified training specialist for 3ds Max, Combustion, and Toxik. During this time he authored *The Focal Easy Guide to Combustion* and developed the compositing curriculum for the Discreet Design Academy. At the SigGraph 2007 Conference, Davis was awarded the title of Autodesk 3ds Max Master and shortly thereafter joined the Media & Entertainment Division of Autodesk as a specialist for 3D animation and compositing solutions. Davis is a regular lecturer at the SigGraph Master classes as well as the Autodesk University conference. He continues to maintain visualZ as a consulting and production boutique in Orlando, Florida and can best be reached via `http://www.visualZ.com`.

Pete Draper is a UK-based visual effects animator and 3D artist who has been involved in the CG & VFX industry for well over a decade. After holding such titles as Lead and Senior Artist, Head of

Media, and Director of Visual Effects, Pete returned to working as a freelance VFX gun for hire, covering a wide range of disciplines.

One can find him producing work for film and television, writing for a number of online and print publications, and teaching workshops around the world. Pete's articles provide tips, tricks, reviews, and tutorials for 3ds Max and other animation and graphics tools.

In addition to his popular *Deconstructing the Elements* series published by Focal Press, he also contributed to *3ds Max 4 Magic* and *3ds Max 6 Killer Tips*, as well having written numerous papers that are available on his own website. He is currently collaborating with an established author on another book, jointly developing video training projects, and contributing monthly to a column in the industry-renowned magazine, *3D World*.

Pete's work and numerous free online writings can be viewed at `www.xenomorphic.co.uk`.

Lukas Dubeda was born in Prague, the Czech Republic in 1983. He became interested in computer graphics as a primary school student through exposure to pre-rendered CGI scenes in video games and the Hollywood visual effects created by studios such as ILM. After successfully completing his high school studies in information technology and computer science, Lukas moved to Sydney, Australia for two years to study computer graphics and character animation.

In Sydney, Lukas landed his first CG job at a local design company, where he modeled, rendered, and sketched designs for client presentations. He subsequently worked at MonkeyLab, PlasticWax, and several other studios before returning to Europe in 2006, where he started his freelance career under the name duber studio.

Since then, Lukas has worked on a large number of projects, ranging from simple branding and design work to specialized technical positions at local VFX houses such as UPP, where he recently served as Lead Technical Director on a big budget Hollywood film. He is presently working to establish a facility that will provide end-to-end character animation services to a broad clientele worldwide. You can see some of Lukas' work on his website `www.duber.cz`.

Danny Jones is a graduate of Florida Atlantic University with a Bachelors of Architecture degree. During his undergraduate work, he began Creative Workshop Designs, LLC, to do freelance architectural renderings. Upon completion of his Bachelors of Architecture, Danny enrolled in Florida Atlantic's Masters of Fine Arts program with a concentration in Computer Animation. While in graduate school, he taught undergraduate Introduction to Computer Modeling courses and gave guest lectures in mental ray rendering. He is currently a designer for BPRH, Inc., in their Marietta, Georgia, office where he does most of their 3d visualization work.

Kim Lee started his career 15 years ago at his father's printing company and it was there that he recognized his desire to bring still images to life. He honed his animation skills working on complex software at Design Systems, readying himself for his next venture—animating for commercials and broadcast television. Kim became a Senior Animator at Curious Pictures, where he worked on such projects as TV Land promos and Wendy's commercials.

Seeking more project variety, Kim decided to co-found Worlds Away with his brother Kai, and began freelancing as an Animator/Technical Director for prestigious companies such as Nick Digital, Spontaneous Combustion, and Psyop. Kim also represented Autodesk, traveling through Europe and North America to train artists and instructors at IBM, Electronic Arts and MTV. In 2001, Disney recruited Lee to work as part of a 3-man team at Disney Feature Animation in California to develop a test for an upcoming animated feature Gnomeo.

Following his time at Disney, Kim partnered with Pixel Monkeys Inc., working on projects for clients such as Eminem, Tiffany's, The History Channel, and Intel. In 2004, he refocused his energies on Worlds Away, creating the digital effects for national spots by Chase Bank, V8, and Lotto. Shortly thereafter, IFC chose Worlds Away to animate and develop their new cartoon series *Hopeless*

Pictures. Kim is currently exploring commercial directing, his latest accomplishment being the "Whac-A-Charge" spot for Time Warner Cable.

He is currently working on CGI sequences for *Crime 360* on A&E and *Known Universe* on the National Geographic Channel as well as various commercials. Kim's publications include *Inside 3ds Max 4*, published by New Riders. His work can be seen at `www.worldsaway.tv`.

Louis Marcoux has had a long career in the 3D visualization industry, holding positions as a 3D technical artist, software developer, and special projects consultant. He has created award-winning interactive CD-ROMs and was involved in bringing real-time 3D graphics to the small screen at ABC, NBC, CNN, and a number of Time Warner Cable stations in America. As part of Discreet Logic, he traveled the world to help innovative TV stations move to real-time 3D graphics and virtual environments.

Louis graduated from Concordia University in Film Production, from UQAM in Communication Studies, and from Polytechnique in Computer Engineering. He was awarded *Best Speaker* for two consecutive years at Autodesk University (2006 & 2007). He also contributes to a 3ds Max video tips & tricks website (`http://area.autodesk.com/louis`) where every month, thousands of artists find solutions to their production challenges.

Jeff Mottle is the president and founder of CGarchitect Digital Media Corporation (`www.cgarchitect.com`), the leading online magazine for architectural visualization professionals. With over 12 years of industry experience, Jeff has been an integral part of conferences around the world, both speaking and helping to develop them, including Mundos Digitales, IMAGINA, VisMasters DMVC, and the American Society for Architectural Illustrators (ASAI). He is immersed in many areas of the industry and actively pursues initiatives that help promote the growth of the field, including CGarchitect's yearly Architectural Visualization Competition and 3D Awards. Jeff has also written articles for *3D World* magazine and been quoted in *Business Week*. He frequently acts as an expert judge for industry competitions and publications, including Ballistic Publishing's *EXPOSÉ* and *Elemental* books.

Before leaving production, Jeff worked for a number of companies. He served for more than two years as North American Production Director for the London-based design communications firm, Smoothe. He also helped develop and manage the visualization department for one of the world's largest office solution providers.

Jeff recently worked as business development manager for VisMasters, an online software marketing and resource company for design visualization professionals. His responsibilities included organizing and developing the annual VisMasters Design Modeling and Visualization Conference (DMVC), growing and developing industry products, and overseeing day-to-day operations.

Mike Merron realized the power that 3D graphics could bring to architectural visualization while studying architecture at Greenwich University. He quickly gravitated towards using 3ds Max to bring his architectural designs to life. After graduating, Mike spent seven years working in the architectural visualization field, four of those at the world-renowned firm Uniform, as a senior artist where he blended design, visualization, and VFX imagery to produce stylized architectural films.

Mike has produced award-winning imagery, and is widely recognized within the industry for amazing and inspirational work. He currently runs his own studio specializing in visual effects and consultancy. He also presents master classes throughout Europe and recently developed Escape's online visualization course.

Scott Rosenbloom was born and raised on Long Island, New York. He holds a Bachelor's of Professional Studies degree in Architecture from the State University of New York at Buffalo and a Bachelor's degree in Architecture from the New York Institute of Technology. He also holds a Master's degree in Computer Art from the School of Visual Arts in NYC.

Scott has worked for various firms concentrating on architectural design, 3D visualization, and computer hardware and software management. He is currently a Digital Design Manager at Skidmore, Owings and Merrill in New York City, where he is responsible for CAD, BIM, and 3ds Max management, as well as employee training. Additionally, he manages the implementation, training, and maintenance for all architecturally related design software.

For the last five years, Scott has taught architectural visualization using AutoCAD and 3ds Max within the Continuing Education Department of the Pratt Institute (a certified Autodesk Training Center), and is beginning to integrate Revit into the curriculum as well. He has also been a speaker at Autodesk University. He also created `www.CADuzer.com` where he posts written and video tutorials as well as commentary on various pieces of design visualization software including Revit, AutoCAD, 3ds Max, and SketchUp.

Smoothe's Ben Haworth has 15 years of experience in CG and visual effects for broadcast and film in both production and creative direction roles. He has been a member of several award-winning teams, who between them have claimed 3 BAFTAs and several RTS awards. He has led and overseen teams of varying scales, producing work for National Geographic, Discovery, BBC, and Channel 4, and has been an integral part in moving sequences from storyboard to screen. Ben currently works as Creative Director and Senior Compositor at the London-based visualization firm, Smoothe.

Smoothe's David Macey studied Communication Design and has over six years experience in the design and visualization industry. He has spent most of his professional life in a multi-disciplinary environment working on both illustration and film production, and currently works as a Senior Designer at the London-based visualization firm, Smoothe.

David is passionate about advancing the visual language of architectural visualization to match that of film and advertising more closely. He feels that the days of the monotonous fly-through are over, with clients wanting film-based production methods that use coherent narratives to showcase and sell their schemes.

Over the past six years David has worked on a wide variety of projects for clients including Foster and Partners, SOM, and London 2012. He has also had his work recognized with a number of awards and publications.

Both author's collective works can be seen at `www.smoothe.com`.

Spine3D's Mauricio Osorno received his Bachelor of Architecture degree from Florida International University in 2004. Shortly thereafter, he joined Spine3D as a Project Manager. In that role, Mauricio oversaw the production of visuals for notable large-scale projects such as the MGM City Center, Fontainebleau, and Paramount Bay. His success as a Project Manager, as well as his ability to manage client relationships effectively, led to his current role as Spine3D's Director of Production. In this capacity, Mauricio plays the critical role of supervising all project managers and production departments of Spine3D's domestic and international offices. Mauricio's expertise contributes greatly to Spine3D's ability to maintain long-term relationships with satisfied clients, notable among whom are MGM Mirage, Gensler, SOM, Trump, and Studio Daniel Libeskind.

Spine3D's Ronald Alvarez graduated from Florida International University with a Bachelor's degree in Architecture in 2006. As a student, Ronald developed a keen interest in 3D design and its ability to serve the architectural world. After years of training in architecture, management, sales and customer service, Ronald joined Spine3D in 2006, as a Project Manager. During his time with Spine3D he has managed some of the company's largest projects for some of its most notable clients, including The Cove Dubai for Kerzner and the International Financial District for Gensler/Millennium Developers. Over time, Ronald's responsibilities in the company have evolved; he is currently a Senior Project Manager, directs Spine3D's employee training programs, and assists with the planning and development of Spine3D's satellite offices in the United States.

Spine3D's website is `www.spine3D.com`.

Tod Stephens has been working in the CAD and visualization field for over fifteen years. He is currently an Architectural/Visualization Applications Engineer with Advanced Technologies Solutions in Tampa, FL and an Interior Design Adjunct Instructor at the Art Institute of Tampa.

Tod teaches and implements several Autodesk applications including AutoCAD, AutoCAD Architecture, Revit Architecture, and 3ds Max. Tod is a 3ds Max Autodesk Certified Instructor and a Certified Professional in AutoCAD, AutoCAD Architecture, and Revit Architecture. He is Vice President of the Tampa Autodesk Animation (3ds Max/Maya) User Group and the Architectural Coordinator for the Tampa Bay AutoCAD User Group.

Tod obtained his Bachelor's degree in Electrical Engineering from Cleveland State University and a Master of Science degree in Education and Technology from Walden University. He is currently pursuing an additional Bachelor's degree in Media Arts and Animation at the Art Institute. He has an interest in green building and sustainable design and is both a member of the South Florida Chapter of the US Green Building Council and an Allied Member of the Tampa chapter of the American Institute of Architects.

Mirzahanyn Vadim decided to dedicate his life to CG at the age of 19. After a few months of intensive study of 3ds Max, he landed his first job at a local Russian CGI studio. Over the next four years he performed many different roles in production, running the gamut from modeling, texturing, lighting, and animation roles, to more specialized technical tasks such as scripting, character rigging, and fluid and dynamics simulation.

In 2007, Mir decided to focus on visual effects as his main specialization. While polishing his VFX skills and working on his reel, he concluded that it was impossible to realize some of his ideas using the standard 3ds Max toolset, so he created his own plug-in called the RayFire Tool that did exactly what he wanted. Over the next two years, his RayFire Tool plug-in became a unique and robust solution for creating destruction simulations in 3ds Max.

Mir currently serves as founder of RayFire Studios and continues to develop the RayFire Tool. His personal web site is `www.mirvadim.com`.

Leigh van der Byl has worked in the visual effects field, primarily as a texture painter, for various clients and studios across the globe. She started her career in her native country of South Africa at the beginning of the millennium, fresh from years of studying fine arts and graphic design.

After working on television commercials, music videos, documentaries, and films in Cape Town, Leigh moved to the U.S. to focus on film visual effects. She eventually moved to the United Kingdom where she remains based in London.

Her in-depth knowledge of Photoshop and texture painting has led her to author numerous articles on the subject, in publications such as 3D World and Keyframe magazines, as well as a handful of books. Her film credits include *The Aviator*, *Sin City*, *Pan's Labyrinth*, *The Tale of Despereaux*, and the VFX Oscar-winning feature *The Golden Compass*.

Joep Van Der Steen originally studied Civil engineering, but this evolved into a career in the computer graphics field about 25 years ago. He began on the hardware side of the industry, achieving his first European sales award by selling high-level color printers. He then moved from static images into the world of video capture, and eventually ended up in a service bureau using 3ds Max.

After several years in production, Joep returned to sales and support for 3ds Max with a local Autodesk reseller in the Benelux region of Northern Europe, where he started the website and forum `www.3dstudio.nl` to support 3ds Max users in the area. The success of this website earned him a European marketing award from Autodesk. In recent years, the company where Joep works has grown into the biggest Autodesk Media & Entertainment reseller in the Benelux region.

As a result of working in 3ds Max support and training, Joep has created a great deal of training material for mental ray, starting from when it was first integrated inside 3ds Max. This material eventually became Joep's book, *Rendering with mental ray & 3ds Max*, published by Focal Press.

About the Front Cover Image

By Uniform

Project — "The Quarter"

Film length:	01m:13s	**Material Count**:	175
Film format:	HD720p	**Aerial filming**:	HD24 / Michael Brennan
Render engine:	V-Ray	**Audio**:	Radium Audio
Composited in:	Fusion 5	**Project URL**:	`http://clients.uniform.net/film/quarter.htm`
Camera Tracking:	PF Track		
Polygon count:	1,067,346	**Film URL**:	`http://rapidshare.com/files/216985766/VDP_The_Quarter_HD_720p.mov`
Object count:	1292		
Light count:	663		

About the Film

The Quarter is a stylish cinematic exploration of Vermonts mixed use luxury development situated right next to the River Mersey, Liverpool. The film concentrates on the new amenities which allow people to live, work, and play in The Quarter. The film ties in the development to the Vermont brand by utilising motion graphics and cinematic styled shots.

Uniform Bio

Uniform (`http://uniform.net/`) is a creative ideas company, established in 1998. We are a studio of 23 people, owned and run by its founding partners. A Design Week Top 100 agency, we have over 30 awards for design and business in the last 8 years.

Our digital team is one of the foremost architectural film and visualization studios in the world. Last year we beat Richard Branson's Virgin Galactic commercial at the Escape 3D awards to win the design visualization category, won the outstanding achievement award at the international CG Architect Awards in Spain, and have spoken to audiences across the world about the output of the studio.

Our digital team helps property developers and architects promote, explain, and generate sales for their projects, big and small, across the globe. We deliver world class results through creative and technical excellence.

We've worked on major projects at home, predominantly in London, and abroad, more recently including major regeneration schemes in Moscow, Dubai, France, and the U.S.

Our client list features some of the biggest names in global architecture: Aedas, BDP, FOA, Foster + Partners, Grimshaw, KPF, Minerva Plc, OMA, Pelli Clarke Pelli, Rafael Vinoly, Renzo Piano Building Workshop, Sellar Property, Zaha Hadid Architects.

Technical Snippets

Planting was created in 3d using OnyxTree. The lighting overlay graphics were produced using a mix of compositing and projected light rendered in scene. There are 3 aerial sequences shot using a gyroscopically stabilized camera mounted onto a helicopter. The first aerial sequence is a 14 second shot in the final edit but the original length of this sequence was 80 seconds and the full length needed to be tracked before being accelerated in post. We used the footage shot in the aerial filming to camera map back onto low resolution models of the surrounding area for realistic reflections and skyline.

Who Is This Book For?

Third in our series on 3D architectural visualization, this book is a collection of independent chapters written by dozens of industry experts. The goal of this book is to take readers from an advanced level to an expert level by providing a straight-forward discussion of difficult subject matter not available anywhere else.

Having taught 3ds Max for many years now, we (3DATS) can say with some degree of authority that one of the biggest problems 3ds Max users have when seeking instruction in the visualization industry is gauging their own skill level accurately enough to find an appropriate class. An even greater problem, however, is that there is just not much real-world instruction to be found at the advanced level and there are practically no professionally written reference materials tackling advanced issues in architectural visualization. One of the goals of this book was to change at this.

Like the *Beginner to Intermediate* and our *Intermediate to Advance* title, this book has been published by 3DATS. This gave us complete control over every facet of its design and structure. We spared no expense in printing the highest quality book, both in terms of physical appearance and technical instruction. Just as we did with our other titles, in this book we went to great lengths to simplify the instruction. It is assumed that by choosing this title, you are already at an advanced level with 3ds Max, and as such, the book will build upon many of the features that you should already be familiar with by teaching great techniques with which to implement those features in a production environment.

Finally, this book is written for the 2010 version of 3ds Max; however, with the exception of some critical upgrades and the occasional change in interface, this book is completely suitable for use with 3ds Max 9, 3ds Max 2008, and 3ds Max 2009. All files are provided in the 3ds Max 2009 format, with the exception of some files that were necessary to provide as 3ds Max 2010. Although it's impossible to gauge what lies ahead for the program, we believe that this book will be completely relevant for many years to come.

Tutorial and Layout Conventions

The editorial team of this book made every effort to improve on the writing of each chapter while not interfering with each author's unique writing style. Only the formatting of the chapters was largely standardized. Even so, several differences can be seen between chapters—most notably the differences in the way exercises were written. There is no right way or wrong way to write an exercise, and it is for this reason that we decided to allow the authors to write their exercises in the manner they felt most appropriate.

Downloadable Files

Some of the tutorials in this book require files that can be downloaded from the book's web page at www.3dats.com\books

Introduction

Ever since I decided to write my first book for 3ds Max several years ago, I knew I wouldn't be satisfied with just one book. Having seen critical reviews of 3ds Max titles by other authors, it was obvious that some readers can be very unforgiving of incomplete material or books that fail to provide comprehensive coverage of any particular area of 3D architectural visualization workflow. Unfortunately, there's only so much information you can cram into a single book, and even if one decides to write an enormous book of over 1000 pages, there are likely to be just as many people unhappy about spending money on a book that contains too much information above or below their skill level. The only logical solution seemed to be a series of books covering as many areas as possible for multiple skill levels. Thus began the idea of a series of books: *Beginner to Intermediate*, *Intermediate to Advanced*, and *Advance to Expert*.

As any 3ds Max instructor will tell you, one of the most challenging aspects of preparing a class is creating material at the appropriate skill level. You never want to hold a class where some people are getting lost because the material is too hard, and you never want to teach material that bores others to tears. Therefore, even in our live group workshops, we always identify classes as beginner, intermediate, and advanced level, and ensure the students know what is involved in each.

Within days of wrapping up production on our *Intermediate to Advanced* title, Brian Zajac and I wasted no time in preparing for our *Advanced to Expert* title. We knew from the start that this book would be completely different from anything else ever written for any 3D program. Unlike the other two titles, which involved a production team of about 10 professionals, this one would require many, many more.

To produce an expert level book, one needs expert teachers. The first thing we had to determine was what areas of 3ds Max workflow to write about. I have always believed that the skill level of any particular area of 3ds Max workflow is not determined by the complexity of the subject matter alone, but also by the user's need. For example, Jeff Mottle's chapter on Color Management is certainly about as complex as material can get and there was no doubt that this subject was appropriate for the *Advanced to Expert* book. However, Michele Bousquet's chapter on Rigging is certainly not any more difficult than any of the chapters in our *Intermediate to Advance*d title. Yet we believe that Rigging is an advanced subject because it is usually not until 3ds Max users reach an advanced level in their career that they need to worry about Rigging. Before reaching an advanced level, there are far more important fish to fry than Rigging. Nevertheless, if you are at an advanced level in your career, we believe you should explore some of the other tools in 3ds Max that can really separate your work from your competition. Rigging is just another tool that you can have in your bag of tricks to do things that users at lower skill levels wouldn't (or perhaps shouldn't) even attempt.

With all this in mind, we set out to determine what the optimal mix of subject material would be for an advanced to expert book. We knew that it would be foolish and short-sighted to determine by ourselves what those subjects should be, so we solicited the help of our peers at CGarchitect.com. On June 21, 2008, just days after wrapping up production on our *Intermediate to Advanced* title, I posted a thread on CGA asking others to help us come up with about 15–20 topics to write about. Thanks to the help of dozens of CGA members, we developed a solid list of topics that we considered to be perfect for our book.

The next question we asked ourselves was, "where in the world are we going to find experts in each of these areas?" All we knew for sure was that we wanted each author to write only one chapter. By limiting each author to one chapter, we could be much more selective in the expertise level of

each author and they could focus their time and efforts much better. Additionally, with each author writing only one chapter, we could produce the book in far shorter time than our previous titles.

Brian L. Smith

When Brian Smith first told me about his idea to produce the *Advanced to Expert* book, we hadn't even started our *Beginner to Intermediate* book. Needless to say, I didn't share the same enthusiasm for a book that I knew was so many years off. Now that we are ready to ship this monster off to print, some 1750 pages after our first book began, I simply can't believe we actually pulled it off.

His idea for the *Advanced to Expert* book was to deliver the "best of the best" in architectural visualization. To get the best, however, we needed to put on a search that would rival some FBI manhunts and a recruiting effort that would put many Hollywood castings to shame.

As you glance through this book, take a look at the 47 authors, tech reviewers, and editors throughout this book. They span the globe from the U.S., Canada, UK, Russia, Czech Republic, Holland, and more. Some authors weren't even in their own countries while writing the book! But they all do some amazing work. Markus Boos makes his own MaxScripts while Mir Vadim creates his own plugins. Companies like Spine3D and Smoothe show you the inside scoop on doing what they do best—working on massive projects and using big-budget technologies like green screening. Many know Jeff Mottle as the man who brings the CG community together with CGarchitect.com. But many of you will be pleasantly surprised to see the level of detail he presents in color management and calibration. His chapter alone could be a stand-alone book! So, whether you are playing around with pebbles in reactor or improving your composition, you will notice this is much more than just a 3D book filled with random unknown authors.

And while the authors may be great, they got hammered with 4 edits, a proofreader, and a compositor, not to mention their own tech reviewer. The tech editors we have in the book are amazing too. For example, look at Spine's chapter. The tech editor is none other than Nils Norgren from Neoscape. And while this creates a one-of-a-kind book for experts in architectural visualization, it is topped off with an introduction from Tom Hudson. What better way to introduce a book than with the father of 3ds Max?

How did it all come together? A ridiculous amount of communication! It all has to do with online collaboration and constantly staying on top of everyone at every point in the production process. In the six months of developing this book, I have personally recorded over 2600 incoming and outgoing personalized emails and over 150 hours of phone calls, instant and text messages, blogs, and tweets (Twitter). I did this all while operating my web design business and managing our 3D production. As for setup and production, 3DATS created a master 16-page chapter writing guideline (how-to videos included), a server with 25 individual FTP access points, an online collaboration spreadsheet for internal use, and a timeline for everyone contributing in the book. At any time of the day, an author knew where he/she stood against the other authors in the timeline. If they didn't, I would remind them until they responded. Altogether, the authors did an excellent job in getting finished. Whenever there was a problem, 95% of it was resolved quickly and professionally. As with the other 5%, it makes for interesting conversation. For example there was a technical author who would just not respond. So I found an old email he sent and looked up his website. His site, of course, didn't have anything. So I looked up his phone number in the domain name it was registered through. I called the number and it was one of his relatives. After I explained the situation, he hesitantly gave me the tech editor's phone number. When I finally reached the tech editor, he was a bit stunned to say the least. That evening, however, I got the chapter tech edited (and he did a great job too!).

Sometimes I like to call this book the "Alice in Wonderland 'Rabbit Hole' experience." Once you dive into each of these chapters, you can't help but learn something new. Each chapter brings you into a whole new world of unlimited exploration and imagination. It will give you moments of clarity and will make you question your professional workflow. Simply put, we believe *3ds Max 2010 - Advanced to Expert* will change the way you work in 3D. Are you ready to become an expert?

Brian Zajac