ROLES IN THE VISUAL EFFECTS & ANIMATION INDUSTRY

The Visual Effects and Animation Industry

Animal Logic is often approached by people with limited experience in digital production who are interested in finding out more about the industry.

We have developed this document to provide information on our industry and offer some career development suggestions. We hope you find this useful, but please keep in mind that this is only a starting point for further research and discovery.

We encourage emerging artists to get in contact once they have matured their skills and have material to demonstrate those skills. This should be done via the jobs section of our website: www.animallogic.com/#Jobs,Job%20Listings.

Here you can also find information about our work experience program for high school students (between years 10 to 12). We do not currently offer any internship positions.

A Career in Visual Effects and Animation

The growth of the worldwide digital production industry over the past twenty years has created many career opportunities in the areas where art and science intersect.

An important point that should be made from the start is that an interest in or aptitude for computers does not necessarily translate to a career developing digital characters, effects or images for film or television production. Having an affinity for computers certainly helps, but probably more important is an active interest in film and television and abilities in visual arts - painting, drawing, sculpting and photography. Computers are, in this environment, an artist's tool, quite a complex and powerful tool, but a tool nonetheless.

There are more purely technical roles in companies such as Animal Logic, in positions that develop tools for our artists, improve and build on our process management methods, and help keep production running smoothly and efficiently. Many of the people who fill these positions come from Information Technology and/or Engineering backgrounds, but also have an active interest in digital production.

We are extremely fortunate at Animal Logic to have some of the most gifted individuals in their fields from around the globe. They have succeeded in their careers due to a combination of great talent, a willingness to push their skills and learn, and a fascination for digital and film/television mediums. Just as it would be a mistake for someone to embark on a career in a field without some natural ability in that area, it could also be misguided to pursue a vocation without a very active interest in, and a strong motivation to work in that discipline.

Start with the Basics

If you want to be an animator, you will benefit greatly by learning the basics of traditional animation. You need to understand human and animal locomotion, skeletal structure and musculature. Start learning the basics of posing and timing from Richard Williams' fabulous book, 'The Animator's Survival Kit' or the classic Disney animation book, 'The Illusion of Life'. Watch and study a variety of animation from the Warner Brothers shorts, to the Disney animated features and then the newer computer animated features from Pixar, Dreamworks, Blue Sky, and Animal Logic. Stop Motion, hand drawn or computer generated - animation is about acting. The animator's job is to create believable, engaging and entertaining performances, so any acting or performance training/experience you have, is going to be a big plus.

If you want to be a designer you need to find out about fundamental design principals. Read about developments of design theory. Learn about designers and their work from all fields: architecture to film, graphics to furniture, and industrial to theatre.

If you are interested in compositing learn about the history of the art and craft of compositing. Find out about theories of 2D composition and lighting as it has developed from a heritage of thousands of years of painting and theatre.

For any creative role (texture artists, matte painters, modellers etc) learn about the history of art from the cave paintings of Lascaux and ancient Aboriginal rock art through to contemporary work. You should learn to draw – and anyone can learn to draw. It's a discipline that admittedly some are better at than others. However, it is a 'discipline' because that is what it requires, and the more you practice and work at it, the better you will be. Often, like sporting disciplines, it requires a skilled trainer, to bring out your true potential, so check out different classes and teachers, from basic drawing and painting, to life drawing and beyond. There are also some great books out there: eg 'Drawing on the Right Side of the Brain'.

Learn about what has come before, the developments that have helped the industry and art get to where it is now. We are not suggesting you need to mimic or be ruled by tradition, but knowing about it will help you push the boundaries, and push your own development and abilities. No great artist ever stopped because they had done enough (except Duchamp and he is a special case). They were all driven to do more, and to go further.

What Course Should I Do

There are now quite a few training options available. Animal Logic cannot recommend a specific course because different courses will suit different individual's needs. Any courses you might find through the list of educational institutions below are simply for you to investigate and make your own judgement. We cannot promise that attending any of these courses will guarantee a job. One important thing to remember is that, like any area of study, the more you put in the more you will get out. Start at their websites and see which courses might be the one for you. These are only a quick list of suggestions, and these are only some of the Australian options. International schools include Les Gobelins (France), CalArts (USA), Bournemouth University (UK) and Vancouver Film School (Canada) are just a few of the incredible options outside of Australia. Online schools like Animation Mentor might be a better fit for you. There are many more out there so get investigating:

Academy of Interactive Entertainment (AIE): www.aie.edu.au/
AFTRS: www.aftrs.edu.au/courses/areas-of-specialisation/digital-media.aspx
Billy Blue: www.billyblue.edu.au
UNSW Art + Design: www.artdesign.unsw.edu.au/future-students
Enmore TAFE: www.sit.nsw.edu.au/enmore/dce/?page_id=333

Fxphd: www.fxphd.com/
SAE Qantm: sae.edu.au/
Raffles: www.raffles.edu.au/
University of Newcastle: www.newcastle.edu.au/school/design-communication-it/
UNSW Comp Science & Engineering: www.cse.unsw.edu.au/
UNSW Media: studymedia.unsw.edu.au/
UTS Animation: datasearch.uts.edu.au/dab/courses/animation/index.cfm
UTS Communications: www.communication.uts.edu.au/
UTS Design: www.dab.uts.edu.au/
UTS Engineering: www.eng.uts.edu.au/
UTS IT: it.uts.edu.au/
UWS Arts: future.uws.edu.au/ug/arts
UWS Engineering & IT: future.uws.edu.au/ug/eng_info_tech
JMC: www.madacademy.com.au/

Research the ones that seem most relevant to you and try and attend their open day. Find what is available, what the course structure is, what the outcomes are, what the entry requirements are and how much the course fees are. Talk to graduates to find out what they thought – the Digital Labourers Federation (www.dlf.org.au) can be quite useful for this. Your decision should take in to account what you can afford, both in terms of time and money, what seems to suit your interests and career goals and feedback you can get on courses.

A prospective employer will be most interested in your showreel – the DVD or web based video presentation of your best work. In most cases a course will give you the opportunity to develop experience and material for your showreel, and often with a high level of technical and aesthetic support and advice. You will also start to make professional connections that can last throughout, and assist, your career.

Other Ways to Learn

Self-training is still an option in this industry. It requires a lot of motivation and drive, as you have no established structure (assignments, examinations, deadlines) no peer group (other students) and often little constructive criticism of your work. However, as has been said previously, companies are most interested in what you can do, so if self learning develops your skills and gets work on your reel, then it may be worth considering. The challenge will be to actively explore and experiment with the software, generate work, get it viewed and get feedback so that you can put it in context. There are plenty of forums on the web that help you learn. These are fantastic resources, as many sites (listed at the bottom of this document) contain material from, and are viewed by, practising professionals from all areas of the industry. They are often happy to answer your questions and provide you with the feedback.

Websites, books and magazines offer a realistic and comprehensive range of learning material, from problem solving to step-by-step tutorials. Remember however, that your behaviour and conduct on such websites is very important. Be polite and be grateful with everyone who is willing to answer your questions or give you feedback.

Also, try and read any supporting documentation that comes with software or tools that you use. It can be quite frustrating having to read a post from an artist asking how to do something that is explained in the support material. You will find that self-education and manual topic searches are an ongoing part of the job.

Getting a Job

The most important aspects about you for a potential employer are talent and relevant experience. The more quality material you can build up, on a showreel or in a portfolio, which you have created or worked on, the better. The 'Catch 22' is how to build up material to get a job, if you do not have a job to create the material. You can start by working on your own projects, either in a course, or that you are simply doing yourself, or you can try to get work on other people's productions. This might range from doing titles for your next-door neighbour's holiday videos, through to student projects, no budget to low budget independent films through to fully budgeted work. All of these can give you an opportunity to develop your experience and material for your reel.

In general, any film or television production experience, in any role, that you can get will be of value. This will give you hands on knowledge of the processes and structures involved in making film and television. However (stating the obvious here) the closer your role is to the work you want to do, the more relevant it will be to an employer.

It will be useful to read up on digital postproduction tools and techniques. There is a reference list towards the end of this page that is a good starting point. Some of these references will give a "how to" view of specific softwares and others give a more general approach, discussing developments and histories of the industry. You will benefit from both.

It is worth knowing about organizations such as the DLF (Digital Labourers Federation) (www.dlf.org.au) and ACM SIGGRAPH (with local chapters in Australia) (sydney.siggraph.org.au/) that can help you find out what is happening in the industry and perhaps get in touch with other people in the industry.

Remember that the companies you might try to contact are both busy and constantly being approached by people looking for work. Do not let it put you off, but it can be tough getting our attention. Have a look at company websites and see if there is information there on applying for work. As this may be your first contact with a company, it is worthwhile giving a good impression and showing that you can read and follow instructions. We like applicants to look at the available jobs and register their details on our online recruitment application form. If there is a position that matches your skills and experience we will get back in touch to request further material. We, like most companies, will not contact you unless we feel there is a job that we think might be a fit for your experience and skills.

Roles in the Visual Effects and Animation Industry

Storyboard Artists

Storyboard artists translate the written word into a series of sketches. They must be able to work in a team, be good story tellers, have excellent and fast drawing skills, think cinematically, be a strong creative thinker, but also able to interpret other people's ideas. It is advantageous to have a thorough knowledge of character and camera.

Concept Artists

Concept artists produce the images that inform all of the visual direction for the production. They realise the art director/production designers brief. They must have excellent illustration skills, possess the ability to visualize in 3D space and interpret other people's ideas, accept and adapt to change as requested, be a good team player and have a keen interest and understanding of film, design, architecture and art theory, particularly in regards to lighting, colour and composition. Software used: Photoshop and some 3D software knowledge would be advantageous.

Designers

This covers a broad range of disciplines including character design, graphic design, set design and prop design. Each requires its own specifics though many artists move between these areas.
All require a general understanding of working to a deadline, delivering work that displays strong imagination and ingenuity, an eye for detail and accuracy, good communication skills, the ability to take a brief and develop a solution that works to budget and timeframe, work well in a team and have good drawing and visualizing skills.

Character designers need to have knowledge of performance and animation.
Graphic designers have a strong understanding of graphic language and the use of typography.
Set designers may come from an architectural background, have the ability to visualize and think in 3D space.

Prop designers display an interest and ability in industrial design.
Software used: Photoshop, Illustrator, After Effects, 3D packages.

Art Directors

Art directors generally move into this position from one of the above. They must have the ability to trouble shoot which comes from years of experience and a thorough knowledge of the whole production process. Art directors have initiative, strong visualizing skills, the ability to conceptualise ideas, methodical working practices, display diplomacy and sensitivity when leading a team, and the ability to look at the broader picture and translate ideas into realities.

Modellers

Modellers create 3D models from designs, concept drawings and photographic reference material. They are a digital sculptor. They focus on creating digital environments, characters, creatures, vehicles, and props, in both organic and hard surface form. A modeller is a highly creative artist primarily concerned with shape, volume, aesthetics, attention to detail, ergonomics, and most importantly, the action of their models. Modellers work closely with Art Department, Look Development, Rigging and Animation.
Software used: Maya, Mudbox, ZBrush, UV Layout, XSI and 3DSMax.

Rigging Technical Directors

Rigging TDs are like the puppet builder – they build the mechanism that controls and manipulates an animated creature or object. This mechanism often attempts to simulate a real world skeleton and muscle system and it is this mechanism that an animator will use to give the illusion of life and movement. They are also responsible for rigging characters and props with skeleton, clothing and hair deformation controls. Programming/scripting skills are highly desirable, such as Python. A background in medical illustration, biomechanics, computer science or drawing would be advantageous.
Software used: Maya and XSI.

Animators

Animators use frame-by-frame filmmaking techniques to give characters the illusion of movement. They use software(s) that simulate the visual (light, shadow and atmospheric effects) and physical behaviour of 3D objects in a 3D setting. Like traditional animators, they can animate frame by frame, but they can also use procedural techniques which create movement following a predetermined set of rules or instructions. They can also use motion capture, which captures 3D data from live performers. A visual art education/background, with some traditional animation, and perhaps

acting, experience would be an ideal grounding for a computer animator. Any experience with any computer animation package is also going to be very useful.
Software used: Maya, XSI, 3DSMax, Houdini.

Previs/Layout

Previs/Layout artists are responsible for staging every shot, and plotting the action that will take place within each scene. A layout artist takes the storyboard and realizes it into 3D shots. Using designs supplied by the art department they build basic models of locations, major props and characters which they then place in a scene, select camera angles and plot moves.

As this is the early stage of production the layout artist will often work closely with the director and output a range of different options for editorial, so the ability to take direction, make changes, work quickly and in a team are essential. Must be extremely film literate; demonstrate artistic skills, a knowledge of cameras, composition, pacing, timing and a good understanding of editing. Studies in computer animation, film and cinematography are all relevant, but need to be coupled with knowledge of at least one 3D program such as Maya.
Software used: Maya and XSI.

Surfacing/Look Development

Surfacing artists create the visual appearance of surfaces and textures of 3D characters, creatures, objects and environments. For example, a scene in a forest will require surfaces that look like bark, rocks, leaves, grass dirt etc. These surfaces are attached to the objects and environments built by the modellers. Look development artists use shaders and textures, to control surface characteristic like colour, reflectance, opacity and bumpiness. Strong skills in traditional drawing, painting and photography are essential.

Software used: Photoshop, specific UV unfolding tool, specific 3D texturing programs like Mari and 3D packages (Maya, XSI, Houdini), Renderman, Mayaman, V-Ray, Arnold.

Lighting Artists/TDs

Lighters control and adjust lighting in a 3D environment, creating the mood of a scene and revealing the 3D spaces. Lighters can use different approaches including traditional methods, utilising artificial lighting setups that replicate lighting rigs used by camera crews in the real world, and global illumination techniques, which replicate more natural lighting situations.
It also helps to have an understanding of the departments that feed assets to lighting (modelling, surfacing, animation, layout, FX), to drive the process for cutting up a scene for rendering. Experience with lighting for photography (stills or cinema) and a background in visual arts are helpful.

Software used: 3D packages (Maya, XSI, 3DSMax), Renderman, Mayaman, V-Ray, Mental Ray.

FX

An Effects (FX) artist will create and simulate movement in computer graphic elements such as fire, smoke, water, earth, rock and ice to create effects such as storms, explosions, waves etc. This is often done procedurally – which means you determine a set of rules that will initiate and control the action, rather than animating it in a traditional frame-by-frame manner. This means that FX artists tend to be quite technical and will often get in "under the hood" and work on the computer code of the software they are using. Computer coding skills are useful, with the C++ and Python languages at the top of the list. Backgrounds in engineering, computer science or pure mathematics are quite common, but so are creative educations.

Software used: 3D packages (Maya, XSI, 3DSMax, Houdini), Renderman, Mayaman.

Crowd Technical Directors

Crowd TDs use artificial intelligence-based 3D crowd animation systems to stimulate often large groups of characters or vehicles that appear and behave in a realistic manner. They must have an understanding of motion, acting and defining (isolating) behaviours. Crowd TDs would have a strong level of technical skill and would have typically studied computer science. They must have an understanding of motion, acting and how different situations or environments effect the crowds behaviour.

Software used: 3D packages (Maya, Massive, Houdini).

Matchmovers/Trackers

Matchmovers/Trackers calculate the camera parameters from a live action sequence so CG images can be seamlessly integrated into it. A good eye for detail is essential. Often involves on-set work during the physical shoot. Background in cinematography or CG would be desirable.
Software used: 3DEqualizer, PF Track and Boujou.

Matte Painters

Matte painters create artificial backgrounds. A background in visual arts, a strong knowledge of painting and photography techniques partnered with a thorough understanding of lighting, colour and perspective are required.

Excellent Photoshop skills, drawing abilities and some generalist knowledge of various 3D software is expected. This is an evolving area of the industry so a desire to self improve and learn the basics of packages such as Nuke and Maya are essential.

Software used: Photoshop and any of the 3D packages. Increasingly compositing packages such as Nuke are used for camera projection work.

Rotoscope Artists

Rotoscope artists modify and remove isolated elements for digitally composited sequences.
They perform pate clean up, create mattes, backgrounds repairs, wire removals and blue screen extractions. An eye for detail is essential. This is a good entry-level position if you want to become a compositor.

Software used: Nuke.

Compositors

Compositors take all elements of a scene including digital objects, live footage and effects footage and integrate to create a believable finished shot. They ensure that the shot to shot elements match – lighting, colour etc. A good eye for detail, colour, composition, photographic techniques and theory are important.

Software used: Nuke, After Effects and Flame.

Software Developers

Software developers within digital production companies have two major functions. One function is to build new or extend existing software tools for artists. The other function is to solve the many, varied and unpredictable problems and issues that pop up with existing software and production processes. A good grasp of mathematics, technical problem solving, computer coding skills are necessary for this role. Commonly used computer languages include C++, Python and Java. Backgrounds or degrees in computer science are quite common as are engineering, physics or mathematics.

Technical Operations

Render Wranglers constantly monitor the render queuing system to ensure efficient, trouble-free rendering. This is a good entry level position as it provides exposure to many productions and interaction with a variety of departments. Render wranglers require good interpersonal and communication skills coupled with technical/scripting ability. Background typically in computer science or CG.

Data Operations Technicians maintain, back-up and archive both production and facility data, paying very close attention to detail and proper tracking. Good interpersonal and communication skills and technical/scripting ability. Background typically in computer science.

Video Operations Technicians provide reliable and efficient video data services using a variety of tape formats as well as reformatting and transferring image files. Strong interpersonal and communication skills are necessary due to high client interaction. Background in video compression techniques and standards desirable.

Production Management

Roles in Production Management include Production Assistants, Production Coordinators, Production Managers and Producers. These are the people who are the connector between the artists, technical staff and client. They make sure things happen on time, on budget and as the client requires. Background in film studies, with a particular interest in the business/financial planning side of TV, film and/or animation production. Great interpersonal skills, ability to communicate well and a strong team player are all necessary qualities.

Software used: MS Excel, Project and Filemaker Pro.

Resources and Useful Links

Lists of animation houses around the world:
en.wikipedia.org/wiki/List_of_animation_studios

Animation in Australia:
australia.gov.au/about-australia/australian-story/animation-in-australia

A variety of websites with loads of information on digital production:

en.wikipedia.org/wiki/3D_computer_graphics_software

www.3dluvr.com

forums.cgsociety.org/

www.dlf.org.au/

www.fxguide.com/

www.creativecrash.com/

www.animationmagazine.net/

www.awn.com

animatorsresource.blogspot.com.au

aeportal.blogspot.com.au/
Information about Adobe After Effects and more. Links to Tutorials, resources, tips, plug-ins and more for Adobe After Effects

www.ilm.com/
The effects guys who brought you Star Wars, Jurassic Park etc etc...

visualmagic.awn.com/
Animation World Network Visual Effects Site

www.ilm.com/ - visual effects, computer graphics, makeup and animatronics magazine

www.awn.com/vfxworld - visual effects, 3D animation and computer graphics viewpoints, tutorials, news and imagery

www.11secondclub.com/ - monthly character animation competition

www.3dtotal.com/ – news and recourses for CG artists

forums.cgsociety.org/ – discussion board

www.cgchannel.com/ - news forum gallery and jobs

raph.com/3dartists/ - galleries, forums

www.3dbuzz.com/ – news, discussion , education, jobs, artist links

www.3dlinks.com/ – news and directory for 3D software, tutorials and communities

www.3dluvr.com/content/ – news, forums, articles, reviews, tutorials and galleries

www.dvgarage.com/ – 3D tools, tutorials

www.renderosity.com/ – rendering art community

www.renderosity.com/ - forum for concept art display and discussion

www.elfwood.com/ - Fantasy and Sci-Fi art site

forums.sijun.com/ – digital arts discussion and galleries

www.good-tutorials.com/ – Extensive Photoshop tutorial base

www.pslover.com/ - Photoshop tutorials, links, downloads resources and gallery

tutorialoutpost.com/ - Photoshop, Flash, 3D Studio Max and Illustrator tutorials

www.adobeexchange.com/ – Official community site for Adobe Studio offering actions, plug-ins, extensions, tutorials, and other helper files. You can even create, upload them, and share your work and files.

www.deviantart.com/ – general art gallery and discussion board

phong.com/ – images, tutorials for Flash, Photoshop, 3D Studio Max

planetphotoshop.com/ – resource, tutorials, features and galleries for Photoshop work

www.creativebloq.com/ - online UK based creative spot

Books

We are not able to provide an extensive list of books, or to comment on what you should or should not review, but here are some suggestions to get you started:

Art & Design Education Resource Guide
A guide to art and design courses available at University, TAFE and private institutions.
(www.designgraphics.com.au)

So What's This All About Then?
by Shilo T. McClean

The Animators Survival Kit: A Manual of Methods, Principles, and Formulas for Classical, Computer, Games, Stop Motion, and Internet Animators by Richard Williams

The Art of Maya

The Art of 3D Computer Animation and Effects by Isaac V Kerlow
CG 101: A Computer Graphics Industry Reference by Terrence Masson

The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures
Jeffrey A. Okun (Editor), Susan Zwerman (Editor)

Artists

You should use the web to find other artists profiles and websites. For inspiration look at the credits to films you have enjoyed and look up the people who have worked on them.

Professional Organisations

The Digital Labourer's Federation (DLF) www.dlf.org.au

The DLF exists primarily online and is largely Australian based. You might like to join the DLF (it is free) to ask other artists questions and to join in the often lively discussion. Keep two things in mind – if you join the mailing list you will get 50 to 100+ emails a day, and secondly the discussions can sometimes be a bit 'frank and forthright', but a great source of information and contacts.

Sydney SIGGRAPH sydney.siggraph.org.au/

The local professional chapter of SIGGRAPH – the Association of Computing Machinery's Special Interest Group in Computer Graphics and Interactive Techniques. SIGGRAPH is a worldwide organization of people with a professional interest in computer graphics and hold the leading conference in the world each year in early August, usually in the United States. This is the local chapter and has monthly meetings with guest speakers talking on a wide range of related topics. It is a good way to start making professional contacts.

The Visual Effects Society (VES) www.visualeffectssociety.com/

The VES is the professional organization for the visual effects, animation and games industries. This organization began in the US and an Australian chapter has recently been formed. The members are individuals who have at least five years professional experience, but they do put on events for students from time to time.

Free or Cheap Versions of Software

Some of the major software companies make available free or very cheap versions of their software. This is a great way to familiarise yourself with the software without paying the full market price. The understanding is that you won't use this software for commercial (paid) work and in some cases the software will prevent you from doing this by putting "watermarks" over parts of the image. In this case it is still possible to use the software to create work for your reel. Employers will not mark you down for having a watermark on your work.

You may also be offered or find online 'cracked' versions of these softwares. We recommend you do not use these versions. You break local and international law when you infringe copyright in this way, you affect people's jobs and livelihoods when you do it, and you may expose your computer to viruses and other technical problems which you will have little or no way of correcting.

A Final Word

We hope you have found this document useful in helping you work out your next steps in moving towards commencing your career in Animation and Visual FX. As previously stated, this is just a starting point. You now need to do more independent research and study. We wish you all the best on this journey.