



Dr. Babasaheb Ambedkar Open University

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DMA-103

2D Animation



Diploma in Multimedia and Animation (DMA)

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2D Animation

Dr. Babasaheb Ambedkar Open University



Editor

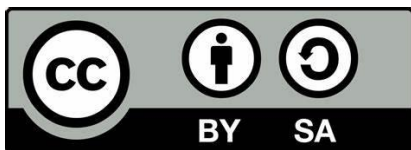
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DMA-03

2D Animation

Block – I: Introduction to 2D Animation

Unit-1 Concept of 2D Animation

Introduction

is for individuals who wish to make a career in sound

The process of making an illusion of motion is known as animation. The illusion or apparition is created by the change in rapid series of sequential images that actually differ from each other. Let us discuss about the different types of animations. Generally, there are 2D animation, 3D animation, stop motion, computer animation, sand animation, etc.

The 2D animation follows the traditional animation method and it has been in existence since late 1800s. Today, most of the 2D animations are created by computer software and every frame is slightly different from each other based on its colour, its preceded frame.

This unit is about exploring the 2D animation. You will learn the definition of animation, its history and different kinds. The unit covers 12 core principles and concepts of animation. You will learn how to apply the principles of animation to a character in order to create it.

Outcomes

Upon completion of this unit you will be able to:

- Explain about the concepts of animation
- Elucidate about the history of animation
- Categorize the various types of animation
- Explain how animation works
- Apply the 2D animation principle

Terminology

FPS: A film projected at 24 frames for every second and video projected at 25 frames per second.

Cel and Cel setup: A picture is drawn on a unique place of plastic. This plastic is called as Cel. If at least one Cel overlays on a base it is known as Cel setup.

Model sheet: It is the drawing of a character, in an assortment of states of mind and expressions, made as a source of perspective guide for an artist.

Character models: Animator prepares a model sheet of the character. The model sheet contains the character in an assortment of outward appearance and stances.

Maquette: It is a sculpted preliminary model or sketch in view of the real/final character in

the Model Sheet.

Time out: This is a liveliness key. It includes matching all the on-screen activity to its correct beats, including music and sound impact.

Lead artist: This artist in charge of making and animating one specific character in the film.

Meaning of animation

We all have an idea of what animation is. We think of Disney's classic animated films but have you ever thought about what actually makes animation film. The term animation has originated from Greek word 'Any moss' and Roman 'enema'. This basically means "bring to life", so there is a sense of evolution over time that is what we capture through animation. Conventional animation has been there for a long time and the primary concern of animation techniques has been to create the illusion of movement. It basically has the aspect of movement, which could be just an illusion, without simulating the motion in its physical sense. It involves creating a series of photographs as frames and run those sequentially over time. This aspect of illusion of life has been used by various commercial setups.

History of animation

The animation is the way towards making the deception of action and the illusion of progress by methods for the quick progression of consecutive images that negligibly vary from each other. The animation is possible because of the persistence of vision discovered by Peter Rajat in 1820. The persistence of vision causes images to look like they are there longer than they actually are causing the drawings of animation to blur together. Animations started with the phenakistoscope, created in 1872. The phenakistoscope is an optical illusion toy with rotating disks to make it look like a moving picture. In the year of 1898, stop-motion animation was invented. Stopmotion animation is the method of taking many pictures and putting them together to create an animation. Humpty Dumpty was the first animated feature film to use stop-motion animation in 1914. It is when Gertie the train dinosaur was created. It was one of the first cel- animated films. A Cel (celluloid) is a transparent sheet of paper used for traditional hand drawn animation. Cel animation is when the background is drawn separately from the characters, the background is put in a clear box and the characters are placed on top of it, in their own separate box and then photographed. This saves a lot of time of the animator because they do not have to redraw the background every time. In 1915, Max Fleischer patented the route a scoping process. Tracing a live footage is called Rotoscoping. In 1923, Walt and Roy formed Disney Brothers cartoon studio. In 1928, Steamboat Willie, the first animation with sound, was created by the Disney Brothers. In 1930, Warner Bros

cartoons were created, and the first CGI animation was made by Charles Sri and James Schaffer in 1967. CGI stands for computer- generated imagery. CGI is normally associated with 3D computer effects but CGI is any picture that is generated by a computer and not drawn by a human. There are many movies such as Star Wars, Tron Legacy, Alien Series and The Matrix that have seen use of CGI animation for certain effects. The first feature-length animation that used CGI was Toy Story. Today, many cartoons on TV still use traditional animation but computers have become a big part of the animation process.

Types of animation

1. Traditional animation

Cel animation is generally recognized as traditional animation. This is the grownup forms of animation. In traditional animation, every frame is hand drawn for creating an animation image sequence. It consists of large numbers of hand drawings called “Frames”. In the past, the drawing occurred on a big light table. It was a drafting table with a big light section in the central point of it. The animator drew the image sequence on it, and the light allowed the animator to see his earlier drawings all the way through the paper to get a better look of his animation. This is called Onion Skinning. Even now, traditional animations are mostly done on PC with a Pentab alike the Wacom Pentab. The 2D or traditional animation is generally animated at 12 frames per second with more frequent and rapid animated actions at 24 frames per second.

2. 2D Animation

Vector-based animation is referring to 2D animation. This is all around preferred configuration from most recent couple of years with the expanding clients. 2D animation software is easy to use as it is for entry level and has a user-friendly interface.

Illustration: Flash animation products are the modest and simple to utilize vector-based animation program. An artist has an alternative option of making rigs for the character at the joints for the moving body parts and movement can be provided separately as per the requirement of the character in the drawing. The character having more than one eventual outcome can be achieved as it permits complex rigs for animations or by utilizing the manikin apparatus to drag and move the body parts around. These types of adaptabilities give more choices. While moving ahead in the process of



animation, particularly, if the drawing is not solid, it would not match at all for which drawing abilities are mandatory like traditional animation.

Title : Animated Horse

Attribution : [Janke](#)

Link : <https://commons.wikimedia.org/wiki/File:Animhorse.gif>

3. Computer Animation

Computer animation is also known as 3D animation or just animation. It is the common form of animation. 3D animation works in a totally extraordinary manner from traditional animation, all the animators are considered to be associated with a standard organization and has certain level of creative development, yet there are some specialized experts in particular fields of work who are different from each other. In 3D animation, the artist moves the character in a 3D program by manipulating controllers, which are associated with each body part, for example, hands, elbows, lips and etc. Like 2D animation, an animator in 3D program doesn't have draw to move every frame. Animators set the key frame on the timeline when the models are ready to animate. Proceed to move forward in timeline and move all those controllers again to create another key frame in the 3D program. Then the program calculates and animates the frames between those two key frames. Animators take maximum time to clean the curves for a detailed and smooth animation, which helps for the development of various body parts later on. Another huge distinction with 3D animation is that it's not at all like traditional animation. The body parts are constantly present and contemplate. In 2D animation, the character draws for each edge.

At the point when the character is seen from the side portion of its body is not appearing and in this manner not drawn.

The significant distinction with 3D animation is the edge rate like traditional artists. Generally, a shot is taken at twos, which implies they draw another drawing each having two edges and in this manner making them draw less for two edges. 3D animation's movement is constantly smooth with the exception of adapted pieces, which deliberately attempt to appear as unique. Having a character stop totally resembles a mix-up in 3D. Notwithstanding when the character is stopping, there ought to dependably be a few indications of life. This is something which 2D animation can escape with a great deal by more effectiveness than 3D.

4. Motion Graphics

Motion graphics is considered as a type of graphics animation. Motion graphics is

somewhat not quite the same as alternate part of animation. Unlike any animation, it is not character- or story- driven. It is the craft of imagination of moving realistic components or content which is mainly used for business or promotional purposes, enlivened logos, introduction recordings, TV promos or even film opening titles. The abilities for motion graphics do not vitally means alternate sorts of animation since, they



don't require information of body mechanics or acting. However, they do have a few characteristics in similar manner. For example: Presenting great arrangement and extremely imperative camera motion.

Title : Motion Graphic Attribution :

Source : Little Visuals

Link : <https://www.pexels.com/photo/lights-abstract-curves-long-exposure-1944/>

5. Stop Motion

A standout amongst the most well-known structures is clay animation. Working with mud or play-doh characters can undoubtedly be controlled for animation. The animation process is similar to 2D animation, creating poses of movements and moving it little step by step while taking pictures of each movement. Then the pictures are used to play sequentially, which creates illusion of motion. Propelled clay animation as found in the Neverhood or Armikrog utilizes metal skeletons on which the dirt is shaped for more durable rigs. A few illustrators would utilize normal manikins rather than dirt ones, generally likewise based upon some kind of skeleton rig. The characteristics of the characters can be supplanted in light of the articulations or be controlled inside the rig.

Another mainstream type of stop-motion is cut-out. Utilizing development paper or cardboard characters and putting them on paper, while shooting the animation from above. That is the means by which South Park was originally made before they exchanged the PCs. Like cut-out animation, outline animation utilizes cardboard or some sort of level material, yet the items are for the most dim parts and the shot is portrayed with outlines as it were. This is one of the most established types of stop-motion and is once in a while utilized today.



Title : Stop Motion

Attribution : Cogdogblog

Source : <https://www.flickr.com/photos/cogdog/5560633224/>

Link :

[https://en.wikipedia.org/wiki/File:Stop_the_Motion_\(5560633224\).jpg](https://en.wikipedia.org/wiki/File:Stop_the_Motion_(5560633224).jpg)

Pixilation, is a type of stop-motion that utilizes genuine individuals and genuine conditions to make unbelievable recordings. It utilizes the stop-motion technique for taking a still photograph, moving things around and taking another photograph. However, the topic is normally used for genuine individuals rather than manikins.

12 principles of animation

Walt Disney Studio's animators developed the twelve principles of animation in 1930. Frank Thomas and Ollie Johnston distributed them in their book "The Illusion of Life" Disney Animation, in 1981. Those standards came due to their goals to make sensible animations, through the development and articulation of the character. The standards taken after the essential laws of material science additionally manage more issues which are conceptual. These principles were utilized as rules to make toons and are still used today in numerous animation studios. The book "The Illusion of Life" has been considered by some as the "Bible of animation". Principles are:

1. Squash and stretch

This is the rule that defines speed, energy, weight and mass of any animated subject. This is the most important principle of animation. Squash and stretch also use too exaggerated facial expressions and when you are animating dialogue you can apply it in any simple objects. For example, bouncing balls and very difficult creations like characters face muscles. It is the principal strategy for artists.

2. Anticipation

This is the point when a character gets ready for action guiding audience what is going to happen next. It makes the activity seem more sensible. When a character is going to hop, before jumping into the air he needs to get ready for the activity by hunching down. To fabricate the vitality, it is resembled with a spring that loops up before discharging. A character's hopping with no anticipation is extremely unreasonable, in light of the fact that the vitality to bounce appears unexpectedly. You will see this in many toons, before running a character will pull back and takes a running pose holding for a second before taking off. Anticipation also utilizes rather than quickly extending up the face squashes initially to anticipate the extent and give it more power anticipation imparts activities to the group of onlookers by setting them up for the following activity. This can occur from numerous points of views. In the event that a character is going to remove something from their pocket, they arrange the position of their hand exceptionally obvious and not yet decided before going into the pocket. Something else, the gathering of people may miss it and think about how they got that protest in any case. The most important thing is that the viewer notices the hand and the pocket so the character cannot perform any competing actions.

3. Staging

Staging is the introduction of guiding the gathering of people's thoughtfulness regarding what is essential in the scene. The extreme expansive guidelines are totally unmistakable as they cover a large number of zones of animation. It can apply to acting, timing, camera edge position and setting. During animation, you need to be in full control of where people are looking at. You are basically saying to take a gander at this, the control is accomplish through staging, the majority of the components of the scene cooperate to move the watcher's eyes around the scene.

For instance of awful staging, an animation of Tom chasing Jerry inside a house there are props like sofa, TV, carpets, vases and many more. A character often gets obstructed by props used and a watcher does not know which one to take a gander at. The camera has a great deal to do with this. It's critical to know when to shut everything down or when to go, which is useful for an enormous scale of activity like showing a nuke blasting. The primary activity of the scene ought to be clear and basic. It can't be upstaged by various things that are going on which removes consideration from the principle point. It has to be a legitimate planning by allowing one activity to get completed before the other individual begins their activity, thereby avoiding overlapping. Now and then, you have to embed delays if there is something on the screen that is necessary to be handled by the watcher before proceeding

onward.

4. Straight ahead and pose to pose animation

This rule portrays two strategies used to animate drawings. The main technique is drawing the principal drawing and then moving on to the second drawing and so on. Then, sequentially arrange them by outlining from the beginning. The second technique is 'pose to pose' in which you draw the starting and end of every principle pose and later on fill in the drawings at the middle called in-between poses. There are advantages to these two strategies but 'pose to pose' is by far better for most activities since it gives the maximum control to what the activity will resemble. Utilizing straight ahead animation can prompt the character evolving size, or being on an alternate level from start to finish whereas pose to pose technique spares a considerable measure of work. On the off chance, animate an entire grouping straight ahead and then understand that one pose is off. You would need to change few drawings to settle that one pose. In pose to pose technique, you would do the fundamental poses to check whether it feels right and if you can get issues at an opportune time straight ahead animation. It is also useful for animation, which is flighty. A few cases of this incorporates fire, water, particles, dust and storms blasts explain the motivation behind straight ahead functions, which admirably is on the grounds that there are laws of material science that work at a steady rate and it is difficult to foresee them. Another method is animate using pose to pose, then going through, and adding the years using straight ahead. This is good because you can focus on the figures' movements without the distraction of having to do it and you can focus on the physics of the particular movement without the distraction of his body's movement.

5. Follow through and overlapping action

This is the strategy of having body parts and different parts behind, whatever remains of the body and keeps on moving, a few sections of the body lead the action, and others follow the development. Drag is another mainstream method where the following parts of the body take a couple of more casings to get the primary lead parts. At the point when the body stops follow through, an overlapping action is regularly connected with another method called follow through. Follow-through alludes to the route parts of the body and keeps on moving after the body stops. Overlapping action depicts the counterbalance between the planning of the primary body and its different parts. Each of the three of these is depicting distinctive parts of a similar thing. Follow through is an overlapping action that includes a lot of

authenticity to a character. Overlapping action when the fundamental body moves the tip of the limb ought to be the last to make up for lost time and when the body stops the tip ought to follow through the furthest before settling back this is valid for extremities as well as the entire body too. When grinding to a halt regularly the body will follow through and then returned just, as a character needs to anticipate.

6. Slow in and slow out

This rule alludes to the way practically all development begins gradually, constructs speed and completes gradually. This stands out amongst the most imperative procedure of accomplishing life like a motion without moderate in and moderate out feel mechanical. It is in light of the fact that robots are one of the main things that really move their parts at a consistent speed to utilize.

This principle in 2D animation is your extraordinary poses that attract a solitary between and then just in the middle of the drawings nearest to the extremes until the point that you're happy with the measure of moderate in and moderate out. With 3D animation and motion graphics having moderate in and moderate out issue, can be solved by changing the motion bends from straight to spline, modifying the Bezier handles to create a smooth curve in graph as time advances, the protest begins moderate gets quick.

7. Arcs

Every action follows an arc, either you swing arm, throw a ball or chew a food. Curves make the animation feel normal and realistic. Arc in motion helps to define momentum too. Any object not following its natural arc will not look fluidic but erratic for example you cannot make sharp turn in a speeding vehicle rather than a slow moving vehicle.

8. Secondary Action

It implies something altogether, different secondary action portraying helps the fundamental action to add more measurement to the character animation. The secondary action commands the essential action. Secondary action helps in characterisation or expressing emotion like a tensed man is walking left and right with hands in his pocket, joyful person walking with swinging hands and whistling, a horse is running so its tail is waving fast following the movement of body. The principle of staging is also very vital in secondary action.

9. Timing

This principle expresses that the identity and nature of an animation is incredibly influenced by the quantity of casings embedded between every primary

action. Timing means the speed of action which gives the quantity of in-betweens i.e. between two keys. It includes picking the quantity of edges that will be used to animate a scene. The quantity of edges demonstrates the speed of the action on the film. The less casings and action the animation has, the speedier and crisper it will get. On the off chance that an action has many edges, it will be moderate and smooth. Timing adds surface and enthusiasm to the development of your characters. A decent approach to rehearse this method would be considering the acting and development of on-screen characters and entertainers in front of an audience and utilize it as reference while animating.

10. Exaggeration

Each action poses and articulations are taken to the following level to build the measure of effect on the watcher. The early artists at Disney would get confounded on the grounds that Walt would instruct them to, which includes more authenticity yet when they transformed it. He would ensure the outcome since it was not overstated enough.

More sensible did not mean you would make the material science and extents more steady with reality but instead make the thought or embodiment of the action more evident. Exaggeration a decent manage to follow is to push the exaggeration level until the point that it really turns out to be excessive. Along these lines, you see the entire range beforehand as opposed to shooting oblivious right. Illustrators need to utilize determination and information and shield it from winding up plainly excessively showy animated.

11. Solid drawing

This principle is tied with ensuring that structures feel like they are in three-dimensional space with volume and weight. Adjusting one thing that makes animating simpler is having the capacity to draw a figure from all points. This requires learning of three- dimensional drawing. For instance, when drawing a line on a circle, it must follow the shape of the circle's surface. A straight line right away makes the circle look levelled when drawing blocks abstain from making parallel lines. Lines are ought to be twisted towards the vanishing point, otherwise it will resemble a level. Illustrators need to take craftsmanship class and genuinely draw is vital.

12. Appeal

The last principle of animation is appeal. Characters that you animate ought to be some degree satisfying to take a look at. They should have some sort of magnetic

angle about them to be liked. A character's appeal doesn't generally mean attractiveness, it may be based on its look or characteristics such as a scalawag ought to resemble to have an intriguing look. Everybody has an alternate standard for what is appealing; however, recently giving your character a dynamic plan can enormously support its appeal. Here are three stages for doing in order to start with: utilizing an assortment of shapes as opposed to, utilizing a similar shape for each character and experiment with various shapes on the grounds. There is no restriction to the range of insane arrangements that characters can have. Secondly, play with the extents. Visual artists regularly amplify the things, discover intriguing and contract the things. For instance, they may broaden the head and eyes, shrivel the body and make the hands bigger. Finding that part of a character, that characterizes his/her identity. Third, one is to keep it straight forward as a lot of data can over muddle the character and make it harder to control animation.

Stages of creating an animation movie

The stages for creating an animation film, it has to go through phase's like:

- Pre- production
- Production
- Post-production

These stages are sub-divided into parts and the animators execute their work as decided.

Pre-production:

Pre-Production is the period of time during which work is done on a show prior to the first rehearsal. During pre-production, you make decisions that dictate how the rest of the production comes together. During pre-production, following things are finalized so that all the obstacles are removed to get a smooth production.

- Writing the story
- Production plan
- Character development
- Story board
- Creating premises
- Scene planning
- Sound track
- X-sheet

Production:

This is the most challenging stage of creating an animation film. At the stage, you get to see the actual result of the treatment given to the story and the visual achievement of the director's imagination.

- Recording the dialogue
- Layout designing
- Background designing
- Animating

Post Production:

Post Production is the process of compositing and editing both the pictures into an organized matter.

- Compositing
- Digital compositing
- Computer effects
- Sound
- Editing
- Mixing audio-video
- Final mixing

Summary

In this unit, you have learned about animation. It would introduce and expand the knowledge, understanding and skills for a diverse range of different types of animation by exploring relevant techniques and processes. Also, it explains the history of animation. You should be able to apply the 12 principles of animation and production processes to create an animation film.

Assignments

- Explain what is animation
- Examine the basic types of animation
- List various steps for creating a 2D animation
- Explain basic techniques used in 2D animations
- Describe animation process
- List principles of animation
- Explain stop motion animation
- What is layout design
- List the types of colour use in inking and colouring

Resources

- <http://resumbrae.com>
- <https://upload.wikimedia.org>
- <https://cdn.pixabay.com>
- <https://google.com>

Unit 2

Drawing Concept

Introduction

Drawing is a form of visual art in which a person uses various drawing instruments to mark paper or another two-dimensional medium. Instruments include graphite pencils, pen and ink, inked brushes, wax color pencils, crayons, charcoal, chalk, pastels, various kinds of erasers, markers, various metals and electronic drawing.

In this unit, we learn how to draw an image with basic concepts and techniques. To shade with different pencils, you will start out by using pencil to do a light touch on the paper and then push down harder to create a darker shade. Use different pencils to get long and wider lines from the shading. 4B and 6B pencil will have lines that look the same, but they are different in the way they apply graphite to the paper. Practice using all of your pencils to get an idea of how they write, then you can choose which will be the best for your drawing with an educated decision.

Outcomes

Upon completion of this unit you will be able to:

- Introduction to drawing
- History of drawing
- Understand the different types of art forms
- Basics drawing categories
- Drawing methods
- Types of drawing

Terminology

Background: The most distant zone of space in a drawing which creates a three-dimensional illusion. It is helpful to give a sense of depth and balance of perspective in a drawing.

Chalk: A wide variety of easily crumbled drawing materials produced in either round or square sticks ranging from coarse to fine, hard to soft, or dry to greasy. It is originally obtained from natural coloured limestone.

Charcoal: Carbonized wood; willow (or sallow, a species of willow) twigs heated with a state of carbon in sealed chambers excluding oxygen in order that the wood doesn't burn and gets reduced to ashes.

Conte Crayon: Semi-hard chalks of fine texture and various sizes containing a sufficient oil

in the binder to adhere more or less permanently to smooth paper—available in black, white, brown, and sanguine (Venetian red), and three degrees of hardness.

Floor Plane: The interior horizontal plane that the viewer stands on which extends to the horizon.

Gesture: The essential line or depicted state of movement of a live or still form.

Ground Plane: A smooth plane on which the viewer stands, it extends to the horizon marks.

Life Drawing: Drawing from live forms in order to gain visual understanding of the movements, gestures, and physical capabilities of live bodies as aesthetically pleasing art forms.

Sketch: A quick rough drawing with minimum outlines to understand the basic objects.

Vine Charcoal: The highest quality stick charcoal—named for plant vines from which it is extracted through heating and carbonization.

Drawing Concept

Drawing as a verb describes the act of pulling, pushing or dragging a marking tool across a 2D surface. The line remarks that remain serve as a document of the action. These marks can vary depending on the type of marking tool used or the method of applying the image that results from this marking process is then referred to as a drawing.

Drawings are basically broken down into two categories:

1. Receptive
2. Projective

Receptive drawing is when an artist attempts to capture the appearance of something observed from our physical world, for this reason and he was about representational drawing observed from life is also an example of receptive drawing. Spanish artist Pablo Picasso serves as a good example of receptive drawing. Picasso was enrolled in the Royal Academy of San Fernando in Madrid as with most academies of the time Picasso was taught the strict mimetic tradition of drawing from live models and plaster casts, the idea was that drafting is a skill that any artist could master by following a series of strict rules as his career progressed. Picasso began abandoning the receptive drawing practice entirely, instead of drawing from the world around him.

Picasso began drawing from his imagination; this type of drawing is referred to as projective drawing compared to a receptive drawing. The projective drawings usually have to make generalizations about the subject being depicted, even if Picasso had drawn images of hundreds of bowls from life. The moment he drew one from memory it could only be an approximation of what a bowl looks like. Due to this limitation projective drawings are often

drawn in exaggerated or distorted ways to acknowledge the limitations of this method. For this reason, abstract drawings are often projective in nature and of course non-objective drawings are also projective because, they come straight from the artists imagination with no reference to the observable world.

Documentation

First, a drawing can be a form of documentation. In this way, a drawing concerned is a notation sketch for record. This notation can be about something that an artist observes, remembers or imagines. Visual artists often want to record their thoughts and they do this by keeping sketchbooks.

Sketchbooks

Sketchbooks are generally kept from the artist's reference and serve a similar role to that of a writer's journal. Italian Renaissance artist Leonardo DaVinci was renowned for the large number of sketchbooks he kept. Leonardo took a great interest in the study of human proportions as illustrated in his sketch the Vitruvian man. To learn more about human anatomy, he would also take part in medical dissections as illustrated in these sketches from observations of the human heart. He also sketched images of Great machines from his imagination even though the technology did not exist at the time Leonardo is credited for coming up with the concepts of modern machinery such as the tank and the helicopter.

Preparations

Drawings can also function as studies or preparations for a larger or more complex work. One very traditional form of this preparation is sketched for Paintings Michelangelo needed to create many studies first painted fresco on the ceiling of the Sistine Chapel because Buon fresco is such a fast drying process. Michelangelo did not have the leisure to work through the final orientations of his figures and arranged as he painted them, the more preparation you could do, the more successful the outcome and the less frustration would result for his powerful black and white painting entitled Guernica. Pablo Picasso made at least 45 preliminary studies, each drawing serves a sketch for the next drawing until the artist felt he was better prepared to depict the tragic events of 1937. The subject of this painting was the Nazi bombing of the Spanish town Guernica that killed hundreds of unarmed civilians in the case of the contemporary installation team.

Sketch

The drawings also serve as sketches for architecture because buildings cost so much to erect, investors want to see finished plans before any ground is broken. Architectural drawings are usually drawn in perspective, including things like trees, cars and people to

display the building scale. Even architectural renderings need to start somewhere. Believe it or not, this is a loose sketch served as the inspiration for Frank Gehry's Guggenheim Museum in Bilbao spinning after going through many other renderings and modelled.

It was transformed into the complex 3D structure that stands today filmmakers often use drawings called storyboards to plan out the seeds of their films like building fills take a lot of money and labour to complete. Scenes having planned for pre-production prevent any unnecessary confusion or wasted funds although most directors hire artists to draw their storyboards for them.

The Basics of Other Artforms

Most of the drawings have given inspirations to different kinds of art. Drawing is, as a general rule, the premise of every single visual art. For instance, a structural drawing helps in building development, and markings on a stone piece give foundation for the sculpture that rises. Most paintings are in the first place a sketch and as the works continue, they are merged into coloured surfaces. Moreover, researches show that drawings shape the premise of the wall painting, board, book paintings, statues, and numerous other types of art.

Drawing Media:

Drawings are produced using instruments such as pen and ink, graphite point, chalks, pastels, charcoal, silverpoint, coloured crayons, metalpoint, graver, burin or etching needle for incised types of drawing. Other alternatives include graphite sticks, wax or conte crayons, markers and various types of inked pens. Paper gives the most usual support but other options are card, board, cardboard, canvas, papyrus, leather, vellum (calfskin), textiles. Also, even plastic or metal will help, and mixed-media drawings are executed using a combination of these materials.

History

The history of the oldest art we know of is about 40,000 years old. The art was found on cave walls or sculpted from rocks, which comprises people who killed animals or each other. But there is an exception: the famous woman from willendorf, an abstract sculpture of a faceless obese lady who wears just a shower cap. Later, people began to note down things, and then starts a proper history with civilizations developing in Egypt, Persia, Mesopotamia, Greece, Rome, India and China. This historic time in art gave the world pots earthenware, crumbling temples and more. Then arrived warriors, warriors on pots, gods on pots, among other things. In the middle ages, the West was dominated by the church that disputed the validity of all the old gods to claim there was in fact only one god. Art could not feature unrealistic things such as dances of an elephant having more than one limbs or a man with

winged beard but had to be about things that happened in the Bible. This more realistic, down-to-earth approach gave us morose men in yellow hats, morose men in pink shawls and lots of glowing babies. Then came the Renaissance and the material world real life places were rendered in three dimensions. Convincing use of perspective became widespread and the human body was shown as it really is in many images. However, some remain religious in nature, which also featured a flying wing man with laser beam eyes and has been done realistically too. Eastern art continued to develop in its own way -- showing scenes from nature or the everyday world like mountain people kissing or men dressing gowns, getting angry at others. Then came the modern art and the dawn of the 'isms' such as impressionism, expressionism, cubism, dadaism and surrealism. The experiences of global war, the march of technological progress and the popularization of theories about the universe and the human mind as espoused by the likes of Einstein and Freud left their indelible mark on our species. The artistic gloves were off and it was time to experiment shapes, splats, blocks of colour, ghosts pokes, weeping women, fluorescent lights, urinals and unmade beds. All could be considered art in this brave new world people argued the point saying some modern art was shit and some of it really was watered art. Art today is part of the human condition and desire, which is as old as our species and quite probably embedded in our DNA as innate to us as eating, fighting and laughing at other people's misfortune. But it's also big business you're likely to see the famous artwork on a mug, a T- shirt or in a boardroom as in a gallery. The rise of cinema, television and the Internet has led to a dissemination of a common visual culture into every corner of the globe. While the Gideon pace of Technology and ceaseless progress has democratized the entire means of artistic production.

Categories of Drawing:

Drawing consists of three basic categories:

- **Casual drawing (portraying, doodling):** This indicates incomplete and generally basic creations. These drawings don't have the continuous capacity.
- **Preparatory drawing:** This indicates the production of a particular image or arrangement of images, shaping the entire thing or part of a creation the artist wants to finish by including colour (paints, coloured inks and so on).
- **Finished drawing:** This indicates a finished remain of a solitary, independent work, for example, an illustration, a cartoon or visual art.

Drawing Methods

Tools and equipments can be utilized to draw, including slate pencils, metal style, charcoal and chalks, and in addition, traditional pens, pencils, and brushes, wellspring pens,

ball-point pens, and felt pencils; even etches and jewels are utilized for drawing.

- Line drawing
- Stippling
- Shading

The surrealist technique for entopic graphomania (in which dots are made at the destinations of contaminations in a clear sheet of paper, and lines are then made between the dots), and tracing (drawing on a translucent paper, for example, tracing paper, around the blueprint of previous shapes that show through the paper).

A fast and untreated drawing might be known as a sketch.

In fields outside art, specialized drawings or arrangements of structures, hardware and different things are normally called "drawings" in spite of when they have been exchanged to another medium by printing.

Charcoal

Charcoal is the result of heating or charring an organic substance such as wood at a very high temperature, and the dense and dark substance results are primarily composed of carbon. A drawing medium charcoal is generally available in two types: compressed charcoal and vine charcoal. Compressed charcoal is the heavier of the two types. It is found in stick or pencil form with a clay binder added. Compressed charcoal is a relatively unforgiving medium and it gets dark very quickly. Once it is applied to the paper, it tends to be very difficult to erase because this medium is so soft and dark. It's almost impossible to erase the white of the paper. A firm rubber eraser is best for erasing the thickest areas and an eraser works better for erasing wider applications. Some artists even use an eraser too soft and smudge the heavy medium around the surface of the paper. A German drafts person lost children and friends in the two world wars in Europe. Her later life self-portraits were psychologically charged studies of a woman nearing the end of a difficult life. These emotionally bare drawings are made all the more powerful by the darkness and moodiness of the medium. This drawing entitled *The Call of Death* serves as an allegory to the literal hand of death coming to claim the soul of the weary artist.

Vine charcoal

Vine charcoal is both harder and physically lighter than compressed charcoal. For this reason, it is much lighter in value, if compressed charcoal can be applied to a 100-percent black, vine charcoal may only reach a sixty or seventy percent gray. Vine charcoal is much more forgiving than compressed charcoal because it can be easily erased by any of the aforementioned erasers, charcoal is also available in a fine powdered form and like vine charcoal. Charcoal powder goes on the support much lighter than compressed charcoal. For

this reason, artists will often use vine or powdered charcoal as the under layer of a drawing with compressed charcoal on top white chalk can also be applied to the surface of a charcoal



drawing to create areas of highlight.

Title :

Charcoal Stic

Attribution :

[Mrs](#)

[Scarborough](#)

Source : Own

work

Link :

https://commons.wikimedia.org/wiki/File:Charcoal_sticks_051907.jpg

Graphite

Graphite is apparently the most widely recognized drawing medium. It often comes as pencils, powder or filled sticks and is the thing that a large number of people essentially allude to as "pencil". Each one makes a scope of qualities relying upon the hardness or softness of the material. Hard graphite tones territory from light to dark gray, while softer graphite permits a range from light gray to almost dark black for that reason a considerable measure of graphite drawings is basically called pencil drawings.

Graphite drawing strategies are for all intents and purposes interminable. In any case that you apply graphite to a surface will deliver some kind of results. French sculptor Gaston Lachaise's Standing Bare with hanging cloth is a pencil drawing that fixes the vitality and feeling of development of the figure to the paper in only a couple strokes. Steven Talasnik's contemporary extensive scale drawings in graphite, with their whirling, natural structures and architectural structures are a demonstration of the energy of pencil on paper.

Dry Media

Dry Media incorporates with charcoal, graphite, chalks and pastels. Each of these

mediums gives the artist an extensive variety of stamp making capacities and impacts, from thin lines to huge areas of colour, shading and tone. The artist can control the application of material by applying required pressure to accomplish required impacts from multiple points of view, including similar individual weights on the medium against the drawing's surface, or by eradication, smearing or rubbing.

This procedure of drawing can immediately exchange the feeling of character to an image. From vigorous to normal, these behaviors are clear in the least not easy works: the quick and unalloyed strength of the artists thought. You can observe this in the self-portraits of two German artists; *Kathe Kollwitz* and *Ernst Ludwig Kirchner*. Injured in the middle of the main world war, his *Self-portraits under the influence of Morphine* from around 1916 presents us with a dreadful vision of him wrapped in the mist of sedative medications. His empty eyes and the realistic brokenness of his imprints confirm the energy of his drawing.



Title : Portrait of Carl

Sternheim. Lithographie 1916

Attribution : Ernst Ludwig
Kirchner

Source : <http://www.kunsthhaus-luebeck.de/sites/lagerkatalog-122/seiten/kirchner-el.html>

Link :

https://commons.wikimedia.org/wiki/File:Ernst_Ludwig_Kirchner_Bildnis_Carl_Sternheim_1916.jpg

Pastels

Significantly more prominent color refinement is conceivable with pastel colored pencils, produced using powdered shades blended with a base measure of non-oily cover. At the point colors are out on paper, they perpetually look new and bright, despite the fact that they should be safeguarded from scattering by being kept under glass. Pastel colors are connected in straight method with the pastels, or to a region of the paper specifically with the fingers. Pastels originated in the north of Italy amid the 16th century, and were utilized by Jacopo Bassano (1515-92) and Federico Barocci (1526-1612). Pastel drawings were known

to the Accademia degli Incamminati no later than the 17th century, in spite of the fact that as a work of art it didn't achieve its pinnacle until the 18th century, eminently in France (with Jean Marc Nattier, Maurice Quentin de La Tour, Jean-Baptiste Perronneau and Jean Chardin) and in Venice (with Rosalba Carriera).

Oil Pastels

Oil pastels are a relative of the wax crayons that you may remember from childhood. They are composed of pigment suspended in non-drawing oil and wax binder the oil and wax as binders make the colours of oil pastels much more vibrant than those of chalk pastels like oil paint. Oil pastels can be layered in a way that chalk pastels cannot, while powdery chalk pastels never get far from the surface of a drawing. Oil pastels apply much thicker and can create instances of actual texture for this reason. Though oil pastels are much more difficult to erase, your racers will often just smear the medium or smudge the pigment into the paper. Beverly Buchanan is a contemporary African-American artist who uses oil pastels to explore aspects of her southern rural tradition. Her work has a playfulness that embraces the inherent messiness of the media like Yoshimoto Nara. She adopts a children's art aesthetic that attempts to view the world through the fresh eyes of youth.

Spray fixative

The use of aerosol spray fixative when applied in thin coats, it holds dry media from smudging, smearing or rubbing off of the surface like varnishes for paintings. Spray fixative also protects the media from moisture, sunlight and time, even after fixing their drawing, artists will often store their work sandwiched between clean sheets of acid-free paper. This helps to further ensure that the delicate work will not be damaged or altered in any way.

Graphite Point

When 16th century was drawing to a close, another drawing medium showed up and quickly traded metal point for outlining and initial drawing. Due to its weak stability, it was utilized basically for beginning sketches, instead of independent drawings. The graphite point appropriately brought forth the lead pencil, after the revelation in 1790 by Nicolas-Jacques of an assembling procedure utilized as a part of the creation of artificial chalk. Cleaned and washed, graphite could from this time forward be fabricated in any level of hardness. The pencil focuses with their solid, clear, thin strokes, and was especially suited to the reasons for Neoclassicist artists. Among the best types of pencil designers was the intellectual painter J-A-D Ingres, who utilized deliberate pencil drawings as the reason for his oil works of art.

Chalk

Chalk generally uses inert chalk as a binder to powder pigments into a solid stick.

Chalk pastel has a similar powdery softness to compressed charcoal. It can be erased more easily than compressed charcoal but not as easily as vine charcoal. The chalk and chalk pastel gives the pigment a slightly muted or matted appearance. This is why certain muted colors are referred to as being pastels. French impressionist Edgar Degas made many chalk pastel studies in the late 19th century. His intimate drawings were often related to subjects like ballerinas. There's the matted pastel colors help convey the softness of early morning light.

Liquid media/ Wet Media

The term liquid media refers to any drawing medium that is wet during application rather than dry. India ink is a traditional liquid drawing medium that dates back to India in the 4th century BCE. It is composed of a carbon black pigment water. India ink is usually applied with either a brush or with a nib pen. Ink and wash is a drawing technique used in traditional Japanese culture where India ink is applied with a brush and water. Thinning the ink with water, it is a way to create numerous and subtle values of gray.

This process can be used to create very sumptuous and smooth gradients of tonality. There are many Western fine artists who borrow the Japanese tradition of ink and wash in their work. The study of a fountain by Vincent van Gogh serves as a good example, the quick sketch by Rembrandt Van Rijn displays all the delicacy on this application of hair, even the dress of his sleeping subject.

The reason that ink and wash is considered drawing rather than painting is due to the fact that art uses tonality rather than colour. As we know before, drawings have been historically viewed as being inferior in some ways to paintings. Paintings are generally larger and more complex and concentrated on colour rather than value because of this many Western fine artists have used ink and wash as a sketching medium. India ink also be applied precisely with a metal tipped nib pen, the tip or nib has a grooved channel that allows the ink to flow to the paper, the nib must be constantly dipped in the equal to ensure the desired flow of ink working with an ink pen more even lines than the ink and wash technique. The predecessor to the new pen was a sharpened bird feather called a quill. Today artists don't need to dip pens or quills into an inkwell unless they really want.

Ink Pens

Now many different types of ink pens are available, with ink and a cartridge, built right into the shaft of the pen. Different types of ink pens will create different kinds of lines, fountain pens which resemble the shape of nib pens are known for the fluidity of their mark. Ballpoint pens have crisper more even lines and felt tip pens can be used to create broader types of marks. The American draftsman Andrew Gory used ink pens to create his twisted take on children's book illustrations even though his work looks like a style from a century

ago. He was indeed living in the late 20th century these pieces may even seem innocuous unless you read their captions B is for Basel assaulted by bears. Graphic media like cartoons and comic books will often be drawn using ink pens graphic artists appreciate the clean crisp lines that these tools can create. Older cheaper forms of printing were also unable to print variations in value beyond black and white. This is why artists who use ink pens to imply a volume need to utilize a form of hatching or stifling.

Felt tip

Felt tip pens are viewed as a type of wet media. The ink is immersed into felt strips inside the pen, at that point discharged onto the paper or other help through the tip. The ink rapidly dries, leaving a perpetual stamp. The colored marker drawings of Donnabelle Casis have a streaming natural character to them. The unique nature of the topic gathers body parts and viscera.

Different fluids can be added to drawing media to upgrade impacts – or make new ones. Craftsman Jim Dine has sprinkled pop onto charcoal drawings to make the surface rise with bubbling. The outcome is a visual surface not at all like anything he could make with charcoal alone, in spite of the fact that he is well known for his solid control and work. Dine’s drawings regularly utilize both dry and fluid media. His topic incorporates creatures, plants, figures and instruments, commonly swarmed together in thick, dimly sentimental pictures.

Types of Drawing:

Portraits



Title : Portrait of Maximilian

I Elector of Bavaria

Attribution : Joachim von

Sandart

Source : Extract of de:Bild:MaximilianI.jpg

Link : <https://commons.wikimedia.org/wiki/File:MaximilianI-Bayern.jpg>

Portrait drawings normally include the perfect profile and three- quarter profile. Cases incorporate 15th century portraits by Pisanello or Jan van Eyck, and in addition Durer's drawing of the superior Maximilian. Works of Jean and Francois Clouet in France and of

Hans Holbein in Switzerland and later in Britain have given an exceptional self-rule on portrait drawing, particularly when finished in chalk of different colours. In the 18th century, Quentin de La Visit, Francois Boucher, and Jean-Baptiste Chardin were noted types of chalk. Portraits were more attractive for the psychological parts of portrait art. Late 19th and 20th century portraitists supported the soft pastels that all the more rapidly mirrored their masterful skills.

Landscapes

By the 15th century, landscape drawings had turned into a satisfactory subject for individual drawing too, as showed by Jacopo Bellini's 15th century sketchbooks. Still, not until the approach of Durer toward the finish of the century was landscape completely regarded as its very own subject without reference to similar works. Drawings of his two Italian adventures -- of the area of Nuremberg and his trip to the Netherlands -- reflect the first flawless landscape drawings. Hundreds of years were to go before such flawless landscape drawings happened once more. Landscape components additionally showed up in sixteenth century German and Dutch drawings and illustrations, eminently those by individuals from the Danube School like Albrecht Altdorfer and Wolf Huber. Netherlandish Renaissance painter Pieter Bruegel - The Senior drew geographical perspectives and free landscape structures too, in both the cases as an autonomous works. In the 17th century, the landscape drawings of the Accademia Degli Incamminati, blended classic and legendary topics with courageous landscapes. What's more, Rome-based French classicists Claude Lorrain and Nicolas Poussin additionally created romanticized Arcadian landscape drawings. In the 18th century Italy, the geographically correct landscape drawing accomplished a high point with the approach of the Vedutisti, the view painters like the Venetians Canaletto (1697-1768) and Bernardo Bellotto (1720-80), and the Roman Giambattista Piranesi (1720-78).landscape drawings achieved a moment blooming in Britain amid the mid-nineteenth century on account of works by JMW Turner and Alexander Cozens, while in France the convention was exemplified by Camille Corot and, later, Van Gogh.

Figurative Genre Works

Of far less significance to independent drawing than portraiture and landscape, figure drawings are normally tightly associated with what was going on to painting as a rule. In this way, for instance, drawings of kind scenes were moderately common amid the 17th century Dutch realism School, in 18th century France and Britain, and in 19th century France.

Still Life

Still life drawings, outstandingly the portrayals of blooms, similar to those of the Amsterdam artist Jan van Huysum (1682-1749), have been well known as far back as the

17th century. In some of these works, the equality to painting is close; take for instance, the pastels of the nineteenth century French artist Odilon Redon (1840-1916), or the work of the twentieth century German Expressionist Emil Nolde (1867-1956), both of which cross the separating line amongst drawing and painting.

Fantasy Drawings

Drawing portraying is unbelievable, extraordinary or visionary subjects, for example, the incredible compositions of Hieronymus Bosch, have for quite some time been prevalent. See similarly the grotteschi of Raphael in the 16th century, the symbolic manual worker scenes by Pieter Bruegel, and the festival etchings of the 17th century French artist Jacques Callot. Other specialists whose drawings fall outside scene and likeness include the eighteenth century Italian engraver Giambattista Piranesi, the English Swiss artist Henry Fuseli (1781-1825), the nineteenth century English illustrator artist Walter Crane (1845-1915), the compelling French Symbolist artist Gustave Moreau (1826-98) and the 20th century surrealists.

Illustrations

The illustrative drawing does not possibly go past a basic pictorial clarification of a bit of content, yet even it might in any case fulfill the most elevated creative requests. Repeatedly, awesome artist have illustrated scriptural messages and in addition writing of numerous types. Popular cases, the 18th century German sculpture Daniel Nicholas Chodowiecki (1726-1801), the nineteenth century caricaturist Honore Daumier (1808-79), the nineteenth century visual artist Wilhelm Busch (1832-1908) best known for his rhyming picture stories (Max und Moritz), and the twentieth century Austrian Blaue Reiter painter and artist Alfred Kubin (1877-1959).

Caricatures

Related with illustrative drawing is the art of personification/caricature, which, by misrepresenting the visual qualities of a man or circumstance, makes a capably suggestive picture. This kind of symbolic drawing is exemplified by such illuminating presences as Annibale Carracci (1560-1609) - who initially start the word caricatura - Leonardo daVinci, Durer, and the Extravagant artist Bernini, and by social reporters like the 18th century Italian artist Wharf Leone Ghezzi (1674-1755), the 18th century English artist William Hogarth (1697-1764), the English caricaturist Thomas Rowlandson (1756-1827) who worked fundamentally in ink and watercolor wash, the nineteenth century Frenchman Jean-Ignace-Isidore Gerard, known as Grandville (1803-47), and possibly the best caricaturist of all, Honore Daumier.

Types of Ground

One can draw on practically anything that has a plane surface - level or not - including papyrus and material, fabric, skin, wood, metals, and glass. In any case, since the mid-fifteenth century, the paper has been the most well-known and most prevalent ground.

The technique for paper production remained intact for all intents and purposes, unaltered as far back as 2,000 years. A strong thick remainder of mulberry bark, bast, hemp, and linens pressed and dried in level molds. The presentation of wood mash in the mid-nineteenth century was not gone for art paper, since paper with a substantial wood content yellows rapidly and is in this manner ill- suited for drawing purposes. Initially, to give the paper an adequately smooth and even surface for composing or drawing, it was rubbed with a bone feast or gypsum chalk in a thin arrangement of paste and gum. Be that as it may, since the late 15th century, a similar impact has been accomplished by plunging the paper in a paste or alum shower. Shades and colors are as well added to the mash, with blue "Venetian papers" being particularly prominent. The 17th century supported half tints of blue - or gray, dark brown, and green assortments; the eighteenth favored warm colours like beige or ivory, alongside blue. Since the eighteenth century, drawing papers has been created in practically every possible colour and shade, while quality has additionally incredibly expanded.

Granulated and softer drawing actualizes, for example, chalk, charcoal, and graphite are not as reliant on a specific sort of paper (as, watercolors, pastels or pen, and ink); yet, in light of their slight glueyness, they regularly require a more grounded bond with the establishment and also some sort of surface security.

Unit Summary

In this unit you were introduced to basic types of drawing. You must be able to identify and use these techniques correctly, neatly and accurately. You find and build up a remarkable association with a wide range of drawing mediums -- from primitive charcoal to contemporary computerized drawing. The aim of the lessons is to give major of drawing and to likewise move you past the crucial ideas, to enable you to investigate the unlimited potential outcomes of check making and to create both one of a kind ways to deal with materials and your stylish basic leadership. The fundamental point of this unit is simply the longing to venture outside and find new imaginative ways. These drawing units are intended for all levels of drawing knowledge, in any case you approach central drawing procedures.

Assessment

1. Explain the concept and meaning of drawing
2. Explain what is art
3. Who are the best history painters
4. Classify different types of drawing media
5. When "modern art" begin
6. Describe contemporary art.
7. Who are the greatest portrait artists
8. What is fine art
9. Describe art Deco
10. What is figure drawing
11. Describe "fresco"
12. Define and apply the art vocabulary associated with pen and ink
13. State the benefits of using water colours
14. Describe the advantages of using oil paint
15. Define portrait

Resources

- <https://s-media-cache-ak0.pinimg.com>
- <http://mexicounexplained.com>
- <https://google.com>

Unit 3

Basics of Color Theory

Introduction

This unit is about the exploration of color theory. You will learn what color theory is, its history, different kinds of colors. However, essentially, the unit is concerned with the core principles and concepts of color theory, and understanding how to apply them to a character in order to create the animation.

Outcomes

Upon completion of this unit you will be able to:

- Know about color theory
- Introduction to color vision principles
- Elucidate about the history of color
- Understand about Interaction of colors
- Color expressions

Terminology

Hue: The apparent value of a color, the color itself.

Saturation of Chroma: The general power or splendour of a color.

Value: The delicacy or haziness of a color.

Tone: Addition of dim to an immaculate hue or color.

Shade: Addition of dark to an unadulterated hue or color.

Primary Color: The primary colors are Red, yellow, blue.

Secondary Color: The secondary colors are Cyan, Magenta, Yellow and Black.

Triadic: The three colors equidistant from each other on the color wheel (illustration: red, yellow and blue).

Optical Color: Color that individuals really see additionally called neighbourhood color.

Arbitrary Color: Colors picked by the craftsman to express emotions or state of mind.

Introduction to color theory

With colors you can set a disposition, draw in consideration, or create an impression. You can utilize color to invigorate, or to cool down. By choosing the correct color plan, you can make an atmosphere of style, warmth and serenity or you can pass on a picture of fun loving energy. Color can be your most capable component when you figure out how to utilize it viably.

Colors influence us from numerous points of view, both rationally and physically. A solid red color has been appeared to raise the circulatory strain, while a blue color has a calming impact. Having the capacity to utilize colors deliberately and concordantly can enable you to make fabulous outcomes.

History of color theory

The main color wheel was invented by Sir Isaac Newton. He split white sunlight into red, orange, yellow, green, cyan, and blue shafts. At that point, he joined the two closures of the color range together to demonstrate the normal movement of colors. Newton connected each color with a note of a melodic scale.

A century after Newton, Johann Wolfgang Goethe started studying mental impact of colors. He saw that blue delivers a feeling of coolness and yellow has a warming effect. Goethe made a color wheel showing the mental impact of individual color. He partitioned every one of the colors into two gatherings - the "in addition to" side (from red through orange to yellow) and the minus side (from green through violet to blue). Colors of the "in addition to" side create energy and brightness. Colors of the "minus side" are related with shortcoming and unsettled feelings.

The present form of color theory was produced by Johannes Itten, a Swiss color and craftsmanship theorist who was teaching at the School of Applied Arts in Weimar, Germany. Johannes Itten created 'color chords' and changed the color wheel. Itten's color wheel depends on red, yellow and blue as the primary set of three and includes twelve hues.

The Three Dimensions of Color

The 'Post-Impressionists', subsequent to acing Impressionist theory, tossed its strict application out of the window, with the exception of Cezanne. He supported warm-cool differentiations and complexities of color-saturation (level of virtue) to such an extent like inverse hues. In this manner, he re-attested basic characteristics of painting, utilizing high color, that were lost in favoring the complexity of hues over the other two measurements of color. It is an essential indication on how he utilized saturation to construct frame. To comprehend what Cezanne was doing, it is critical to remember the three measurements of color and four types of differentiation that they make accessible. The three measurements are:

1. Value (light-dim).
2. Hue (the wavelengths: green, red, yellow, and so forth.).
3. Saturation (virtue of color)

These measurements can be set in a three-dimensional model. Note that the color

circle is calculated in respect to the vertical value(brightness) scale with the goal that the unadulterated hues are set opposite to each other to their coordinating values.

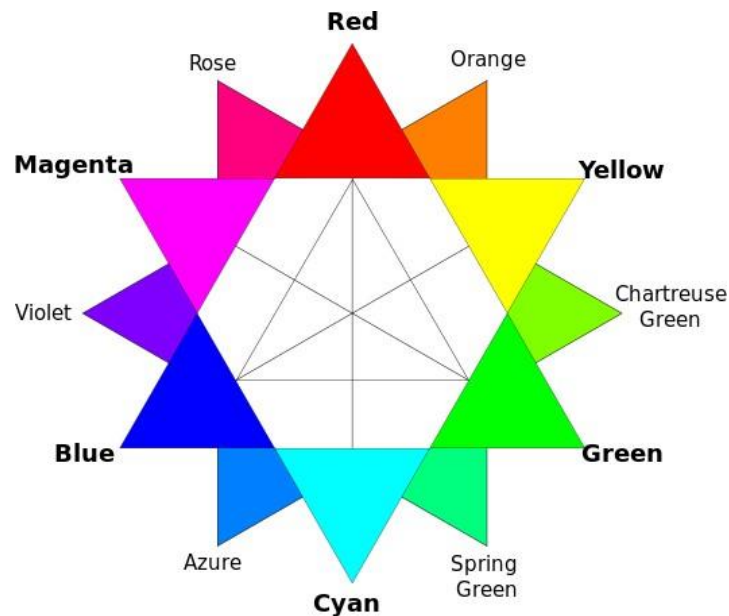
Each of these measurements gives a type of complexity:

1. Value: light versus dim
2. Hue: color versus its inverse
3. Saturation: killed color versus unadulterated color

Each of these differentiations, independently or together, can be utilized to assemble space and shape and to escalate lighting impacts. The last complexity accessible is the warm-cool differentiation. A warm-cool differentiation is really a component of hue as opposed to a different measurement.

Earle Loran, who distributed the conclusive work, "Cezanne's Compositions" attested that the canvases could be dissected on the premise of highly contrasting (value) outlines. His examination of the canvases on these grounds is splendid. In any case, it is deficient in light of the fact that he disregarded the way that Cezanne was forming with an advanced blend of value, hue and saturation.

The Color Wheel



Title : RGB Color wheel Attribution : DanPMK

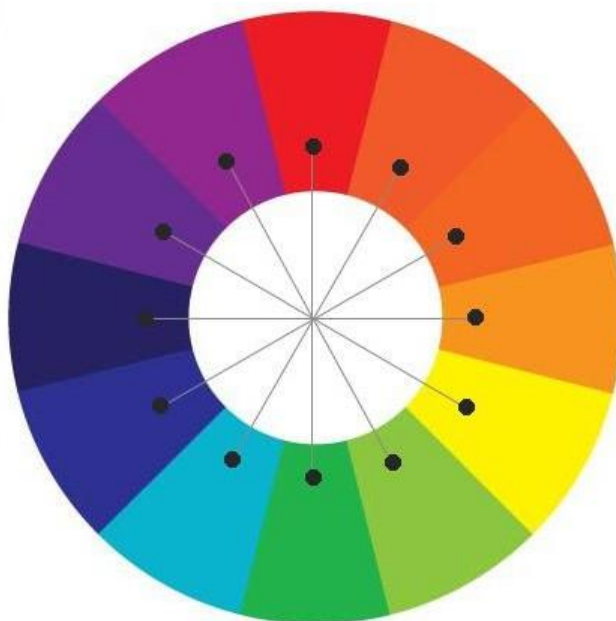
Link : https://commons.wikimedia.org/wiki/File:RBG_color_wheel.svg

The color wheel or color circle is the essential instrument for consolidating colors. The main circular color graph was planned by Sir Isaac Newton in 1666. The color wheel is outlined with the goal that for all intents and purposes, any colors you pick from it, will look great together. Throughout the years, numerous varieties of the essential outline have been made, yet the most widely recognized rendition is a wheel of 12 colors in view of the RYB (or creative) color model. Customarily, there are various color blends that are considered

particularly satisfying. These are called color harmonies of color harmonies and they comprise of at least two colors with a settled connection in the color wheel.

Traditional Color Theory

Complementary colors



Title : Complementary Colors Attribution : [Bababao](#)

Link : <https://commons.wikimedia.org/wiki/File:Complementary.jpg>

For the mixing of colored lightweight, Isaac Newton's color wheel is normally used to depict integral colors, the square measure colors that cross out each other's tint to supply relatively colorless (white, grey or black) lightweight blend. Newton offered as a guess, that colors exactly inverse each other on the shade circle dispose of each other's tone; this thought was incontestable a ton of absolutely inside the nineteenth century.

A key presumption in Newton's shade circle was that the "blazing" or most immersed tones are settled on the external perimeter of the circle, though colorless white is at the center. At that point the immersion of the blend of 2 ghastly shades was anticipated by the line between them; the blend of 3 colors was predicted by the "center of gravity" or center of mass of 3 triangle focuses, et cetera.

As per old color hypothesis bolstered subtractive essential colors and consequently, the RYB color model that originates from paint blends, yellow blended with violet, orange blended with blue, or red with green creates a comparable dim and are the painter's corresponding colors. These kinds of complexities are the possibility of Chevreul's law of color difference: colors that appear along are changed as though blended with the chromatic color of the inverse color. In this manner, a touch of yellow fabricated set on a blue foundation can appear tinted orange. Be that as it may, once integral colors square measure

picked bolstered definition by lightweight blend, they're not comparable on the grounds that the craftsmen's essential colors. This disparity winds up noticeably imperative once color hypothesis is connected crosswise over media. Computerized color administration utilizes a tone circle delineated round the added substance essential colors (the RGB color model), in light of the fact that the colors in an exceedingly PC screen, square measure added substance blends of daylight, not subtractive blends of paints.

Warm vs. cool colors



Title : Warm Cool Color Attribution : Oliver Harrison

Link : https://commons.wikimedia.org/wiki/File:ART_WARM_COOL_COLOR.png

The qualification amongst "warm" and "cool" colors has been imperative since 18th century. The refinement, as inferred by historical backgrounds inside the Oxford English Dictionary, shows up that a scene light-weight is the "warm" colors identified with sunlight or sunset and furthermore the "cool" colors identified with a grey or cloudy day. Hot colors square measures normally aforementioned to be tints from red through yellow, tans and browns included; cool colors square measures ordinarily previously mentioned to be the tones from blue green through blue violet, most grays encased.

Color theory creates a tangible action and mental impacts to the present refinement. Hot colors are said to progress or appear to be extra dynamic in an exceedingly painting, while cool colors have a tendency to retreat; utilized in inside style or form. Hot colors are said to excite or animate the watcher, though cool colors quiet and unwind. The vast majority of those impacts, which are genuine, will be ascribed to the upper immersion and lighter worth of warmth colors in comparable to chill shades. Subsequently, darker could be a dull, unsaturated hot color that a couple of people consider as outwardly dynamic or mentally stimulating.

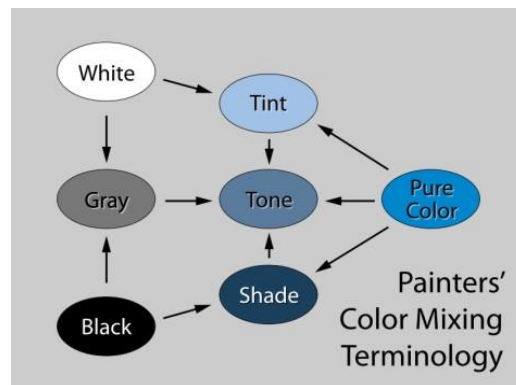
Achromatic colors

Any shading that needs solid chromatic substance is said to be unsaturated, colorless, close unbiased. Close neutrals incorporate browns, tans, pastels and darker hues. Close neutrals can be of any hue or lightness. Unadulterated colorless or unbiased hues incorporate black, white and all grays.

Close neutrals are acquired by blending unadulterated hues with white, black or gray, or by blending two reciprocal colors. In shading hypothesis, impartial hues are effectively

changed by adjoining more immersed colors and they seem to go up against the tone reciprocal to the soaked shading; e.g.: beside a splendid red sofa, a gray divider will show up particularly greenish.

Tints and shades



Title : Tint-tone-Shade Attribution : [Jacobolus](#)

Link : <https://commons.wikimedia.org/wiki/File:Tint-tone-shade.svg>

A tint is the blend of a color with white, which builds lightness, and a shade is the blend of a color with black, which reduces lightness. A tone is created either by the blend of a color with gray, or by both tinting and shading. Blending a color with any impartial color (counting black, gray and white) reduces the chroma, or colorfulness, while the hue stays unaltered.

The expression "shade" can be summed up to besides incorporate any assortments of a specific color, regardless of whether in fact they are shades, tints, tones, or marginally unique hues; while the expression "tint" can be summed up to allude to any lighter or darker variety of a color.

When blending colored light (added substance color models), the colorless blend of frightfully adjusted red, green and blue (RGB) is not gray or black, it's constantly white. When we blend colorants, for example, the shades in paint blends, a color is delivered which is constantly darker and brings down in chroma, or immersion, than the parent colors. This pushes the blended color toward an impartial color—a gray or close black. Lights are made brighter or dimmer by changing their brilliance, or vitality level; in painting, lightness is balanced through blend with white, black or a color's supplement.

Split primary colors

In painting and other visual expressions, two-dimensional color wheels or three-dimensional color solids are utilized as apparatuses to show tenderfoots the fundamental connections between colors. The association of colors in a specific color model relies upon the reason for that model: a few models indicate connections in view of human color observation, though others depend on the color blending properties of a specific medium, for

example, a PC show or set of paints.

This framework is as yet prevalent among contemporary painters, as it is fundamentally a rearranged rendering of Newton's geometrical dictate that colors nearer together on the tone circle will create more dynamic blends. Notwithstanding, the scope of contemporary paints accessible, numerous craftsmen just add more paints to their palette as craved for an assortment of viable reasons.

Color Harmony

Harmony is nature's method for saying that at least two things together bode well. Color harmony speaks to a fantastic adjust or solidarity of colors. Mixes of colors that exist in harmony are satisfying to the eye. The human mind recognizes the visual intrigue and the feeling of request made by the harmony and structures a dynamic equilibrium. Experts have particular thoughts in light of the standards of color hypothesis and color brain research of color mixes that are tastefully engaging and lovely. The accompanying calculated model shows this 21st century way to deal with color harmony:

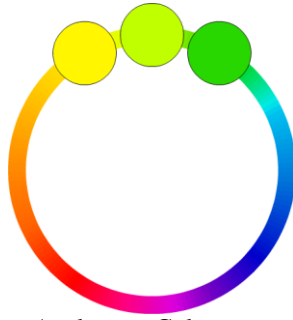
$$\text{Color harmony} = f(\text{Col}1, 2, 3, \dots, n). (\text{ID}+\text{CE}+\text{CX}+\text{P}+\text{T})$$

Wherein color harmony is a function (f) of the cooperation between color/s (Col 1, 2, 3,..., n) and the components that impact constructive stylish reaction to color: singular contrasts (ID, for example, age, sexual orientation, identity and full of feeling state; cultural encounters (CE), the context (CX) which incorporates setting and surrounding lighting; interceding perceptual impacts (P) and the impacts of time (T) as far as overarching social patterns.

Color Harmonies: Basic techniques for creating color schemes

Furthermore, given that people can see more than 2.8 million distinct tones, it has been proposed that the quantity of conceivable color mixes is for all intents and purposes limitless in this way suggesting prescient color harmony formulae are in a general sense unsound. Despite this, many color scholars have concocted formulae, standards or rules for color mix with the point being to anticipate or determine constructive tasteful reaction or "color harmony". Color wheel models have frequently been utilized as a reason for color blend standards or rules and for characterizing connections between colors. A few scholars and specialists trust juxtapositions of reciprocal color will deliver solid difference, a feeling of visual pressure and in addition "color harmony"; while others trust juxtapositions of comparable to colors will inspire positive stylish reaction. The following demonstrate the essential color harmonies in view of the color wheel.

Analogous color Scheme



Title : Analogous Colors

Attribution : Trond Grøntoft

Link : <https://commons.wikimedia.org/wiki/File:AnalogousColors.png>

Practically equivalent to color plan tend to create a solitary tinted or monochromatic color involvement and a few scholars likewise allude to these as "basic harmonies".

Undifferentiated from color plans are frequently found in nature and are agreeable and satisfying to the eye. Ensure you have enough differentiation while picking a comparable to color plan. Pick one color to command, a moment to help. The third color is utilized (alongside black, white or gray) as a highlight.

Complementary Color Schemes

Integral color plans normally delineate an adjusted corresponding pair, with rather than the "genuine" second color being picked, a scope of comparable to tints around it are picked, i.e. the split supplements of red or green.

The high differentiation of corresponding colors makes an energetic look, particularly when utilized at full immersion. This color plan must be overseen well so it is not jostling. Reciprocal color plans are dubious to use in expansive dosages, yet function admirably when you need something to emerge. Correlative colors are truly terrible for content.

Triadic Color Scheme

Triadic color plan receives any three colors roughly equidistant around a color wheel demonstrate. Triadic color plans have a tendency to be very lively, regardless of the possibility that you utilize pale or unsaturated adaptations of your shades. To utilize a triadic agreement effectively, the colors ought to be deliberately adjusted - given one color a chance to command and utilize the two others for highlight.

Split-Complementary Color Scheme

Split-Complementary color plan is a variety of the complementary color plan. Notwithstanding the base color, it utilizes the two colors contiguous its supplement. This color plan has an indistinguishable solid visual complexity from the complementary color plan, yet has less pressure. The split-complimentary color plan is frequently a decent decision

for apprentices, since it is hard to botch up.

Rectangle (tetradic) Color Scheme

The rectangle or tetradic color plan utilizes four colors organized into two integral sets. This rich color plan offers a lot of potential outcomes for variety. Tetradic color plans works best on the off chance that you let one color be dominant. You ought to likewise focus on the harmony amongst warm and cool colors in your outline.

Square Color Scheme

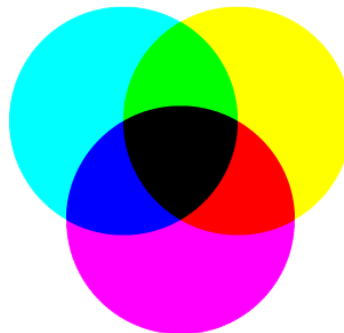
The square color plan is like the rectangle, however, with every one of the four colors dispersed equally around the color circle. Square color plans works best on the off chance that you let one color be dominant. You ought to likewise focus on the harmony amongst warm and cool colors in your outline.

Color Physics (Newton, 1676)

1. A triangular prism scatters white sunlight into a range of colors (rainbow): Red, Orange, Yellow, Green, Blue, Dark blue and Violet. Each shade (color) can be precisely characterized by indicating its wavelength of recurrence. The light waves are discolored. Color emerges in the human eye and cerebrum. Each ghostly tone is the supplement of the blend of the various otherworldly tones.
2. Light produces the color: Colors are the offspring of light, and light is their mom. A question does not have any color in itself. A red question looks red on the grounds that the particle constituting its surface retains every other color of light, and reflects just red.
3. Color temperature:
Standard Incandescent = Temperature 2700 Kelvin Halogen = 3000K
Tungsten = 3200K Fluorescent = 4200K Daylight = 5000K

Color Process

1. Subtractive Color (reflected pigment)



Subtractive Color

Title : Subtractive Color

Link : <https://commons.wikimedia.org/wiki/File:SubtractiveColorMixingII.png#file>

Color coming about is because of retention of light. Their blends are administered by the run of subtraction. All color, when blended in specific extents, the subtractive outcome is black. (Pigmentary, objects, printed matter and CMYK color) there are three primary shades red, yellow and blue that can consolidate to acquire all other color tints.

(Primary color of Pigment) Cyanine (Blue) + (Primary) Magenta =

(Secondary) Violet

(Primary color of Pigment) Magenta (Red) + (Primary) Yellow =

(Secondary) Orange

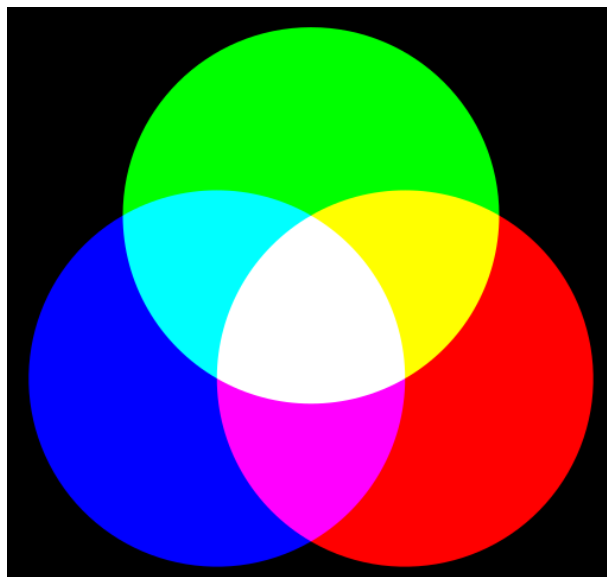
(Primary color of Pigment) Yellow + (Primary) Cyanine =

(Secondary) Green

Blend of 3 primaries of reflected shade: Black (Brown)

Reciprocal + Complementary = Gray

2. Additive Color (projected light or reflected light):



Addictive Color

Title : Additive Color

Source : [mage:Synthese+.svg](image:Synthese+.svg)

Link : <https://commons.wikimedia.org/wiki/File:AdditiveColorMixiing.svg>

All colored light, when blended in specific extents, the added substance result in white. Color coming about is because of projection of light. (TV screen, PC screen and RGB color)

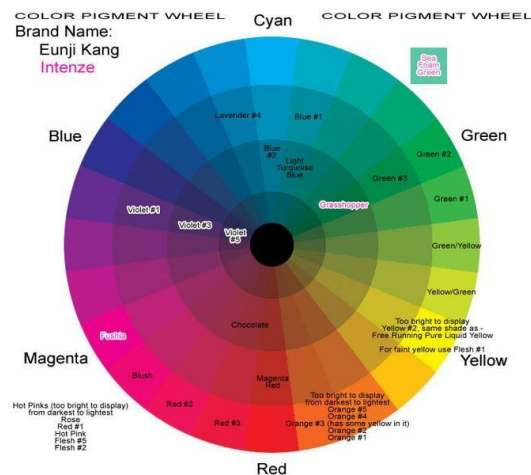
(Primary color of light) Red + (Primary) Green = **(Secondary)** Yellow

(Primary color of light) Green + (Primary) Blue = **(Secondary)** Cyanine

(Primary color of light) Blue + (Primary) Red = **(Secondary)** Magenta

Mixture of 3 primaries of projected light: White

Color Wheel of the Pigment Color (misleadingly increased range, included purple)



Title : Color Pigment

Attribution : [Stib](#) at [English Wikipedia](#)

Source : [Methecooldude](#) using [CommonsHelper](#)

Link : https://commons.wikimedia.org/wiki/File:Color_Pigment.png

Color Contrast

Much the same as for difference of structures the figure-ground relationship is essential for differentiate in color. The color distinction between a subject (or figure) and its encompassing field (ground) makes differentiate - the more difference between a figure and the ground, the more unmistakable it progresses toward becoming.

Difference of color comes in two essential assortments, esteem differentiates (light versus dull color) and tone differentiates (contrast in color tint). Yet, there is more to color complexities. In his two surely understood books, "The Art of Color" and "The Elements of Color," Itten expounds on the viability of color associations regarding seven particular color differences as we'll see next.

What is Itten's Color Contrasts?

Contrast of tint: Difference between tones, for example, yellow, blue and red.

1. Light-dim complexity: Black and white, night and day, dim gray and light gray. The differentiate is shaped by the juxtaposition of light and dim esteems. Additionally compelling as a monochromatic creation.
2. Cool-warm differentiation: Red, orange yellow (warm) stood out from blue, green and dark colored (cool).
3. Complementary differentiation: Opposing colors on the color wheel which make maximum complexity; yellow, violet, blue, orange, red, green.

4. Simultaneous difference: Contrast when the limits between colors perceptually vibrate here and there making fascinating deceptions. This is an impact that happens when two adjoining colors upgrade or reduce their optic immersion:
 - White looks more white when encompassed by darker esteem.
 - Gray seems more extreme when encompassed by lighter esteem.
 - Colors can seem lighter or darker relying upon their encompassing quality and shade.
5. Difference of immersion: Contrast between immaculate, extraordinary colors and more nonpartisan, pale colors.
6. Difference of augmentation: Involves allotting numeric properties to color and then utilizing them in measuring relative sums by each other.

Color Expressions

The accompanying colors summon certain implications in this culture. These subliminal observations, natural idea and positive information ought to dependably work together. They bear some broad truth, yet may shift in various social orders. They are identified with the mental domain, mental and enthusiastic experience of the watcher.

Red

Red stands for the color of flame and blood, and is related with war, vitality, quality, peril, control, assurance, enthusiasm, longing, and love. It is a sincerely serious color, and improves human digestion, expands breath rate, and raises circulatory strain. It has high perceivability, which is the reason stop signs, stoplights and fire hardware are typically painted red. In heraldry, red is utilized to show mettle. It is a color found in numerous national banners.

Orange

Orange joins the vitality of red and the satisfaction of yellow. It is related with euphoria, daylight, and the tropics. Orange speaks to energy, interest, satisfaction, innovativeness, assurance, fascination, achievement, consolation, and incitement.

Yellow

Yellow stands for the color of sunshine and is associated with happiness, joy, intellect and energy. Yellow produces a warming effect, arouses cheerfulness, stimulates mental activity, and generates muscle energy. Yellow is often associated with food. Bright, pure yellow is an attention getter, which is the reason why taxicabs are painted this color. When overused, yellow may have a disturbing effect; it is known that babies cry more in yellow

rooms. Yellow is seen before other colors when placed against black; this combination is often used to issue a warning. In heraldry, yellow indicates honor and loyalty. Later the meaning of yellow was connected with cowardice.

Green

Green is the color of natural world. It is a symbol of development, concordance, freshness and fruitfulness, and has compelling enthusiastic correspondence with security. Dull green is additionally normally connected with cash. Green has awesome recuperating power. It is the most serene color for the human eye; it can enhance vision. Green recommends steadiness and continuance. Some of the time green signifies absence of experience; for instance, a "greenhorn" is a tenderfoot. In heraldry, green shows development and expectation. Green, instead of red, implies wellbeing; it is the color of free entry in street movement.

Blue

Blue is the color of the sky and ocean. It is regularly connected with profundity and soundness. It symbolizes put stock in, dedication, shrewdness, certainty, insight, confidence, truth, and paradise. Blue is viewed as advantageous to the brain and body. It moderates human digestion and produces a quieting impact. Blue is unequivocally connected with serenity and tranquillity. In heraldry, blue is utilized to symbolize devotion and earnestness. You can utilize blue to advance items and administrations identified with cleanliness (water purging channels, cleaning fluids, vodka), air and sky (carriers, air terminals, aeration and cooling systems), water and (ocean voyages, mineral water). Instead of sincerely warm colors like red, orange, and yellow; blue is connected to cognizance and acumen. Utilize blue to recommend accuracy while advancing cutting edge items.

Violet

Violet consolidates the soundness of blue and the vitality of red. Violet is related with sovereignty. Violet is a baffling, reflective, enthusiastic, devotion color and the color of poise. Its tints symbolize the brighter parts of life, while shades speak to the dim, negative powers and dread.

White

White stands with light, guiltlessness, goodness, immaculateness and virginity, and is the color of flawlessness. White means security, virtue and cleanliness. Rather than dark, white as a rule has a positive meaning. White can speak to a fruitful start. In heraldry, white delineates confidence and virtue.

Black

Black is related with control, style, convention, passing, abhorrence, and riddle. Black is a secretive color related with fear and the obscure (black gaps). It normally has a negative essence (blacklist, black cleverness, 'black demise'). Black means quality and specialist; it is thought to be an extremely formal, rich, and esteemed color (black tie, black Mercedes). In heraldry, black is the image of distress.

Black gives the sentiment viewpoint and profundity, however, a black foundation reduces decipherability. When planning for an exhibition of workmanship or photography, you can utilize a black or dim foundation to make alternate colors emerge. Black stands out well from splendid colors. Consolidated with red or orange – other intense colors – black gives an exceptionally forceful color plan.

Meaning of Color in Different Geographical Locations

Colour is prompt correspondence. It genuinely is the main language, other than music, that doesn't require any words. Is it any ponder that color is utilized as a part of images and signs everywhere throughout the world! You might not need to know how to peruse to see the red stop sign or perceive a yellow posted warning in the United States. We can talk about light in a wide range of viewpoints. It has its material science and arithmetic appearances. We can talk about color as far as light and vitality. By a long shot the most significant dialog of color we can have is in the impression of color. Color, similar to style, feel or even nourishment inclination is to a great extent impacted by the way of life we live in. In the United States for instance, red means risk; in China it implies bliss and celebrations; in Japan, it stands for outrage; in the Middle East, it implies insidious. Know your essential crowd. Know how colors are seen in every nation and culture.

Unit Summary

The focus of this unit lies in as you build up your own designs, remember that shading is subjective and shading decisions will most likely be made in a joint effort with your customers. Differentiation in esteem, and also shading, assumes a critical part in design. Confide in your intuition and in addition theoretic information while applying shading, and recall that shading is only one of the variables in your design. It ought not to be utilized to just "enhance" highly contrasting structures. It should add something meaningful to your message, for example, setting the state of mind, introducing social meaning, or connecting through unconstrained relationship with your watchers.

Assessment

- What is a color wheel and what the purpose?

- What does primary color mean?
- Define secondary colors? How are they produced?
- What do tertiary colors mean and how are they produced?
- Distinguish between complementary and analogous colors From where each one is obtained on the color wheel?
- What does color contrasts mean and why is the importance of it?
- How to define color dominance in design.
- Distinguish between hue contrast and value contrast. Which is more critical in design of websites among them?
- You can deliver shading contrasts yet not really esteem contrasts. Clarify how this functions and give cases.
- Define color context and what is the importance
- Describe simultaneous contrast and how to use it in design
- Distinguish between warm and cool colors
- What does saturation mean
- How does type and readability is related to color? What is the main aspect of choosing type color?
- What is Gamma? What is gamma correction?
- Describe hue, brightness and saturation? Distinguish between them
- Define GIFs and JPGs. Distinguish between these two? How to use each one and why

Resources

- <https://s-media-cache-ak0.pinimg.com>
- <http://mexicounexplained.com>
- <https://google.com>

Unit 4 Incorporating Sound into 2D

Animation

Introduction

is for individuals who wish to make a career in sound

This unit is about the exploration of sound in 2D animation. Sound is very important like any visuals in an animation. Whether you're looking to make a score, surrounding noise, discourse, or a total soundtrack, you'll require sound for your piece. This unit incorporates sound for animation. It will explain the theory and working behind sound for picture, and will give a diagram of the frameworks and generate way to enable you to make your soundtrack. Figure out how to utilize the devices and procedures of the exchange. Improve your piece and figure out how to configure sound for animation.

Outcomes

Upon completion of this unit you will be able to:

- Explain why audio is so important in animation
- Explain the process for digitizing sound
- Understand the important audio components
- List sources for audio clips
- Describe the functions of audio components
- Explain the considerations when using audio in animation

Terminology

Magnetization : "Mental pan" of the sound medium.

Pitch: The apparent "highness "or "lowness" of the sound

Mouth chart: A graph in light of the eight activity phonemes (A & I, E, U, O, F & V, L, M and Q which is utilized to speak) utilized for lip-match up.

Sound scrubbing: A procedure that gives you a chance to hear sound progressively while you advance the play head or in reverse. This is extremely helpful for fine-tuning a lip-synchronize.

Synchronous: The mental combination between a sound and a visual when these happen at the very same time.

Composer: Individual in charge of composing and masterminding the melodic substance of the film.

Recording session: The occasion amid which a film's soundtrack is recorded.

Incorporating Sound into 2D Animation

Sound can be an imperative part of any animation medium and a significant component of specific applications. For instance, consider how troublesome it is to examine a foreign language dialect without hearing how the words are articulated; Sounds can be joined with animations to make temperaments, improve understandings, fortify ideas, and enable the client to work through the applications.

Essential audio components

Each film and animation consists of three types of different audio components. These are music, dialogue and sound effects. In silent films the dialogue is missed out, still sound effects and music make it interesting. Dialogue is more essential content than playback audio.

Music

First of all you have the music. This incorporates all the background music that officially isn't a part of the film. It can add a real emotional layer to a film. There has been a great deal of impact of music and sound. We as a whole know the minutes that make us hop, or the minutes that make us cry. Unknowingly, music has a huge impact in that we experience in a motion picture. You can really change the setting and disposition of a scene by utilizing different music.

The music in movies is called film score. Creating for film is its very own train. Much the same as writing a catchy pop song, there are certain rules you can use to make a great sound track. There are a couple of styles you have to know. One of them is traditional ensemble orchestra. It doesn't make a difference what the genre of the film is -- almost every sort utilizes an ensemble orchestra. This means as a composer you have to have the capacity to write music for different instruments.

Some huge film composers are AR Rehman, Vishal-Sekhar and Salim-Suleman. For instance, Vishal-Sekhar really knows how to make music dramatic and emotionally charged. It's important the music really enhances the story that is being told.

In Ra-One, you erase the music from the last scene and just leave in some stable impacts. The scene totally changes from being heroic to being very awkward and boring. This really indicates how music can totally change a film.

Sound effects

The sound impact is one that truly makes the feel of the story being told. It's the rain out of sight, the strides on wood, an entryway that closes, and so forth. Without the sound impacts a film or animation wouldn't feel practical. Particularly for animation, this is the part

that needs a ton of work, since you don't have any sound in any case. With films, they frequently can utilize a considerable measure of sounds that are recorded while filming. Some should be supplanted by reproduced sounds, in light of the quality. They must be reproduced, which is frequently done in a studio and is called Foley. There are whole studios where Foley specialists will reproduce sounds and match them to the pictures in the film.

'Foley is the generation of ordinary sound impacts added to film, video and other media in after creation to improve sound quality' . It's a decent approach to include the inconspicuous sounds that a creation mouthpiece regularly misses. Be that as it may, for animation, you need to make each and every thing in the film that makes a sound.

As indicated by Tom Meyers, you can't generally record sounds in the "genuine" world, since you frequently can't control these sounds. He says that each solid has two segments, the exacting part and the enthusiastic segment. From one perspective it must be reasonable, however, on the other it additionally needs to get a specific feeling over. 'The sound outline doesn't need to thump you over. It is there to upgrade your experience. To keep you inside the story, and the occasion.'

Adjacent to the enthusiastic layer, a few sounds you can't simply basically reproduce for basic reasons as wellbeing. You can't simply crash an auto each time you require a sound of an auto collision. This is for example why they regularly utilize a watermelon at whatever point they need the sound of a human head being crushed in. You likewise don't need to reproduce each solid yourself; there are great deals of sound impact libraries you can use. You frequently need to pay for this, yet there are likewise as of now a considerable measure of free stable libraries.

History

The primary animations utilized a considerable measure of instruments to make the sounds. The recording hardware was enormous -- just go outside to record sound. We most likely all recall those old Mickey Mouse animations where you would for example hear some kind of cymbal crash when somebody was hit on the head (which is presently called 'Mickey Mousing'). When you consider it, it isn't reasonable in any way, yet it adds a specific layer to a film that makes it more sensible than when you wouldn't utilize any stable impacts.

Afterward, when animations turned out to be more famous, the sound originators became more inventive also. There are cases of sound fashioners, who might trigger whole establishments to make a particular sound. For example, they would have a 'rain- machine' that reproduced the sound of rain without utilizing any water. These days, the systems are obviously much more progressed; however, still in some cases they utilize the most bizarre establishments or articles to make sounds.

In short there are "just" three sound parts you need to consider while doing sound outline: discourse, music and sound impacts. Obviously, there is far more to that than simply recording it and putting it under a scene. You must be cautious that a scene doesn't end up plainly one major tumult with all these diverse sounds. You need to locate the correct adjust. A major piece of sound outline is quite recently attempting a variety of things. These include exploring different avenues regarding recording distinctive sounds, assembling the men tuning in to them again and again until the point you locate the ideal blend.

Functions of each component

Non-diegetic and Diegetic

Sound can be divided into two types like diegetic and non-diegetic sound. Diegetic originates from the Greek word diegesis, which signifies 'described story'. This needs to do with whether the wellspring of the sound is "noticeable" in the realm of the film or not. Exchange amongst performing artists and sound impacts like strides, are diegetic sounds since they exist in the story itself. The source doesn't really need to be unmistakable; it could likewise be a rescue vehicle siren out of sight.

Cases of non-diegetic sounds are music (score), a voiceover and other sound impacts that are for instance included for a more emotional impact. So, all sound we can listen, yet the characters in the film can't. We include an additional layer that aides the gathering of people through the film. Utilizing both diegetic and non-diegetic sounds will "appear" on the outside and within an occasion at the same time.

Functions of Audio Component

Toward the end, every one of the parts will meet up and make one major sensible condition that will ideally take you away to another universe for 90 minutes. Each bit of sound has its own particular capacity in doing this. In this unit it turns out to be all the more clear why you would utilize these diverse sounds and how you can utilize them to achieve a specific objective you have.

Dialogue

Dialogue has a few capacities that are very vital to make a decent story. However, it's more about substance than it is about sound. As indicated by Ellen Jackson, discourse has the accompanying six capacities:

- Revealing the characters
- Giving important data
- Moving plot along
- Showing the possibility of one character about another

- Reveal strife and construct pressure
- Show how somebody feels.

Dialogue is more about substance, yet these things are essential and can (mostly) not be proficient by the other sound parts. Composing discourse is really hard and is about what you do and you would prefer not to uncover to the group of onlookers.

Music

One of the greatest elements of music is adding an additional enthusiastic layer to the film. As per Robin Hoffman, music has 17 unique capacities. Here are a couple of them that show in what ways you can utilize music.

Most importantly, it truly pushes the crowd in a specific bearing. With music you can infer that a scene is courageous or that somebody is feeling dismal. Now and again individuals can locate this irritating on the grounds that it takes their capacity to judge something for themselves away.

Music can likewise be utilized as a purported leitmotif. This is tied in with giving a character a specific personality that can be utilized through the whole film. When you hear this subject later on in the film, you will realize that they are discussing that character.

It's likewise conceivable to inform all the more concerning social/social/geographic condition and the time/time frame the scene is set in. This should basically be possible by utilizing unmistakable music from a day and age or from a specific nation or culture.

Something else is that music can likewise associate scenes. Without the music a scene may appear to be disorganized on account of a great deal of hops. The music pastes everything together and makes it more justifiable all in all.

You can truly control or underline something in a scene by utilizing the correct music. You can for example, utilize repudiating music or substitute the impression of time by changing the rhythm. Things can turn out to be more terrifying or amusing and you can absolutely change the presence of a character. There are great deals of things you can do with music.

Sound effects

Sound impacts are particularly truly essential for animation. This is the part where you are truly going to make that condition. Sound impacts have three primary capacities. These are:

- **Creating illusion**

With sounds you can demonstrate individual things that aren't straightforwardly appeared in the scene. When you hear planes out of sight you will get an entire other thought of nature than when you hear youngsters snickering.

- **Creating mood**

You can likewise thoroughly change the state of mind of the scene through foundation sounds, this can likewise change the temperament and climate. Flying creature sounds will set an unexpected air in comparison to stormy climate.

- **Simulating reality**

This is tied in with finding the correct sounds that fit the activities occurring on the screen. When you see an entryway pummelling you would prefer not to hear an entryway being closed tenderly. The group of onlookers needs to trust that what they see is genuine, sound has a major impact in fulfilling that.

Effects of sound on humans

Sound is something that we're quite often encompassed by and we unwittingly respond to. Normally solid influences us physiologically, by making us deliver certain hormones, raising our circulatory strain, our heart rate and brainwaves. For example, startling noisy sounds will make us hop since it will make us go into battle or-flight mode. On the opposite side, trilling winged animals will make us feel loose. The best sort of music, contingent upon the individual obviously, is regularly recently basic feathered creature sounds.

Emotions

For film, the passionate impact of music is the most vital. A most pleasant aspect regarding music is that is basically a general dialect. Each culture on the planet has music, and in spite of the fact that this may vary especially from what we know, there are a couple of things that are truly all inclusive. The two essential feelings: joy and pity. Cheerful music is higher pitched, has more vacillations in cadence and pitch and a quicker beat. The inverse of this is viewed as dismal music.

Infrasound

This is a sound beneath 20Hz, which is underneath the level of what people can listen. Be that as it may, what is fascinating is in spite of the fact that we can't generally hear it, we do respond to it. These sounds can make sentiments of dread, distress and even dejection. These sounds are made by a ton of characteristic things. A few creatures can deliver infrasound, additionally quakes, vibrating channels in your storage room, atomic blasts, and so forth.

Presently, how is this associated with film? There are hypotheses circumventing that some blood and guts movie have utilized these sounds to upgrade the experience. Paranormal activity is one of the films that have transparently conceded on their site to have utilized infrasound in specific scenes. In the event that it truly works, it's a truly decent approach to

give an additional measurement to a film.

Considerations in using sound

The accompanying ought to be considered when utilizing sound in any media application:

1. Appropriateness
2. Intended audience

Appropriateness

Utilizing sound can upgrade most mixed media applications. Without a doubt, sounds are fundamental for specific applications, for example, instructive titles that educate remote dialects or music.

Notwithstanding, the simplicity with which sounds can be gotten and joined into an application may make a designer abuse sound as a segment and to incorporate "charming" sound impacts that end up diverting or irritating a client.

Intended audience

For a few people, understanding an idea is less demanding when sound is utilized. Envisioning how the target group will react to different sounds can control the decision of which sounds to utilize. For instance, grown-ups may react superior to anything kids to the utilization of traditional music as a foundation sound.

Lip Sync and Mouth Chart

Lip-sync – 1

In full animation, it is critical for a character to emulate. When S/he is talking, thus his emulating must be once in a while synchronized to the soundtrack. Exchange is perpetually recorded before creation and the planning of it is passed to the artist as a phonetic breakdown. It is likewise critical that the illustrator ought to have a duplicate of the track on tape, with the goal that he can hear it out more than once until the example of accentuation, the ascent and the majority of the voice, and so forth, is clear in his psyche. It is once in a while valuable to demonstrate this. The phonetic breakdown by methods for a line which moves left and perfectly fine voice falls and rises and winds up noticeably thicker and more slender as per the level of accentuation.

Lip-sync – 2

The initial step is to make the character's activities fit his/her words. On the off chance that s/he is forceful, s/he will tend to push himself forward and strengthen certain focuses with signals. In the event that s/he is timid, he may shrivel away and talk conciliatory and in the event that s/he is cunning he may put on a show to grin, while giving speedy looks

to see the response to his/her words et cetera.

The second step comprises moving the character's lips and maybe the lower some portion of the face, to fit the edge by outline phonetic breakdown of the discourse on the presentation diagram. Here it is vital to listen over and over to the way the exchange is talked. In a typically talked sentence, there are generally a couple of complemented vowel sounds and whatever is left of the words are of lesser significance. Play the soundtrack again and again until the example of accentuation, the ascent and fall of the voice and so on, is clear. At that point design the lip match up to comply with this example in visual terms. As of now specified, mass-delivered TV arrangement the exchange conveys the focal enthusiasm of the film and there is basically no animation separated from the mouth. This is not adequate in different sorts of generation and it is along these lines imperative to guarantee as a matter of first importance that the mouth, eyes and different elements of the face should express the significance of the exchange. The hands ought to likewise be utilized for accentuation. Thirdly, the body itself ought to be utilized to underline the substance. The three components have obviously to be firmly organized.

Lip-sync – 3

Once the fundamental planning of the mouth development is worked out, the following stage is to consider how the outward appearance, head development and body motions can underline and add to the significance and enthusiasm to the exchange.

In the main discourse of Old Major in Animal Farm, it was particularly essential to pass on the message of this character to the gathering of people, since the entire film was spurred by it. The outward appearance needed to express the figure's genuine worry, as well as a sickly character, physical agony too. The whole body of the pig was enlivened while its face, eyes, mouth, nose and the facial wrinkles passed on the feelings of the character.

It is not fundamental to energize all vowels and consonants as far as single edges. Particularly in TV diversion arrangement, where speed of creation is basic around eight places of mouth and tongue are sufficient.

Lip match-up is the most critical idea in animation, since the aggregate animation depends on energizing discoursed. Dissimilar to live activity, discourse can't be recorded after creation. In animation a discourse must be recorded first and energized. That implies artists should design the activity and acing of the character as indicated by the exchanges. Utilizing programming like Magpie, a discourse can be part into outlines so a track peruser can get the length of the exchange. Same exchanges will be composed on the introduction sheet alongside the edges. This implies the exchange can be measured with the casings.

Once the length of the exchange winds up noticeably clear, particular mouths will be

included for every last casing. Each expression of the exchange will be part into the coordinating mouth shapes. A mouth diagram, of mouth shapes for each character will be set up in the pre-generation organize itself. There are 11 essential mouth shape utilized as a part of animation.

In pre-creation arrange, the Story Board craftsman will design the acting part as per the discourse and scene tweak. Executive or key illustrator energizing that specific scene will design situating the fundamental key drawings on to the introduction sheet with key positions said with reference to casings and sound. Presently, activity is determined to the introduction sheet. At that point an artist assumes the part of producing all drawings required to fill the entire presentation sheet. On the keys he will specify which mouth ought to show up on what drawing. The collaborator artist will take after a similar guideline and produce the mouth shapes for in-betweens.

Synchronizing animation to speech

Not at all like real to life movies, where the discourse is at the same time recorded with the action, in animation it must be recorded beforehand so the development can be fitted to it unequivocally. It is a fundamental preproduction operation that can't be left until after the fulfillment of animation.

Once the soundtrack is accessible either on tape or optical movies, the sort and character of the voice can be investigated through the utilization an of synchronizer (16mm or 35mm) and outline by outline timing guide for the animation can be made. This should be possible either on the introduction diagram, where there is an uncommon section for it, or on a different outline. In either case, it must be done as far as casing investigation. No two-discourse exhibitions are the same. Indeed, even single words like 'you', "yes", "its", "had" can differ considerably when examined as far as partitioned outlines. Such data is the premise of fitting animation to sound.

Initially, listen painstakingly to the soundtrack and specifically to the inclination behind the path in which the words are talked. At that point, tune in to the stating and beat of the discourse and discover the places of the principle accentuations and catchphrases. Design the developments of the character's body, head, arms and so on, to fit the words and the path in which they are being stated, to strengthen the emotional impact. Attempt to accentuate the principle purposes of the discourse with the entire body, if time and spending grant it. In animation, the significance of exchange ought to be to some degree overemphasized, particularly in an engaging film.

Audio Production

After the story has been laid out with a storyboard and pitched to a group of artists,

chiefs, and makers, it's a great opportunity to begin recording the exchange. Now, on the off chance that they haven't as of now, the scholars and executive will adjust their storyboard into a composed script, finish with a diagram of what each character is doing amid every scene. This procedure is intended to additionally expand on the thoughts displayed in step 1, as storyboards are by and large just unpleasant, divided diagrams of what the last item will resemble.

After the script has been concluded, it is given to the voice ability to the film, who works intimately with the executive to nail down each character's individual identity. Despite the fact that it may not be clear to the group of onlookers, voice performing artists assume an immense part in fleshing out their characters' on- screen identity. Periodically, scripts are utilized for the most part as free rules for the performing artists, who impromptu the character to life, giving them a considerably more appealing identity than originally proposed and notwithstanding influencing the imaginative style or finished product of the film.

Robin Williams' execution as Genie in the Disney classic Aladdin is an ideal case of how a voice performer can impact the identity of a character and the heading of the film overall. The chiefs of Aladdin enabled Williams to improvise the vast majority of his lines, just adhering to the script when it was completely fundamental. They even let him include his own particular jokes and stifiers to the script. Illustrators utilized the identity that Williams made to think of the last search for Genie, including how he moves and how he connects with alternate characters. The outcome was a standout amongst the most vital and adorable characters ever.

Sources of Sound Files

Pre-packaged

Some solid documents may accompany your PC's working framework or with programs that are introduced on your PC. Some sound files that come with Microsoft Office. Notice that these are for special effects (applause, chimes, etc.) and that they are small in size and length (3 seconds).

Purchased or Borrowed

Sound files can be purchased from companies specializing in sound clips. The Internet is an excellent source for sound clips that can be purchased, or in some cases, they may be provided free and downloaded. These sources may be good for background and special-effect sounds as well as historical events, but for narration you will need to create your own files.

Make your own sound

Making your own particular sound claps can be as simple as utilizing a recording

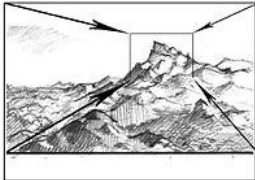

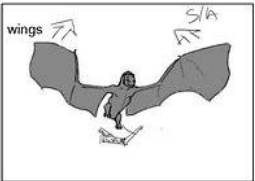
program that accompanies a PC's working framework, (for example, sound recorder) and talking into a receiver joined to the PC. The quality of the resulting sound files may be acceptable for certain applications such as a simple media, web pages, etc. However, if the goal is to produce a high quality commercial product, you have to consider utilizing a recording studio with gear, for example, DAT (Digital Audio Tape) gadgets that record sounds carefully.

Incorporating sound into 2D animation application

Presentation development programs such as Macromedia Flash, Pencil, Tupi, Synfig Studio, Plastic animation Paper, PowToon and Victorian Giotto and many other programs allow you to easily incorporate sound.

For complex projects where sound will be a significant component, storyboards and scripts should be used to guide the application developer. There are various formats for a script.

The figure below shows the audio script format that would be used for incorporating sound into the accompanying storyboard. The storyboard in the image also shows how an animation sequence would take place.

TITLE George and the dragon		PAGE 1	
S-1 1/1	S-2 1/7	S-2 2/7	
			
ACTION zooming in Still image	Dragon come out from cave	Dragons starts swing his wings	
DIALOGUE Far, far way in the high, high mountains	there lived a mighty dragon.	SFX: waving wings	
TRANSLATION			
TIMING last about 8 sec 00:00:00:00:	00:00:09:16	00:00:09:20	

(Example of a storyboard associated with an audio script)

Title : Storyboarding Example Attribution : Tomas Mitkus

Link : https://commons.wikimedia.org/wiki/File:Storyboarding_template_02.jpg

Making a video or animation truly woken up isn't something you will essentially fulfil by following two or three stages. Sound is something that you not record but also put it under a scene. You need to consider its numerous parts: exchange, music and sound impacts. To put it plainly, with exchange you can truly recount the story, with the music you include an emotional layer and with the sound impacts you can truly make a whole world.

Unit summary

In this unit, you have learned how sound is used in animation. You are familiar with the categories of sound, as well as the ways sound can be used (set a mood, provide narration, add special effects, etc.). You know about the sources for sound clips and how sound can be created. You also know about the considerations for using sound in animation.

Assignment

- State the important audio component.
- Describe the music importance in animation.
- Explain synchronizing animation to speech.
- Explain the history behind animation, sound.
- List the various steps of sound recording.
- Explain the effect of sound on humans.
- Explain developing audio production.
- Explain infra sound.
- List the component of sound effects.
- Explain diegetic sound.

Resources

- <https://animationbrain.com>
- <http://wikipedia.com>
- <https://google.com>
- <http://minyos.its.rmit.edu.au>

DMA-03

2D Animation

Block – II: Layout & designing

Unit-1 Basic of Sketching

Introduction

Drawings are methods for articulation of our perceptions, contemplations and emotions. Over the wide field of workmanship and outline, specialists and planners will utilize drawing as a particular tool for visual correspondence. In the meantime, it may also be utilized for a wide range of attracting strategies to express, create and showcase thoughts and work with the watcher for innumerable reasons. It is difficult to make a drawing unless the craftsman has a reasonable comprehension of what type of thought or scenario is to be presented and what visual dialect will be utilized in giving shape and expressing the flow of the drawing. This is frequently overlooked or misjudged by most educators of drawing.

In this unit, you will learn about basics of sketching, still life drawing and composition of basic elements.

Outcomes

Upon completion of this unit you will be able to:

- Describe various types of pencil
- Examine various techniques of holding a pencil
- Explain the meaning of sketching
- Practice still life drawing
- Assess the components of composition

Terminology

Pencil: A bar of graphite encased in a delicate wood for drawing and writing.

Balance: Balance is the feeling that the depiction "feels right" and not heavier on one side.

Pattern: A customary reiteration of lines, shapes, hues, or qualities in a composition.

The Pencil

A pencil is a bar of graphite encased in a delicate wood, for example, cedar which is around six or seven inches in length and uncovered toward one side. Unrefined types of graphite pencils were first utilized as ahead of schedule as the 17th century. Prior to this, poles of lead or silver (known as silver point) were utilized as executables for making drawings. The cutting edge type of lead or graphite pencil with its wooden encasement initially came into utilization about the start of the 19th century.

The pencil essentially works by pushing or pulling the lead end over the surface filaments of the paper, which gets grated getting separated into little drops. Weight on the pencil pushes the pieces of lead into the filaments of the paper to leave a stamp.

Graphite, a type of carbon, otherwise called mineral dark, is the real constituent of the cutting edge pencil. The delicate quality or hardness of a pencil fluctuates relying upon the measure of earth blended with the carbon. Practically, no earth contains the mildest assortments of pencil. Craftsmen and creators will have to utilize the scope of pencils, for shifting their decisions as indicated by the impact based on their attempts to accomplish.

As the graphite is worn away through utilization, it has to be uncovered. This is finished by the activity of honing the pencil utilizing a sharpener. Honing and uncovering the graphite ought to be viewed as an imperative demonstration, since how it is done changes the kind of stamp you make with it. There are numerous methods for honing. A specific point creates a specific outcome.

The craftsman should test to find what is conceivable and how to make each kind of pencil meet his specific needs at any given point of time.

The pencil can be utilized for an assortment of purposes and, as with any material which is utilized, you should be completely aware of its possibilities and its impediments -- diverse pencils and sorts are intended for specific employments. In the resulting section, some of these practices will be uncovered with specific pertinence to the suitable pencil or graphite material.

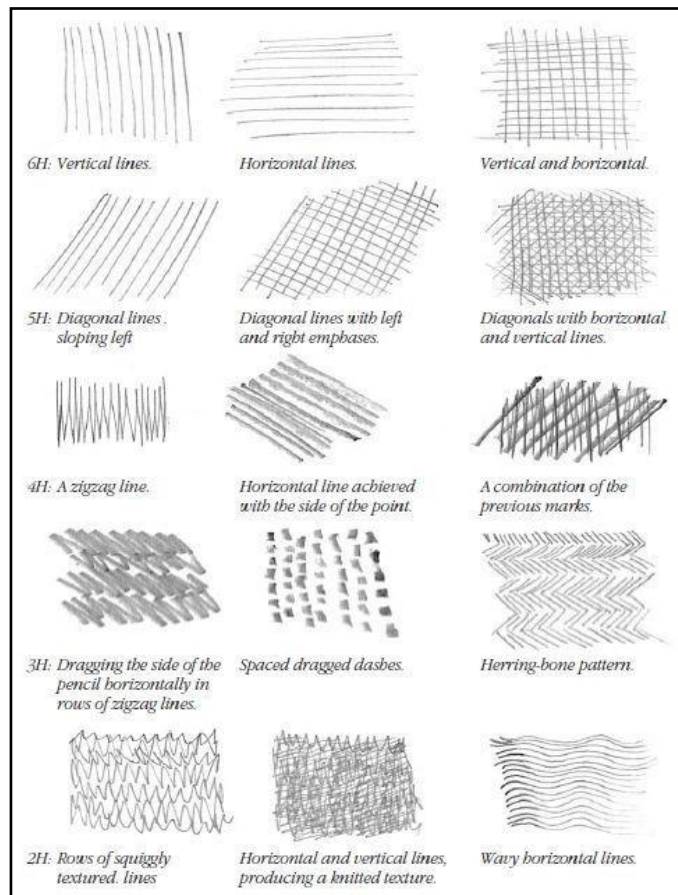
The imprints that appear over the accompanying couple of pages give some thought of the extensive variety of checks making conceivable. When you are taking a look at them, see each of the pencils thoroughly as to what marks you can make. Aside from being extremely animating and finding methods for opening your brain to new potential outcomes with your drawing, you will discover how it expands your "vibe" for the pencil itself. As specialists, what we feel through the materials we utilize affects what we deliver. And understanding the nature of those materials is indispensable for a decent result.

Types of Pencil

There are many types of pencils like hard pencil, soft pencil, peel- back pencil, clutch pencil, standard thick dark pencil, triangular craftsman's pencil, graphite pencil or stick and aqua drawing pencil. But as a basic, we will discuss only about hard pencil and soft pencil.

Hard pencil

Hard pencil marks have almost no variety in the scope of stamp making. They just for the most part shift through a direct movement. Tone is normally produced using a development of crosshatch impacts. Hard pencils are meant by the letter H. Similarly as with delicate pencils, they arrive in a range, involving HB, H, 2H, 3H, 4H, 5H, 6H, 7H, 8H and 9H (the hardest).



Title- Hard pencil marks

Attribution- Peter Stanyer

Source- The complete book of drawing techniques

These pencils are essentially for use by originators, planners and individuals who create exact specialized diagrammatic drawings for which a fine, precise line is fundamental (for example, viewpoint or other projection drawings). Despite the fact that the imprints made with hard pencil demonstrate almost no variety, it can be utilized as a part of an expressive medium. Likewise, with delicate pencil, tone can be constructed utilizing across-incubating framework, despite significantly better and more formal outcome.

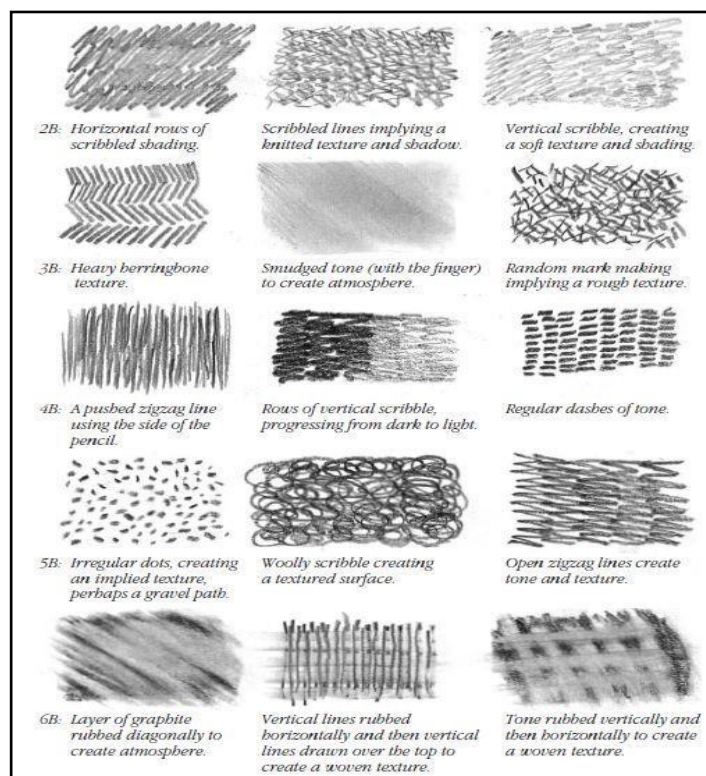
Hard pencils are generally proper for drawings requiring exactness. As we have paid attention to already, such drawings are typically done by engineers, mechanical fashioners, visual originators and modellers. The last drawings which are created must be proportional and exact with the goal of an individual, for example skilled workers can choose in the directions to develop and improve the instigated drawing or make the exact proposed drawing. These drawings arrive in diverse point of views or parallel projection frameworks, extending from level of orthographic arrangement or rise drawings to 3D point of view delineations.

Soft pencil

The soft pencil has more flexibility for making tone and surfaces than the hard pencil. Soft pencils are meant by the letter B. The HB pencil is a blend of hard and soft and is the essential pencil between the two extremes. The scope of soft pencils accessible comprises of HB, B, 2B, 3B, 4B, 5B, 6B, 7B, 8B and 9B (the softest).

These pencils are intended for the fine craftsman to express specific thoughts. For instance the working of tone, the making of surface, cross-bring forth or even simply basic line. Range of pencils having softest end can be utilized to create pieces of tone. A graphite stick is by far the most suitable for this kind of work and for creating bigger ranges of tone.

Mainly the soft pencil is reasonable for refined work requiring extraordinary exactness - basically for the safeguard of the hard pencil depends on the fine grip of the pencil.



Title- Soft pencil marks

Attribution- Peter Stanyer

Source- The complete book of drawing techniques

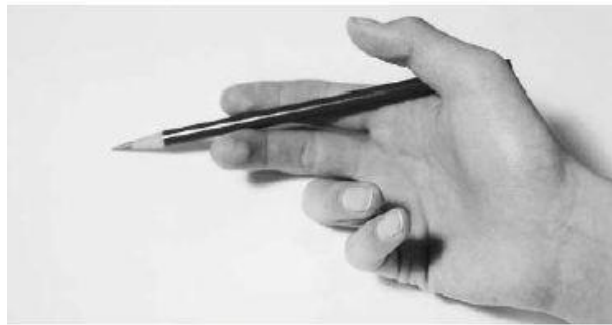
Pencil holding techniques

Holding Pencils

There are numerous approaches to hold the pencil yet the watchword to recall while drawing is "unwind." Avoid holding the pencil as though you were composing, in light of the fact that, for the written work, the pencil has to be grasped fairly firm and tight. The hold required for portraying is relatively loose and simpler. Hold the pencil roughly, a few crawls from the tip of the lead. The holding position ought to include the thumb and the initial two

fingers just, with the pencil lying easily within the tip of the third finger. Utilize the second finger and the thumb to settle the pencil and to keep it from slipping out.

The connection between the second finger and the thumb as a rule directs the sort of lines and portraying style. At the point when the tips of the two are moderately near one another, for mooring of the pencil the whole hand by and large creases internal; and in this manner the portability and reach of the pencil for development is restricted by how far the fingers can extend. This position is called **Position A** and is very similar to the written work grasp. It is exceptionally helpful in portraying short strokes and points of interest and it also gives the craftsman more control of the instrument managing to be less inclined towards committing errors



Control the pencil with three fingers.

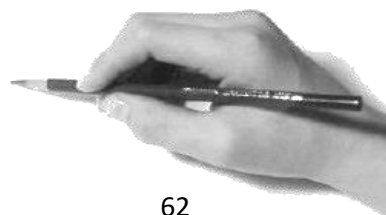


The grip should be relaxed but firm. Control the movement with the same three fingers.



WRITING POSITION

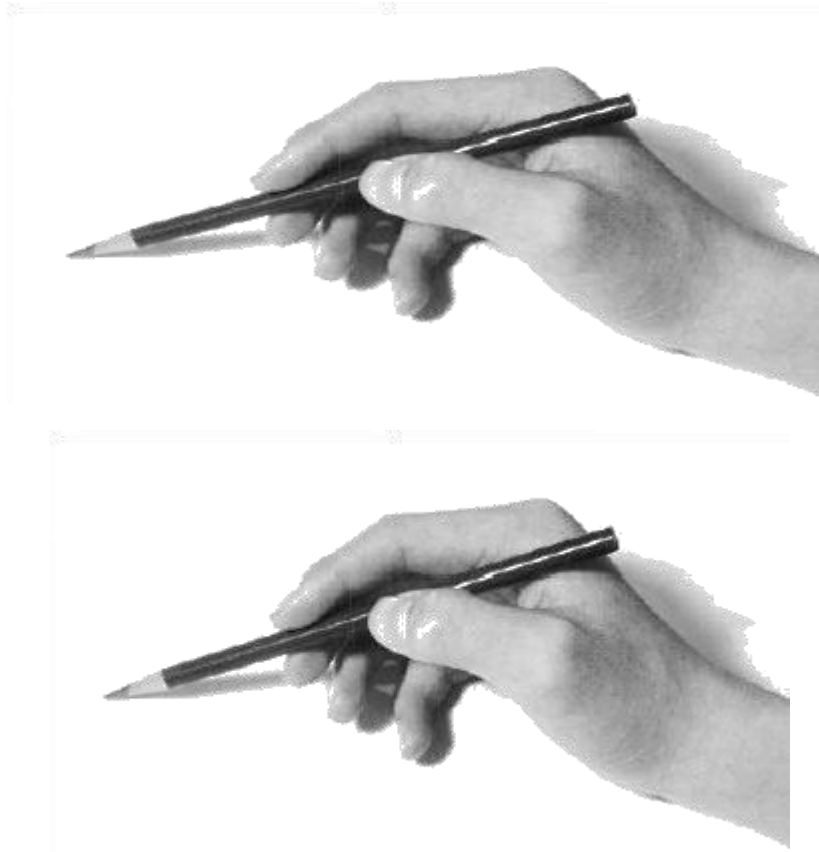
- tight grip
- no flexibility
- hold very close to lead



SKETCHING POSITIONS

- looser grip
- flexible
- hold farther up the shaft

Position A



Position B

Title- Pencil holding techniques **Attribution-** Thomas c. wang

Source- Pencil Sketching (2nd Edition)

Link-

Position B is the point at which the tips of the second finger and thumb are far separated. The second and third fingers are normally straight as opposed to being twisted internally thereby expanding the portability and reach of the pencil. By clearing here and there with the broadened second and third fingers, the strokes can be achieved up to six to seven inches. This is a perfect position for shading in light of the fact that, the hold is free and the fingers are substantially less demanding to move. This position additionally enables the craftsman to hold the pencil sideways and boosts the adequacy of the whole pencil tip. General terms are one aftereffect of this hold. Basically broadening the fingers of the whole hand having the palm down helps coasting the pencil over the page. The edge of the pencil must be changed in accordance with the individual craftsman's hand and level of adaptability. One ought to have the capacity to change from Position A to Position B in a nonstop development decisively or stoppage.



Position C

Title- Pencil holding techniques **Attribution-** Thomas c. wang

Source- Pencil Sketching (2nd Edition)

The third (Position C) includes holding the pencil as though holding a putty blade or little hand apparatus. The pencil is held between the thumb and the second finger. This dispenses with any type of finger or hand development and along with hand development these lines are essentially suited for long and general terms. The whole lower arm is utilized, giving the craftsman most extreme reach. Contingent upon the extent of paper accessible and the scope of the craftsman's arm, pencil strokes can reach more than three feet. This position can likewise be utilized to make etch strokes. Simply hold the pencil and strike it here and there utilizing short and sudden strokes.

Pressure

Applying pressure (drive) to the pencil is the thing that gives beauty and enthusiasm to a line. Without pressure, the strokes and lines are plain and exhausting. A straight forward line attracting pen and ink can be very excellent but if there is a consistency in the lines, they can draw out the lucidity and softness of the portrayal. A hard lead can give a line that is moderately reliable when contrasted than a softer lead. Considering this, the magnificence of pencil portraying lies in the craftsman's capacity to apply pressure to the pencil keeping in mind the end goal to change the nature of the lines. The striking, lifting and turning, the incidental bumping and bending, and the sudden change of the edge of the lead all add to a huge number of impacts which are one of a kind to pencil portraying. What's more? It is this uniqueness that makes pencil exceptional.

A pencil ought to and should be dealt like as an expansion of the craftsman's hand arm and fingers. The creators of drawing not only include the movement of a hand holding a pencil but also manage the whole tactile transfer from eyes to cerebrum to that of hand. We watch and inspect with our eyes; streamline with our cerebrum and eyes; dissuade our mind about what ought to be kept; record with our hand; assess with our eyes again to check whether the picture takes a look at all like the one we saw before; roll out moment improvements and reexamine everything again in an unending cycle. This is the outlining procedure more or less. Similarly, as drawing is without doubt a mental procedure that is

extremely individual and cozy, so is the demonstration of applying pressure to the pencil is based on individual and personal experience. There is no logical standard for how much constrain one ought to apply on a specific lead. It is fundamentally an experimentation procedure which you gain from your trials and errors. You do it more than once to accomplish a predictable example and you attempt to keep it that way, however nobody can show you how to do it.

Sketching

A definitive objective of sketching is to graphically decipher the picture effectively. In spite of the fact that the way of elucidation and introduction is an individual issue (and each craftsman has his or her methods for communicating it), the ultimate result of a draw is regularly represented by some pleasing benchmarks. The portrayal must have some level of authenticity and the subject of elucidation must be fairly conspicuous. For instance, on the oversimplified level, a portrayed tree should resemble a tree and not a man. On the more propelled level, an old tree ought not to resemble a youthful sapling. The storage compartment and the bark ought to some way or another uncover its age. If a house with a stone exterior is ought to be drawn, then the unobtrusive contrasts in the joints and mortar can be uncovered and highlighted.

Observation

With a specific end goal to effectively translate the picture that we are endeavouring to portray, we should invest energy watching it painstakingly. Cautious perception is a critical initial phase really taking shape of a decent outline. Perception must be sharp. Rehashed perception and recording are required to comprehend the subject. Once in a while estimations are taken just to ensure that the best possible relationship is accurately depicted. Scene sketching (and especially the sketching of trees) gives one of the best vehicles to exhibit the significance of perception and recording. Estimations and recordings have an astonishing advantage for originators in light of the fact that these right and appropriately proportioned pictures can turn into the visual information bank from which they can later infer motivation and thoughts for future work.

Steps to sketch:

- **See**
- **Identify**
- **Isolate**
- **Simplify**
- **Translate into sketching**

Still life drawing

Still life is the best subject in workmanship for learning and educating the aptitudes of drawing and painting. It shows you what is the look for items and see those like a craftsman - - with a discerning attention to their framework, shape, extents, tone, shading, surface, frame and organization.

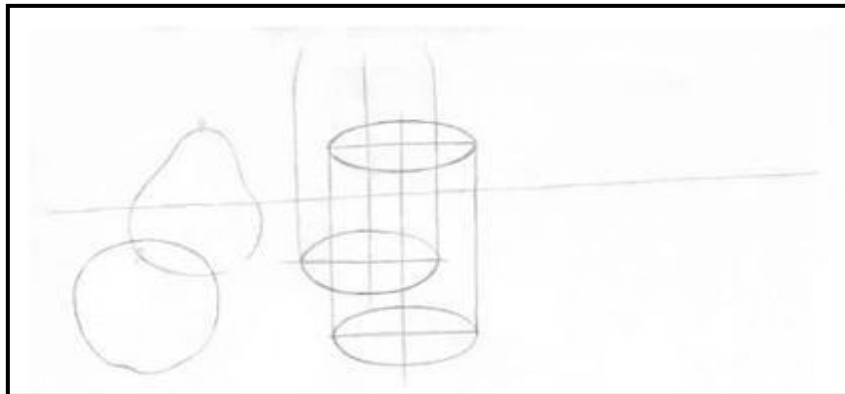
Well ordered, still life lesson will show you the attracting strategies used to create the still life, which was finished with a 2B pencil on cartridge paper.

- Steps 1 to 4: It exhibits how to draw the shapes and extents of the still life objects utilizing line.
- Steps 5 to 8: It represents how to render the three dimensional type of the still life utilizing tone.

For this still life lesson you will require:

- **2B pencil**
- **Eraser**
- **A3 sheet**

Step 1: Beginning the still life drawing



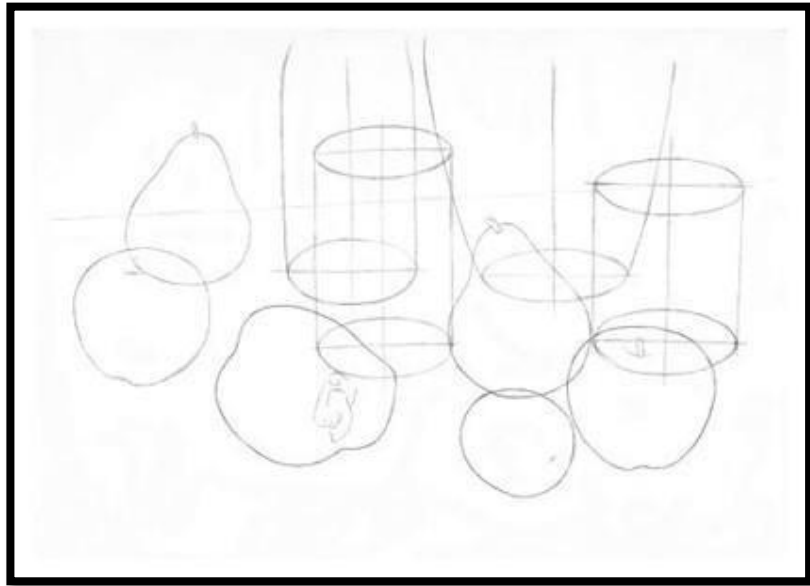
Title- Beginning the Still Life Drawing

Link-http://www.artfactory.com/still-life/still_life_pencil.html

In any still life, you should begin to draw the items, as though they are straightforward wire outline frames with noticeable lines of development. This procedure causes you to be completely mindful of the state of every individual frame and its position in connection to alternate structures. It is critical to outline the items softly as this commits it simpler to change any errors and delete any lines of development.

NOTE: This transparent drawing strategy utilizes vertical and even lines of development to help you to attract persuading circles and to adjust the symmetry of round and hollow structures.

Step 2: Making a fascinating synthesis



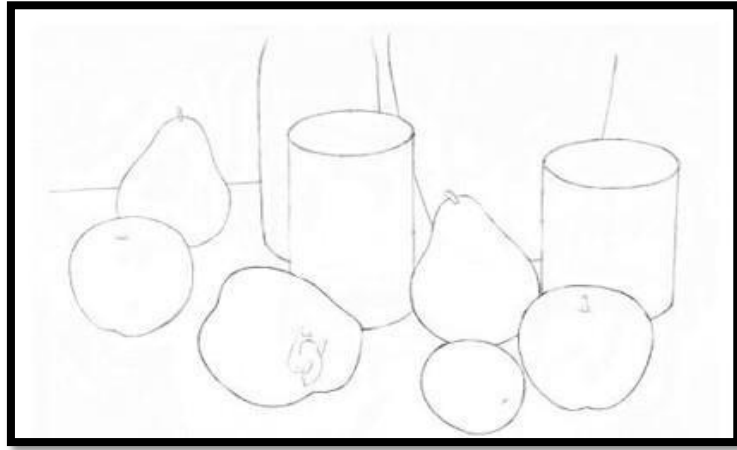
Title- Making a fascinating synthesis

Link-http://www.artfactory.com/still-life/still_life_pencil.html

While forming a still life, attempt to present the qualities that make a fascinating plan. You should know about the conceptual structure of your course of action: its rhythms and complexities of line, shape, tone, shading, example, surface and frame.

NOTE: A straightforward wire outline way to deal with sketching the still life encourages you to sort out the organization of the gathering. It makes it less demanding to see the shape, position and extents of each object in connection to its neighbours.

Step 3: Eradicating the lines of development

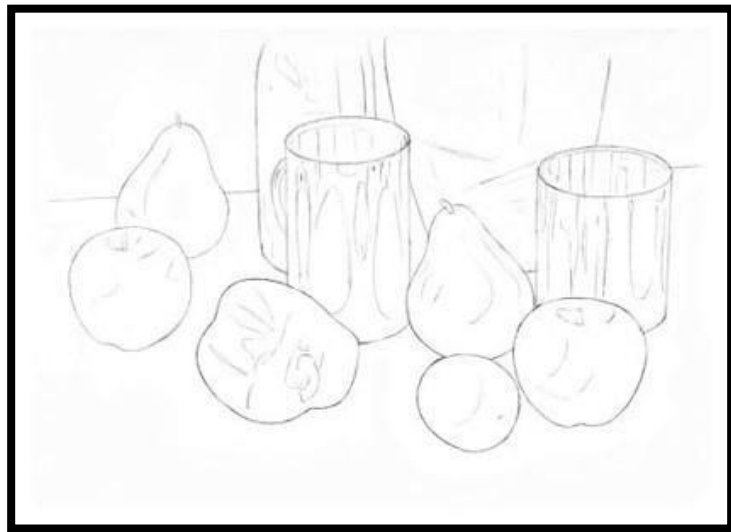


Title- Eradicating the line of development

Link-http://www.artfactory.com/still-life/still_life_pencil.html

When you are content with the shape, extent and structure of the still life, you can delete the lines of straightforward development. This will abandon you with a precise noticeable layout of each shape and the certainty that everything of the articles is situated accurately. You are currently prepared to take a shot at the points of interest of each protest.

Step 4:Including the points of interest in line



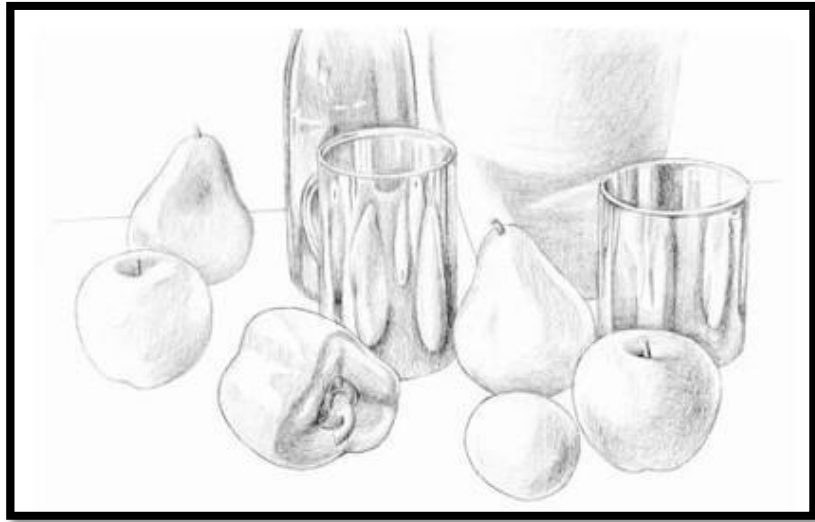
Title- Including the points of interest in line

Link-http://www.artfactory.com/still-life/still_life_pencil.html

Presently softly portray in the states of any shadows or reflections onto each question.

NOTE: The more care you assume control over the precision of these imprints, the less demanding you will locate the following phase of the drawing - the Application of Tone.

Step 5: Shading Method: 1

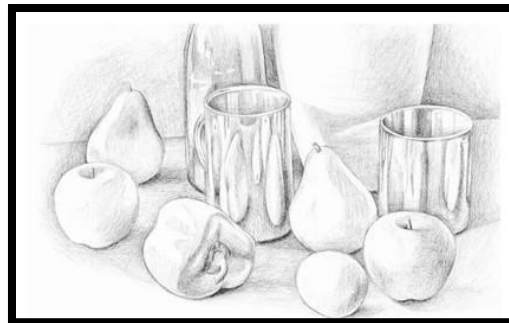


Title- Shading method step-1

Link-http://www.artfactory.com/still-life/still_life_pencil.html

The tone of our still life is developed in four phases sketched out in steps 5-8. In this progression, some essential tones are softly connected to each object help develop its three dimensional shape.

Step 6: Shading Method:



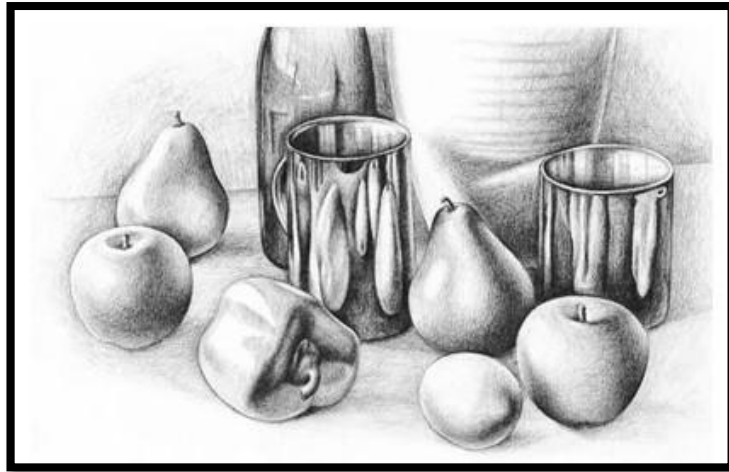
Title- Shading method step-2

Link-http://www.artfactory.com/still-life/still_life_pencil.html

The second stage in working up the tone concentrates on the spaces between and around the articles.

NOTE: The drawing of the light and shade between the items must be regarded with as much significance as the drawing of the articles themselves. The shadows cast underneath and around the articles add as much to the meaning of their shapes as does the shading on their surfaces. Notice how the counter-change of tones between the items and the spaces assumes control from the utilization of line to characterize the types of the still life.

Step 7: Shading Method: 3



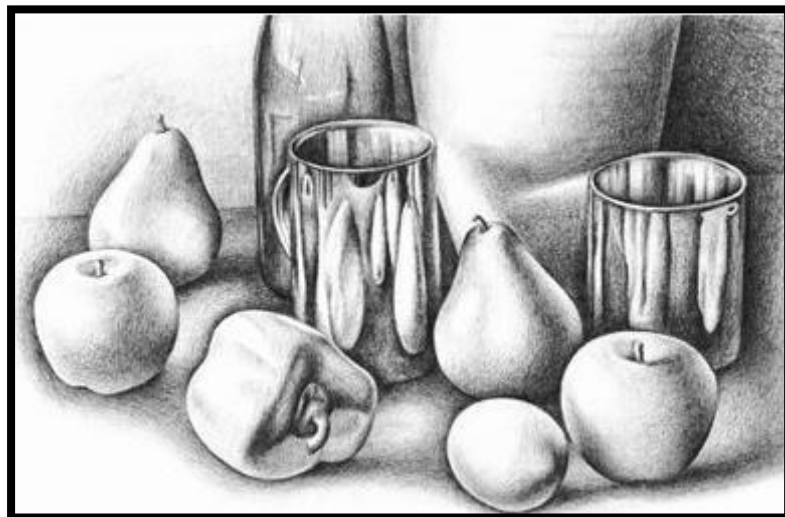
Title- Shading method step-3

Link-http://www.artfactory.com/still-life/still_life_pencil.html

In the third phase of working up the tone, you concentrate back on the items. This time you extend their tone, expanding the complexity between the territories of dim and light. This will improve the type of the articles and increment the effect of the picture.

NOTE: The most concerning issue at this stage is keeping up an adjustment of tones over the entire still life with the goal that no part shows up excessively dim or too light. You are hunting down solidarity of tone and shape.

Step 8: Shading Method: 4



Title- Shading method step-3

Link-http://www.artfactory.com/still-life/still_life_pencil.html

At last, you concentrate again on the spaces between the articles, developing their tones and expanding their complexity.

NOTE: You should be cautious in adjusting the tonal estimations of the articles and the spaces between them to guarantee that you make a bound together picture.

The finished still life should chip away at two levels: as a practical portrayal of the gathering of items and as a dynamic creation of visual components, orchestrating and differentiating the utilization of line, shape and tone.

Composition

The demonstration of perception is the most critical part in sketching. A decent draw starts with watchful perception and innovative seeing. Inventive seeing needs to go with figuring out how to disengage things. Earnest Watson said in his book *The Art of Pencil Sketching* that “in pencil drawing, one always avoids any leaning toward photographic simulation.” How genuine that is. Sketching is tied in with catching the quintessence of the genuine article. An outline speaks to another dialect particularly like shorthand that records the genuine article with shortened images of lines and surfaces. Imaginative seeing is tied in with finding the conspicuous element, exhibiting it, and disposing of the rest. It is tied in with catching the skeletal structure and the soul that rises above it. Clearly, the genuine article can be scattered wreckage; however, a decent draw comprehends what to dispose of.

Arrangement is a piece of the whole inventive seeing procedure. It includes visual determination, visual positioning and visual core interest. Maybe we know what to dispose of; however what do we do with the things that we keep? How would we rank them in the request that we need to accentuate them in an outline? For instance, should the attention be on the entryway or the windows? How would we disengage the purpose of intrigue and utilize differentiation to highlight the significance? How would we adjust tone and esteem and how would we outline the draw keeping in mind the end goal to outwardly lead the watchers into the photo? By tending to these inquiries effectively, a great structure has the uncommon capacity to join the craftsman and watcher both outwardly and inwardly.

Piece is the term used to depict the course of action of the visual components in an artistic creation or other fine art. It is the manner by which the Elements of Art and Design - line, shape, shading, esteem, surface, frame, and space -- are sorted out or formed by the Principles of Art and Design - adjust, differentiate, accentuation, development, design, mood, solidarity/assortment - and different Elements of Composition, to give the canvas structure and pass on the aim of the craftsman.

Arrangement is not the same as the topic of a work of art. Each depiction, whether

theoretical or illustrative, paying little mind to topic, has an organization. Great organization is basic to the achievement of an artistic creation. Done effectively, great organization attracts the watcher and afterward moves the watcher's eye over the entire painting with the goal that everything is taken in and at last, settling on the primary subject of the depiction

Element of Composition:

The Elements of Composition in craftsmanship are utilized to orchestrate or arrange the visual parts in a way that is satisfying to the craftsman and one's expectations, the watcher. They enable to provide structure for the format of the artistic creation and the way the subject is introduced. They can likewise energize or lead the watcher's eye to meander around the entire painting, taking in everything and eventually returning to lie on the point of convergence.

Components of composition are by and large thought to be:

- **Unity:** Does every one of the parts of the composition feel as though they have a place together, or accomplishes something feel stuck on, fumblingly strange?
- **Balance:** Balance is the feeling that the depiction "feels right" and not heavier on one side. Having a symmetrical course of action includes a feeling of quiet, though an awry game plan makes a more powerful feeling. An artistic creation that is not adjusted makes a feeling of unease.
- **Movement:** There are numerous approaches to give a feeling of development in a work of art, for example, the plan of items, the position of figures, the stream of a waterway. You can utilize driving lines (a photography term appropriate to painting) to coordinate the watcher's eye into and around the canvas. Driving lines can be real lines, for example, the lines of a fence or railroad, or they can be suggested lines, for example, a column of trees or bend of stones or circles.
- **Rhythm:** Similarly music does, a bit of craftsmanship can have a musicality or fundamental beat that leads your eye to see the fine art at a specific pace. Search for the substantial basic shapes (squares, triangles, and so forth) and rehashed shading.
- **Focus (or Emphasis):** The viewer's eye at last needs to lay on the "most vital" thing or point of convergence in the artwork, generally the eye feels lost, meandering around in space.
- **Contrast:** Paintings with high differentiation -- solid contrasts amongst light and dim, for instance -- have an unexpected vibe in comparison to artistic creations with insignificant complexity in light and dim. Notwithstanding light and dim, complexity can be contrasts fit as a fiddle, shading, estimate, surface, kind of line, and so forth.
- **Pattern:** A customary reiteration of lines, shapes, hues or qualities in a composition.

- **Proportion:** How things fit together and identify with each other regarding size and scale; regardless of whether enormous or little, adjacent or inaccessible

Summary

In this unit, we described the basics of sketching and elements of composition. You got general information of sketching. You will know how to utilize pencil, you must have realized what materials are best used for and you will know how to approach your sketching. More importantly, in any case, you will have an unmistakable understanding that sketching is about how to impart your perceptions, your imaginations, and your thoughts in the light of nature and our general surroundings.

Assignments

1. List the different types of pencils
2. Describe hard pencil
3. Describe soft pencil
4. Write the ways of holding pencil for sketching
5. What is sketching and what are the steps
6. Describe still life drawing with step by step techniques
7. Explain what composition is
8. List the elements of composition
9. Describe the elements of composition

Resources

- <https://en.wikipedia.org/>
- <https://www.google.co.in/>
- <https://www.rmit.edu.au/>

Unit 2

Work in Different Media

Introduction

Any work structure can be a good thing; but in regards to art, innovation is the key to finding out how far you can take a painting and how sincerely you're prepared to express your visualization. A few artists want to take in any particular sole medium, and essentially they want to use individual preferences for that picked medium. And of course, there are those of us who are curious to see how different mediums will work together; you can build up a totally unique style of art while using variety methods of different drawing media.

In this unit, you will learn about different kinds of artworks listed. The unit will give a diagram with a few illustrations that may help make you think about how our function in encaustic can be integrated into the more extensive universe of art. You will learn that each of the three fields that is focussed on painting, drawing and mixed media/collage has a distinct method for describing what the work is made of - a material vocabulary all its own..

Outcomes

Upon completion of this unit you will be able to:

- Describe different type of drawing media
- Explain the major theories influencing art
- Assess how to use materials
- Formal elements and safe working practices
- Differentiate between various water colour techniques.

Terminology

Canvas: The fabric that is extended on a wooden casing in which oil paintings and acrylic paintings are finished.

Crafts: Art frames used for creating attractive art pieces that are both excellent and helpful. Crafts include weaving, texture outline, pottery, and gems making.

Crayons: Pigments held together with wax and formed into sticks.

Fresco: A procedure of painting on a layer of wet mortar. The mortar ingests the shades and the painting turns out to be a piece of the divider.

Mosaic: Small pieces of tile which is creatively placed together to make a design on a wall or floor.

Palette: A wood, metal, or plastic surface used by an artist to blend paint.

Solvent: A fluid material that is utilized to thin the binder in paint.

A Brief History of Designing

Exploring Different Art

Art has implied different things to different individuals at distinctive circumstances through our mankind's history. In the content Art Fundamentals, the authors* discuss the term "art" we utilize it today is likely to be gotten from the renaissance words *arti* and *arte*. "Arti was the designation for the craft guilds of the 14th, 15th and 16th centuries to which the artists were closely tied by the traditions of their calling. The word for craftsmanship is art, implied knowledge of the materials utilized by the artist as well as the surface on which they would execute their work. Art or craftsmanship also implied the skilful handling of those materials in the sense of producing images more or less like those of nature, but certainly not in the sense of imitating the exact appearance of nature."

This unit investigates conventional and non-customary medium related with Two Dimensional artworks including:

1. Drawing
2. Painting
3. Collage

Two-dimensional media are gathered into general classifications. We should take a look at each gathering to comprehend their specific qualities and how craftsmen utilize them.

Drawing

Drawing is the expertise to utilize lines and shapes to make a pleasing piece which shows profundity, differentiation, light and shadow and gives the impression of measurement, using different degrees of detail. Drawing is the least complex and most proficient approach to impart visual thoughts, and for a considerable length of time. Charcoal, chalk, graphite and paper are sufficient apparatuses to dispatch the most profound pictures in workmanship. Leonardo da Vinci's *The Virgin and Child with Saint Anne and Saint John the Baptist* wraps every one of the four figures together, what is basically a more distant family picture. Da Vinci attracts the figures an astoundingly sensible style, one that accentuates individual characters and encompasses the figures in a grand, unfinished landscape. He invigorates the scene with the Christ kid pulling himself forward, trying to discharge himself from Mary's grip to get more like a young John the Baptist on the right, him self's identity turning toward the Christ tyke with a look of inquisitive interest in his younger cousin.

The customary part of drawing was to make outlines for bigger arrangements to be

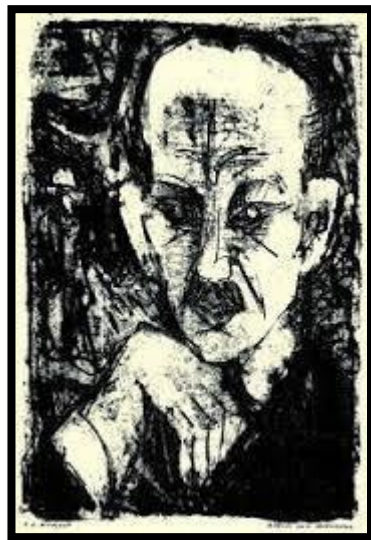
shown as paintings, mold or even design. In view of its relative immediacy, this capacity for drawing continues today. A preliminary draw by contemporary modeller Frank Gehry catches the mindboggling natural types of the buildings he outlines.

Types of Drawing Media

1. Dry Media

Dry Media includes charcoal, graphite, chalks and pastels. Each of these mediums gives the craftsman an extensive variety of stamp making abilities and impacts, from thin lines to expansive ranges of shading and tone. The craftsman can control a drawing to accomplish wanted impacts in numerous ways, including exerting different weights on the medium against the drawing's surface, or by eradication, blotting or rubbing.

This procedure of drawing can instantly exchange the feeling of character to a picture. From vivacious to inconspicuous, these qualities are clear in the most straightforward works: the immediate and unalloyed soul of the craftsman's thought. You can see this in the self-pictures of two German craftsmen; Kathe Kollwitz and Ernst Ludwig Kirchner. Injured during the main world war, his Self-Portrait under the Influence of Morphine from around 1916 presents us with a nightmarish vision of him wrapped in the mist of sedative medications. His empty eyes and the realistic brokenness of his imprints verify the energy of his drawing.



Title- Portraits

Attribution- Sandrine Pelissier

Source- pinterest.com

Link-https://www.moma.org/s/ge/collection_ge/artist/artist_id-3115_role-1_sov_page-71.html

2. Graphite

Ernst Ludwig Kirchner, Self Portrait under the Influence of Morphine Graphite is the

most widely recognized drawing medium. Graphite usually comes in the type of pencils, powder or packed sticks and is the thing that a large portion of us basically allude to as "pencil". Each one makes a scope of qualities depending on the hardness or softness inherent in the material. Hard graphite tones territory from light to dark dim, while softer graphite enables a range from light dim to almost dark. In this manner a great deal of graphite drawings are basically called pencil drawings, despite the fact that calling them graphite drawings would be more exact.

Graphite drawing procedures are for all intents and purposes interminable. At any rate that you apply graphite to a surface will deliver some kind of results. French stone carver Gaston Lachaise's *Standing Nude with Drapery* is a pencil drawing that fixes the vitality and feeling of development of the figure to the paper in only a couple of strokes. And Steven Talasnik's contemporary huge scale drawings in graphite, with their swirling, natural structures and design structures are demonstration of the energy of pencil (and eraser) on paper.

3. Charcoal

Charcoal is scorched natural material. Typically the material is wood. There are a couple of sorts of charcoal utilized by craftsmen to make a drawing. These sorts of charcoal include "vine" and "packed". Vine charcoal is more often used that does not comprise of consumed willow wood. Vine charcoal is effectively spread on a surface and is anything but difficult to eradicate. As an outcome it is for the most part makes a lighter stamp when you draw than packed charcoal and it is effectively smirches. Compacted charcoal is held together by a gum binder and is darker than vine charcoal. Thus, it is harder to eradicate, harder to smirch, yet makes a darker stamp. Compacted charcoal may come as a round stick, a square stick, or in a pencil. (Vine charcoal is quite often a round stick.) But it's harder to control once they are connected to paper.

4. Pastels

Significantly more prominent color refinement is conceivable with pastel colored pencils, produced using powdered shades blended with a base measure of non-oily cover. At the point when the colors are connected to paper, they perpetually look new and bright, in spite of the fact that they should be safeguarded from scattering by been kept under glass. Pastel colors can be connected in straight method straightforwardly with the pastels, or to a region of the paper specifically with the fingers. Pastels originated in the north of Italy amid the 16th century, and were utilized by Jacopo Bassano (1515-92) and Federico Barocci (1526- 1612). Pastel drawings were known to the Accademia degli Incamminati no later than

the 17th century, in spite of the fact that as a work of art it didn't achieve its apogee until the eighteenth century, eminently in France (with Jean Marc Nattier, Maurice Quentin de La Tour, Jean-Baptiste Perronneau and Jean Chardin) and in Venice (with Rosalba Carriera)



Title-Pastels

Source- pixabay.com

Link-<https://www.pexels.com/photo/art-artistic-bright-close-up- 268435/>

Wet media

Ink: Wet drawing media generally eludes to ink, however, truly includes any substance that can be put into arrangement and connected to a drawing's surface. Since wet media is controlled much like paint – through thinning and the utilization of a brush – it obscures the line amongst drawing and painting. Ink can be connected with a stick for linear impacts and by brush to cover huge zones with tone. It can likewise be weakened with water to make estimations of dim.

Felt tip pens are viewed as a type of wet media. The ink is immersed into felt strips inside the pen at that point discharged onto the paper or other help through the tip. The ink rapidly dries, leaving a lasting imprint. The hued marker drawings of DonnabelleCasis have a flowing, natural character to them. The conceptual nature of the topic infers body parts and viscera.

Different fluids can be added to drawing media to improve impacts – or make new ones. Craftsman Jim Dine has sprinkled soda onto charcoal drawings to make the surface rise with bubbling. The outcome is a visual surface dissimilar to anything he could make with charcoal alone, in spite of the fact that his work is known for its solid control. Dine's drawings often utilize both dry and fluid media. His topic includes creatures, plants, figures and apparatuses, ordinarily packed together in thick, darkly sentimental pictures.

Conventional Chinese painting utilizes water-based inks and colors. Truth be told, it is one of the most seasoned continuous imaginative conventions on the planet. Painted on backings of paper or silk, the topic includes landscapes, creatures, figures and calligraphy, a fine art that utilizes letters and script in liquid, expressive motions.

Painting

Painting is the act of applying paint, shade, shading or other medium to a strong surface (bolster base). The medium is normally connected to the base with a brush, however different actualizes, for example, blades, wipes, and enhances with Photoshop, can be utilized.

Painting is a method of inventive articulation, and the structures are various. Drawing, signal (as in gestural painting), piece, portrayal (as in story craftsmanship), or reflection (as in dynamic workmanship), among other stylish modes, may serve to show the expressive and theoretical intention of the professional. Paintings can be naturalistic and illustrative (as in a still life or landscape painting), photographic, conceptual, story, symbolist (as in Symbolist craftsmanship), emotive (as in Expressionism), or political in nature (as in Artivism).

Painting mediums are to massively flexible, in light of the fact that they can be connected to a wide range of surfaces (called bolsters) including paper, wood, canvas, mortar, earth, veneer and cement. Since paint is normally connected in a fluid or semi-fluid state it can douse into permeable help material, which can, after some time, debilitate and damage it. To keep the help material, it is typically first secured on a solid land with a blend of binder and chalk, when dries makes a non-permeable layer between the help material and the painted surface. There are six noteworthy painting mediums, each with particular individual qualities:

- 1. Encaustic**
- 2. Tempera**
- 3. Fresco**
- 4. Oil**
- 5. Acrylic**
- 6. Watercolour**

All of them use three basic ingredients:

- 1. Pigment**
- 2. Binder**
- 3. Solvent**

Pigments are granular solids incorporated into the paint to contribute shading. The binder, generally alluded to as the vehicle, is the genuine film-forming segment of paint. The binder holds the shade in arrangement until it's prepared to be scattered onto the surface. The dissolvable controls the stream and utilization of the paint. It's mixed into the paint, usually with a brush, to weaken it to the best possible consistency, or thickness, before it's connected to the surface. Once the dissolvable has vanished from the surface the remaining paint is

settled there. Solvents go from water to oil-based items like linseed oil and mineral spirits.

How about we look a gander at each of the six main painting mediums:

1. Encaustic

Encaustic is a wax based paint (made out of beeswax, resin and color), which is kept liquid on a warmed palette. It is connected to a retentive surface and then warmed so as to meld the paint. "Encaustic" originates from the Greek word enkaiein, meaning to consume in, referring to the way toward fusing the paint. Though they originate from a similar root word, "encaustic" ought not to be mistaken for "acidic," which alludes to a destructive synthetic response. There is no such risk with encaustic.

2. Tempera

Tempera, otherwise called egg tempera, is a changeless, quick drying painting medium consisting of hued pigments mixed with a water-solvent binder medium (typically a glutinous material, for example, egg yolk or some other size). Tempera additionally alludes to the paintings done in this medium. Tempera paintings are durable and customarily connected in progressive thin layers, called coats, painstakingly developed using systems of cross brought forth lines.

3. Fresco

Fresco painting is utilized only on mortar dividers and ceilings. The medium of fresco has been utilized for thousands of years, yet is most connected with its utilization in Christian pictures during the Renaissance time frame in Europe.

There are two types of fresco: Buon or "wet", and secco, meaning "dry".

Buon fresco method comprises of painting in color mixed with water on a thin layer of wet, crisp lime mortar or mortar. The color is connected to and consumed by the wet mortar; following various hours, the mortar dries and responds with the air: it is this substance response that fixes the shade particles in the mortar. As a result of the compound cosmetics of the mortar, a binder is not required. Buon fresco is steadier on the grounds, that the shade turns out to be a piece of the divider itself.

Buon Fresco alludes to the hues and subtle elements are safeguarded in the dried mortar divider.

Secco fresco alludes to painting a picture on the surface of a dry mortar divider. This medium requires a binder since the shade is not mixed into the wet mortar. Egg tempera is the most widely recognized binder utilized for this reason. It was basic to utilize secco fresco over buon fresco paintings with a specific end goal to repair damage or roll out

improvements to the original. Then the colours and details are preserved in the dried plaster wall.

4. Oil

Oil paint is the most flexible of all the painting mediums. It utilizes color mixed with a binder of linseed oil. Linseed oil can likewise be utilized as the mixing fluid, alongside mineral spirits or turpentine. Oil painting was thought to have created in Europe during the 15th century, however, late research on wall paintings found in Afghanistan hollows show oil based paints were utilized there as right on time as the 7th century.

A portion of the characteristics of oil paint includes an extensive variety of color decisions, its capacity to be thinned down and connected in practically straightforward coatings and in addition utilized straight from the tube (without the utilization of a vehicle), developed in thick layers called impasto (you can see this in many works by Vincent van Gogh). One disadvantage to the utilization of impasto is that after some time the body of the paint can part, leaving systems of breaks along the thickest parts of the painting. Since oil paint dries slower than different mediums, it can be mixed on the help surface with careful detail. This expanded working time additionally takes into account alterations and changes to be made without having to rub off segments of dried paint.

5. Acrylic Paint

Acrylic paint was created in the 1950s and turned into another option to oils. Shade is suspended in an acrylic polymer emulsion binder and utilizes water as the mixing fluid. The acrylic polymer has attributes like elastic or plastic. Acrylic paints offer the body, shading reverberation and toughness of oils without the expense, wreckage and danger issues of using overwhelming solvents to blend them. One noteworthy contrast is the generally quick drying time of acrylics. They are water dissolvable, yet once dry wind up noticeably impenetrable to water or different solvents. Additionally, acrylic paints cling to a wide range of surfaces and are to a great degree solid. Acrylic impastos will not split or yellow after some time.

6. Watercolour

Watercolour is the touchiest of the painting mediums. It responds to the lightest touch of the craftsman and can turn into an overworked mess in a minute. There are two kinds of watercolour media: straightforward and obscure. Straightforward watercolour works in a switch relationship to the next painting mediums. It is generally connected to a paper bolster, and depends on the whiteness of the paper to reflect light back through the connected shading (see underneath), while hazy paints (including murky watercolours) reflect light off the skin

of the paint itself. Watercolour comprises of shade and a binder of gum Arabic, a water-solvent compound produced using the sap of the acacia tree. It breaks up effectively in water.

The conventional and most basic help-material to which the paint is connected for watercolour paintings is paper. Different backings include papyrus, bark papers, plastics, vellum, or calfskin, texture, wood, and canvas. Watercolour paper is often made completely or somewhat with cotton, which gives a decent surface and minimizes contortion when wet. Watercolours are generally translucent, and seem luminous, in light of the fact that the pigments are set down in an unadulterated shape with couple of fillers obscuring the shade hues. Watercolours can likewise be made hazy by adding Chinese white.

In East Asia, watercolour painting with inks is alluded to as brush painting or parchment painting. In Chinese, Korean, and Japanese painting it has been the dominant medium, often in monochrome dark or tans. India, Ethiopia and different nations have long watercolour painting conventions also. Finger-painting with watercolour paints originated in mainland China.

Water Colour Techniques

Watercolour painting has the notoriety of being very demanding; it is more exact to state that watercolour methods are remarkable to water colour. Not at all like oil or acrylic painting, where the paints basically stay where they are put and dry pretty much in the frame they are connected, water is a dynamic and complex accomplice in the water colour painting process, changing both the sponginess and state of the paper when it is wet and the outlines and appearance of the paint as it dries. The trouble in water colour painting is totally in learning how to envision and use the conduct of water, instead of attempting to control or dominate it.

Washes and Glazes

In water colours, a wash is the use of weakened paint in a manner that masks or destroys individual brush strokes to deliver a bound together region of shading. For example, this may be a light blue wash for the sky.

A coating is the use of one paint shading over a past paint layer, with the new paint layer at a weakening adequate to enable the main shading to show through. Coatings are utilized to blend at least two hues, to alter a shading (darken it or change its tone or chroma), or to deliver to a great degree homogenous, smooth shading surface or a controlled yet sensitive shading move (light to dark, or one tint to another). The last strategy requires the principal layer to be an exceptionally weakened consistency of paint; this paint layer disintegrates the surface sizing of the paper and slackens the cellulose tufts in the mash. Painters who utilize this method may apply 100 coatings or more to make a single painting.

This technique is as of now exceptionally mainstream for painting high difference, intricate subjects, and specifically brilliant blooms in precious stone vases splendidly illuminated by coordinate daylight. The glazing technique likewise works extraordinarily well in water colour picture, allowing the craftsman to delineate the complex tissue tones successfully.

Wet in wet

Wet in wet includes any utilization of paint or water to a region of the painting that is as of now wet with either paint or water. As a rule, wet in wet is a standout amongst the most distinctive elements of watercolour painting and the method that delivers a striking painterly impact. The fundamental thought is to wet the whole sheet of paper, laid level, until the point when the surface no longer wicks up water yet gives it a chance to sit at first glance, at that point to dive in with an expansive brush immersed with paint. This is typically done to define the extensive zones of the painting with unpredictably defined shading, which is then honed and refined with more controlled painting as the paper dries.

Dry brush

Dry brush is the watercolour painting system for accuracy and control, especially exemplified in numerous herbal paintings and in the dry brush watercolours of Andrew Wyeth. Crude (undiluted) paint is gotten with a pre-moistened, little brush and then connected to the paper with little hatching or crisscrossing brushstrokes. The brush tip must be wetted however not cheated with paint, and the paint must be sufficiently liquid to exchange to the paper with slight weight and without dissolving the paint layer underneath. The objective is to develop or blend the paint hues with short exact touches that mix to stay away from the presence of pointillism. The aggregate impact is objective, textural, and profoundly controlled, with the most grounded conceivable esteem differentiates in the medium. Often it is difficult to distinguish a decent drybrush watercolour from a shading photo or oil painting, and numerous drybrush watercolours are varnished or lacquered after they are finished to upgrade this likeness.

Diluting and Mixing

Tube paints are regularly utilized with a level palette that gives compartmentalized paint wells (for holding separate paint hues) and an extensive mixing zone for mixing or diluting paints; skillet paints are exhibited in enamelled metal paint boxes that give shallow mixing zones in the folding spread or in a crease out faceted plate. With tube paints, the abundance paint remaining in the palette paint wells ought to be use or wash out just in case if the paint moves toward other well dirtying another paint; generally the paints ought to be permitted to dry out quickly and totally, as this keeps shape from forming. Regardless of the regular misguided judgment, there is no visual contrast between the gooey paint bundled in

tubes and the dried paints in skillet. Tube paints left to dry in paint wells are utilized as a part of the very same path as skillet paints—the painter essentially dribbles or showers water over the paint a couple of minutes before starting work. The main remarkable contrast is that some tube paints, for example, viridian or cerulean blue, create a coarse, uneven paint blend when left to dry and then rewetted.

Minimal Palettes

Palette is likewise the term for a particular choice of paints. A natural decision is the "primary" palette consisting of a fuchsia (generally yet inaccurately distinguished as "red"), yellow and cyan (customarily "blue") paint, each representing subtractive primary shading. This palette can blend every conceivable tint, however the purple, orange, and green blends are distinctively rather dull or dark, and most shading blends require utilization of each of the three paints. The primary palette is in this manner helpful to exhibit that smallness additionally influences accommodation (the trouble involved in mixing any normal shading) and shading immersion (by and large, the paint blend range or aggregate number of exceptional hues it is conceivable to blend with a palette). Leonardo, in his note pads, referred to red, yellow, green and blue (alongside white and dark) as the "painter's primaries". However, he might not have had a particular palette in mind; but rather replacing the cyan paint with a dark blue paint, (for example, ultramarine blue), and adding a green paint, incredibly enhances the immersion of both purple and green blends in a smaller four-paint determination, and enables a dark impartial or dark to be mixed specifically, using just red and green.

In the 19th century six paint "split primary" palette was introduced and is still upheld today as an answer for the mixing restrictions of the three paint "primary" palette. It depends on the three conventional subtractive primary hues (red, yellow, and blue), each in a "warm" and "cool" adaptation.

Collage

A collage is any work of art that is created by gluing or otherwise attaching objects to a base. The base can be canvas, wood, stone, paper or anything the artist wants to use. In collage the medium attached to the base is usually paper or fabric.

History of Collage

Collage turned out to be all the more completely created during the coming of innovation, when Cubist pioneers Pablo Picasso and Georges Braque explored different avenues regarding combining parts of different materials to make a radical new synthesis. These craftsmen mixed high culture (present day workmanship) with components of

everyday life (bits of materials, daily papers, magazines, colour paper, and so forth.). Dada craftsmen introduced the use of existing photos in their compositions, which often remarked on the province of German culture in the disorder of World War I. The craft of arrangement continued to fill in as inspiration in the 1950s and 1960s, when array and Pop craftsmen utilized discovered questions and pictures from mass created commercials in their works. While numerous craftsmen today continue with original strategies for arrangement, many introduce more updated computerized mediums to rejuvenate the customary craftsmanship.

Mixed Media Techniques for Collage

Rice paper and gel medium present an excellent opportunity to preserve many different objects while creating a beautiful piece of art. Leaves, flowers, feathers, pieces of paper and bits of fabric can all be used in this simple technique. When the gel medium dries, the rice paper becomes transparent and encases the items you used to create the collage.

Consider thinking outside the box on the selection of a base for your collage. Stone or ceramic tiles that are commonly used in kitchens or bathrooms can make interesting bases. The “wrong” side of a travertine tile makes a lovely natural base for alcohol inks, acrylic paints, glass powders and other interesting bits. Try using stamps that you already have or make your own. Small found objects can be glued on to add interest or tell a story.

Collage is an excellent technique for people that love to scrapbook as well. You can add pieces of paper such as concert or movie tickets. Pieces of fabric from special dresses, such as a wedding dress or prom dress could be added to a collage that is part of a scrapbook project. This is a good way to transform memories to art and make them last for generations to come.

Unit Summary

In this unit you have learned the different types of drawing media and its use in 2D animation. Besides that you have learnt the exploration of different medium and materials for producing a 2D art. You learn extra strategies and aptitudes to utilize them to express your own innovative thoughts.

Assessment

1. Describe formal elements of art.
2. Classify different types of art.
3. Explain the term media in art.
4. Define pigment in art.
5. List the characteristics of abstract art.

6. Explain the meaning of texture in art.
7. Define creative arts.
8. State what is acrylic?
9. How is a Pegasus drawn?
10. Write the way to erase crayon from paper.
11. Define washes.
12. Describe perspective in painting.
13. State what is ink?
14. Describe "Fresco".
15. What is collage?

Resources

- <https://www.google.co.in/>
- <https://www.rmit.edu.au/>
- <https://www.wikipedia.org/>

Unit 3 Exploration of 2D elements

Introduction

All of us visit several websites in a day. Some websites grab our sights all the more effectively, while others don't. Why? Once in a while we need to comment our feeling about preferences or abhorrence of web sites, and it is anything but difficult to state just "I like this thing, or I don't care for that thin " But in the event that we are asked to answer the inquiry for what good reason, it is extremely troublesome for us to discover the fundamental driver.

Which factors do impact on somebody to have a specific disposition towards a web page? There is a probability of many reasons associated with it, yet I think the "plan" of the webpage is extremely basic one of them.

This unit portrays the components and standards of plan and eloquent the sub-variables of outline. Color, values, structures and shapes, space lines and surfaces are known as the components of outline. These components are known as the basics for all gems. Without these components, craftsmanship couldn't be made. These components exist in our general surroundings in nature and in the situations we make for ourselves.

In this unit, you will learn the relationship between elements and principles.

Outcomes

Upon completion of this unit you will be able to:

- Describe various design elements
- Division of elements
- Elaborate, design elements
- Define a line
- Differentiate between 'outline randomness' and different forms of randomness
- Discuss various grid systems

Terminology

Line: A line is a shape with width and length.

Scale: Scale is a huge piece of outline.

Color: It explains the particular state of mind.

Texture: Texture alludes to the surface quality.

The plan components and standards portrayed here can be an investigating outline for webpage plan. It illuminates us where to start, what to test and how to examine. For instance, the creator who knows the outline components and standards can break down the page in terms of lines, colors, developments, adjustments, amicability, etc., while others simply

imagine whether it is suitable for them or not. This data can likewise give a communicating instrument to the web planner. An author can express his/her idea utilizing dialect. A webpage originator likewise communicates their idea or a specific aim with components of outline and does it viably alongside the plan standards. When a planner needs to state something through the webpage, he should utilize the components (line, color, and so forth) as a specialized device. So it is essential to know such sort of implications of the outline components and standards.

Note: Although color stands out amongst the most vital outline components, I barred the detail depiction of it, since color-related subject has just grabbed creator's interests and numerous architects, I think, definitely they know about it in particular.

Design Elements

The components will be segments or parts which can be disconnected and characterized in any visual outline or masterpiece. They are the structure of the work and can convey a wide assortment of messages. The points of interest might be differently selected by scientists, however, I included "line", "scale", "color", "repetition", "negative space", "symmetry", "transparency", "texture", "balance", "hierarchy", "contrast", "framing", "grid", "randomness", "direction", "rules" and "movement" in this unit



Title-Line drawing **Attribution- Source-** prawnny

Link-<https://pixabay.com/en/vintage-sketch-doodle-line-drawing-1778234/>

A line is a shape with width and length, yet no profundity. Artists utilize lines to make edges and the outlines of articles. A line is made by the movement of the craftsman's pen.

The direction of a line can pass on disposition. Flat lines are quiet and tranquil, vertical lines proposes mostly the potential for movement, while corner to corner lines emphatically recommend movement, which gives a greater degree of sentiment essentialness to a photo.

Lines can be characterized as any linear imprints. In this way, when you consider it, lines make up pretty much everything. Indeed, even these words and letters you're pursuing comprises thousands of bended, calculated and straight lines.

Lines can channel certain thoughts as well. Straight ones can bring out request and tidiness, wavy lines can make movement and crisscrossed lines can infer pressure or fervour.

A strategy to improve photography to a considerable measure is by the utilization of 'driving lines' which does exactly what they guarantee i.e. they lead the eye. Finding and underscoring solid driving lines in your piece can enable you to coordinate the eye through the whole piece or to certain central focuses.

Let's take a look at a case of driving lines in web outline. This webpage has a cool askew grid with extremely solid driving lines that brings down the page from area to segment in a quick crisscross shape. A solid utilization of line is an incredible approach to stylise your representations.

Lines are adaptable, basic and viable realistic components that you surely ought not to underestimate! Let's explore different avenues regarding them and find out what cool things they can add to your plan.

2. Scale

Scale is a huge piece of outline, once in a while actually. In an extremely fundamental definition, scale is the presence of mind measuring the individual components.

Scale can enable us to comprehend plans and pictures. Consider if you somehow happened to attract a mouse alongside an elephant, you'd likely draw the mouse substantially littler than the elephant, which would help watchers easily comprehend your drawing.

Along these lines, scale encourages us to comprehend different things. In any case, scale doesn't generally need to be found on authenticity. You can estimate your components drastically expansive or little to make staggering impacts and to flag which parts of your outline are more vital and which are less.

While this scale is not in fact in light of authenticity as individuals' countenances for the most part are of similar size. All things considered (Ryan Gosling is not a mammoth as far as anyone is concerned) are the sensational scaling all over. The confront causes watchers to get a fast handle on each character's level of significance in the film.

This scaling of components to flag significance is frequently called "Progressive System", which we'll discuss later. For the interim, let's take a look at a case that utilizes scale to connote significance.

3. Color

Color is vital factor. It explains particular states of mind, channels feelings and as well as each shade has certain particular undertones related to it. To put it simply, color can represent the deciding moment your outline.

Color consists of three properties. The first is tone, which is the name of the colors. The essential tones are yellow, red and blue. Auxiliary colors are made by blending two primaries. Middle colors are the blends of an essential and adjoining auxiliary color.

The second property of color is esteem, which alludes to the softness or murkiness of shade. The third property of color is power, which alludes to the virtue of the shade (likewise called "chroma").

Color isn't a rule essentially restricted to marking components. However, color ventures into everything, even photos. Channels and picture adjustors have given us the boundless capacity to change our photo's coloring and tones.

It is safe to say that if you are planning a smooth and advanced publication, then why not a sharp, noir-propelled monochromatic channel run over your picture, similar to Canvas "Road" channel. On the other hand, if you're going for an offbeat look, then consider dropping the contrast of your picture a little to quiet your picture's colors a bit, making it milder and more quiet.

4. Contrast

Contrast is regularly the magical key fixing to make your plans 'pop', which is a (sometimes disappointing) demand from many outline clients.

In an exceptionally basic definition, contrast is the level of difference between two elements of your outline.

Some common forms of contrast are dull versus light, thick versus thin, vast versus small, etc.

Contrast greatly affects meaningfulness and neatness also, it's a major motivation behind why you see books and many different publications imprinting in black content on a white background. Imagine that they printed utilizing light dim on a white background. The contrast would be low and the sort of hard to peruse. In this way, in case you're utilizing sort, make beyond any doubt you bump up that contrast.

Contrast isn't only a stylistic element or a decipherability enhancer; it can likewise act to attract the eye to certain elements of your plan. This technique is utilized as a considerable measure in website plan.

5. Texture

Texture alludes to the surface quality, both simulated and actual pattern of craftsmanship. Techniques used as a part of painting serves to indicate texture, i.e. the dry brush technique produces a harsh simulated quality and substantial application of pigment with brush or other implementation that produces an unpleasant actual quality.

Clean, sharp and smooth graphic plans can be superb, however sometimes; roughing it up a little with some texture can be far superior. Texture can include tactility, profundity, and can add some entirely fascinating effects to your outline.

Be that as it may, as with many things, make sure to use this technique in moderation, as a lot of texture can quickly overwhelm your plan. Remember: there's a barely recognizable difference between shabby-chic and out and out old shabby.

The more textures connected, the harder sort and different elements are created without a stroke effect around each letter.

Of course, in case you're going for the muddier look stylistically, at that point layering textures might look good for you. However, if you're searching for an approach to incorporate texture in a less imposing manner, follow the example below



Title-texture Attribution- Source-monicore

Link-<https://pixabay.com/en/vintage-sketch-doodle-line-drawing-1778234/>

How about we observe an example that utilizes texture in a way that enhances the piece. Notice that the utilization of the unpleasant texture isn't distracting, rather giving it a more handcrafted, authentically-vintage feel.

6. Repetition



Title-repetition **Source-**kaatjem

Link-<https://pixabay.com/en/row-of-trees-repetition-sunrise-2168579/>

Imagine about any big brand name such as Pepsi, Adidas, Audi, Motorola and Apple, this is certain that you would all be able to think about their logo, their manner of speaking and their general color plans utilized. Why are these things so significant without a moment's notice? That is correct, you got it – repetition.

Repetition is a critical component with regards to marking outline, both as far as keeping your marking predictable and as far as entwining your things.

7. Negative Space

To put it gruffly, negative space is the 'space inbetween', the range between or around different elements that form its own particular shape.

Take example of broadly respected ruler and counterfeiter of negative space craftsman M.C. Escher, whose work I'm certain you have seen and would have been sometimes astounded. Escher did a number of decorations that focussed on one shape driving into the following, by means of negative and positive space.



Title-Negative space

Attribution-Maurits Cornelis Escher

Source-

Link- <https://www.flickr.com/photos/pedrosimoes7/38798263524>

Perceive how the space in the middle of the black kangaroos is utilized to display the state of white kangaroos. This is negative space at work – considering everything around and in the middle of your physical outline and manipulating that space to form something new.

Negative space when utilized strategically can help create really staggering and clever plans. Observe these simple animal icons to render clear depictions of each animal.

8. Symmetry

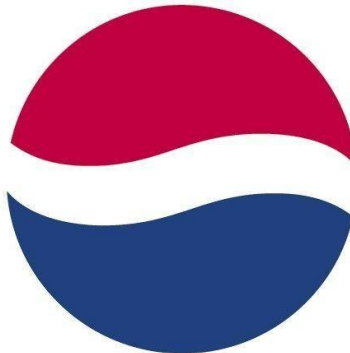


Title-Symmetry **Source**-bogitw

Link-<https://pixabay.com/en/architecture-stairs-steel-abstract-1313678/>

As species, human creatures are scientifically ended up being attracted to symmetry. We find symmetrical faces, examples and outlines, by and large more attractive, effective and lovely.

Symmetry is utilized as a considerable measure in logos so as to create a harmonious and balanced plan. Some examples of extensive brands with symmetrical logos are Target, McDonald's, channel, Starbucks, etc.



Screenshot



Screenshot

Of course, symmetry is not generally a possibility for each plan and nor should it be.

There's an almost negligible difference between an outline looking balanced and symmetrical in appearance as though one side was copied, flipped or stuck to one side. So as opposed to attempting to achieve perfect symmetry, rather attempts are made to introduce inconspicuous elements of symmetry into your outline.

Symmetry isn't generally as evident, either sometimes it is inconspicuous or sometimes you may not even notice it. A prime example of imperceptible symmetry can be found in article plan and more specific message boxes. Open up any magazine you came across, the chances are more in an extended article where you'll notice that the body copy that has been part up into columns of content and they are frequently symmetrically measured to keep things readable, flawless and additionally outwardly engaging.

By utilizing a touch of symmetry in your format, you can create a feeling of balance and request. In this way, next time you're planning a publication outline or a plan with a considerable measure of sort, focus on how much (or how little) symmetry you're utilizing. On the off chance that your outline doesn't look very right, have a run at toying with your symmetry, regardless of whether this be increasing it or decreasing it.

9. Transparency

Likewise occasionally known as 'opacity', transparency alludes to how 'transparent' an element is. The lower your opacity, the lighter and less noticeable your element is, and the higher it is, the more strongly noticeable the element is.

Transparency is additionally an incredible technique for producing a feeling of movement in static images. For example, check out this blurb, layers different images with various levels of transparency to create an immersing effect and feeling of movement.

Transparency isn't quite recently limited to advanced graphics either. Check out how this welcome card for the New York Museum of Glass has apropos which has been imprinted onto straightforward glass, giving the plan a special and drawing in effect. Consider on what mediums your outlines will be imprinted on, what will be the opacity and what completion they will have while designing or showcasing your creativity.

10. Balance

Balance is a really important thing in most of life and it's equivalently important in the realm of outline.

One approach to master balance is to think about each of your elements as having a "weight" behind it. From content boxes to images, to that of blocks of color, consider each of their sizes, shapes and what "weight" they have in connection to different elements on the page.

A decent technique is to imagine if your outline were to be printed out as a 3D model. Would it stand, or would it tip to the other side?

One kind of balance is 'asymmetrical balance', which is less about mirroring left and right/top and bottom and more about conveying, measuring and adjusting elements so their "weights" are in occasion.

11. Hierarchy

Hierarchy in configuration is a great deal like that in culture, as both are based on fundamentally the same thought. At the highest point of a hierarchical scale, we have the most important things, the lords. These elements are to be "dressed" the most indulgently and command the most consideration.

In the following level of hierarchy, we have the noblemen i.e. the elements that are important. However they don't command much consideration as the lords. These are things like subheadings, pull cites and extra information. Make beyond any doubt to keep these eye-catching and noticeable, however not at anyplace close as noticeable as your headings.

What's more? On the last rung of the hierarchical scale are the labourers, the humble elements of your plan that are given minimal amount of visual spirit, as a rule things like body copy, less important information, joins, etc.

Observe this blurb. You can without much of a stretch bring up the title, the subheading/date, and down the bottom, the smallest sort of extra information that isn't as crucial to the communication.

Of course, hierarchy isn't recently limited to sort. Images likewise have hierarchy. The bigger, more colorful or more central elements of your image will have a higher hierarchy than those smaller, blunter and less point by point elements.

12. Framing

Much the same as you do with your photos and pieces of workmanship, framing your plans correctly is an important aspect. We as a rule consider framing in terms of photography – what you include and what you don't. Be that as it may, framing is similarly as important in plan.

Physical frames such as box outlines or graphic elements can enhance or attract regard for specific elements of your plan.

For example, we should check out this menu plan that chooses to frame one of the specials and the business mission statement to attract consideration regarding these two elements that the eye may have generally disregarded. Such a simple method for highlighting

certain elements of your outline can have a major impact.



PALEO COOKBOOK

PALEO DIET MEAL PLAN

PALEO SNACKS BOOK

Why You Should Get a Paleo Cookbook & How to Find The Best One For You

A paleo cookbook is a fantastic source of ideas for making totally paleo meals that are also perfectly suited to your needs and tastes. There are many paleo cookbooks out there. You can even find a free paleo cookbook if you're looking to save money.

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Snacks are actually one of the most risky areas for anyone on any diet. When we get those between meal cravings, that's when we're most likely to cheat on our diet and grab a quick candy bar or bagel or other non-paleo snack.

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Paleo Recipes For People Who Love to Eat

Just choose the one that's targeted to your specific needs and interests and let your creative spirit out in the kitchen!

PALEO COOKBOOK www.paleoauthority.com

Title-Framing

Attribution-Paleocookbook

Link-https://commons.wikimedia.org/wiki/File:Paleo_diet_book.jpg

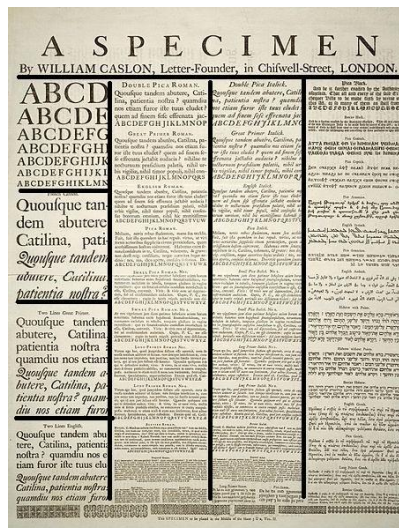
Frames don't need to be graphic either. In case you're working with photographic elements, consider utilizing them to frame your plans. Check out how this notice uses random objects to create a frame for the superimposed sort. Along these lines, you attract consideration regarding the piece by the frame and direct the eye to the truly important bits.

13. Grid

Think about an outline grid like the establishment to a house – it's a crucial initial phase in taking into consideration for you to construct a functional and wonderful final product. It signs to the developer/planner where certain elements ought to be placed, what ought to line up with what and it also gives a general outline for construction.

Grids are important, normally imperceptible elements to pretty much any outline. They are comprised of a certain number of lines and columns that you can adjust your elements against. Grids can keep your content all together, perfect and neat and great looking.

Here are some examples of various grid systems.



Title-Grid

Attribution- [William Caslon](#)

Link-https://commons.wikimedia.org/wiki/File:A_Specimen_by_William_Caslon.jpg

This example demonstrates a four-column grid at work. Note how some elements are contained to one column, while others stretch more than two, sometimes three columns. But the outline all in all seems perfect, clean and very much adjusted.

For more adaptability, consider including some more columns, similar to this example beneath.

In any case, this example has a clear and identifiable grid system to which each element has been adjusted, making for a striking, perfect and attractive outline.

Grids are adaptable, versatile and endlessly helpful. So consider utilizing one for your

next outline and see what it can accomplish for you.

14. Randomness

As of not long ago we've been preaching about alignment and request. Be that as it may, shouldn't something be said about the more organic, unpleasant and random outlines? Randomness has an extensive impact on outline. However, it is a specific sort of randomness that we should call 'plan randomness'.

The difference between 'outline randomness' and different forms of randomness is the reason and execution. With outline, your main objective ought to be communication – what does this piece need to state to consumers? Is it saying it plainly? How might I make the communication more grounded?

This piece layers the hand-sort and positions. It is in an exceptionally random manner that some individuals would state obstruction to the intelligibility. But the idea behind this is to speak to a scrambled and distorted psyche.

In this lies the difference amongst "randomness" and 'plan randomness'. If this outline were connected to a blurb for a children's movie about cheerful talking animals, it would seem random and wouldn't communicate the best thing by any stretch of the imagination. However, in this case, the random outline communicates the movie's themes perfectly.

Likewise, observe this plan by Laura Berglund that uses a level of randomness to create an organic-looking, collage-like effect. While this piece seems as though it was slapped down onto a page and in a flash looked beautifully harsh and ruffled. Have somewhat a glance at it and note what number of outline conventions it actually uses.



Title-Collage

Attribution- Source-

Link-<https://pxhere.com/en/photo/992512>

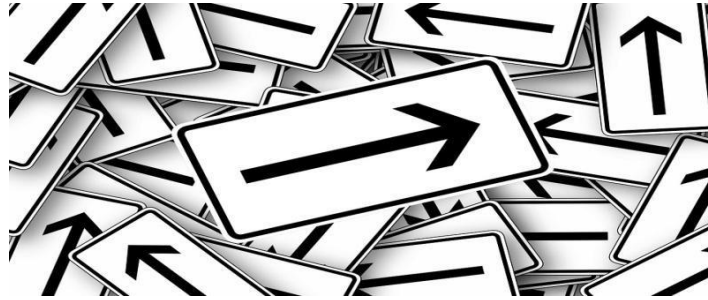
Take a look at how each element has actually been strategically situated. Driving lines have been implemented to manage the eye around the piece and there has been a

selective balance between color level, texture and photography.

This plan seems random; however, if you dissect its elements, you'll notice that certain parts of the outline have been adjusted. The design enables the eye to stream across the page and there are even some indications of a grid at work.

The fact of the matter being – things don't need to be flawless and efficient to be classed as plan. Speaking to "randomness" and playing with a couple of vanguard outlines can be effective and super fun.

15. Direction



Title-Direction Source- Pixabay

Link- <https://pixabay.com/en/direction-road-sign-note-arrow-95475/>

An important aspect of many plans is the means by which the eye moves over the page and the direction it takes – this is likewise sometimes alluded to as 'stream'. How does your eye move across the page? Do your peruses know exactly where to look next? Is the direction that their eye takes is logical?

Studies have dissected the exact idea of our eye movement propensities and the examples our eyes trace over, when seeing specific things.

By and large, the general thought is that the eye normally goes from the upper-left corner to the bottom-right corner, in a "clearing" motion. This hypothesis is best clarified top to bottom. Instead of planning 100% by these examples, however, attempt to adjust your outline's' stream and direction on a case-by-case premise. Simply remember that the eye inclines toward the upper left of a page and winds its way down from there.

16. Rules

This without question begins a lot of verbal showdown and to parcel any room of makers – half announcing that there are no tenets in layout, the other testing that there are numerous. Additionally, in fact, they're both right.

Similarly as with any ability, there are things you need to learn and this comes with general rules. Things like: make your sort neat beyond any doubt, figure out how to kern, don't utilize pixelated images, etc. These are the establishments of plan, the things that assist you to make a basic outline.

In any case, once you've learnt these rules, it's certainly time to break them.

Thus, while the clarity is a little compromised, the communication certainly is definitely not.

Following the rules and breaking them, each have their own places in the realm of outline. Bring everything with a grain of salt and learn as much as you can so that you can break and twist the rules in the correct way and make a memorable sprinkle.

17. Movement

Have you at any point heard or seen somebody describe an artistic creation or piece of craftsmanship as having "a considerable measure of movement to it"? You might have first been bewildered by that clarification – all things considered, how does a static painting move? In any case, movement is a major piece of the visual expressions, including graphic plan.

Prior we discussed the direction and stream of your plan, these factors have a major influence in the movement of your outline. On the off chance that your last piece has a decent spill out of through and through, left to right, corner A to corner B, etc., your piece will "move" smoothly.

Yet, shouldn't something be said about the cases where you need to give an element an exact feeling of movement? Maybe you paint the town that you need to appear in motion, or a car that you need to depict zooming down a roadway.

Movement can likewise be captured through motion lines. These are common in comics representations, when a character is fleeing or moving quickly. Along these lines, channel your internal comic book artist and make the most of motion lines.

Unit Summary

Elements of configuration described here are point, line, shape, form, space, color, and texture. Furthermore, I accumulated information about different outline principles, similar to the balance, extent, perspective, emphasis, movement, design, repetition, rhythm, assortment, harmony, and solidarity. These elements and principles can be the basic information and analytical frame work for an architect. I attached the examples of the elements and principles in supplement. I hope the perusers would find it useful.

Configuration is a complicated business loaded with principles, tricks, and techniques, some of which you can gain from others and some you need to learn by yourself.

Take each "govern" you read about with a grain of salt and apply it where it feels proper and relinquish the rules at whatever point you feel they aren't. Configuration is a constantly developing and changing field and each circumstance is distinctive -- one of a

kind and exciting.

Assessment

1. Elements are divided into categories
2. Describe the various design elements
3. Elaborate how line helps us in design elements
4. The difference between 'outline randomness' and different forms of randomness
5. What can keep your content all together, perfect, neat and looking great
6. Discuss the various grid systems

Resources

- <http://mexicounexplained.com>
- <https://google.com>
- <http://minyos.its.rmit.edu.au>
- <http://wikipedia.com>
- <https://encrypted-tbn3.gstatic.com>
- <http://3.bp.blogspot.com>
- <https://cdn0.iconfinder.com>
- <https://thumbs.dreamstime.com>
- <https://cdn.shopify.com>
- <https://cms-assets.tutsplus.com>
- <http://www.woot-design.co.uk>
- <http://www.magazinedesigning.com>
- <https://www.smashingmagazine.com>
- <https://i.ytimg.com>
- <http://montrealblackfilm.com>
- <http://thecontextofthings.com>
- <http://www.rockdesign.com>
- <https://market.envato.com>
- <http://subdimensionstudios.com>

Unit 4 Pixel & Resolution

Introduction

In this unit, you will be introduced to pixel and resolution with vector-based and bitmapped graphics. In order to understand each graphic format, you will also have to know the benefits and the drawbacks of both types of images on a multimedia screen, calculation of Pixels and its color and intensity depth.

Outcomes

Upon completion of this unit you will be able to:

- Know the resolution
- Describe facts about vector and bitmap
- Elaborate the depth of pixel color and intensity
- Choose the right format
- Convert bitmap to vector

Terminology

Pixels : Picture elements in digital images.

Image Resolution: Number of pixels in a digital image.

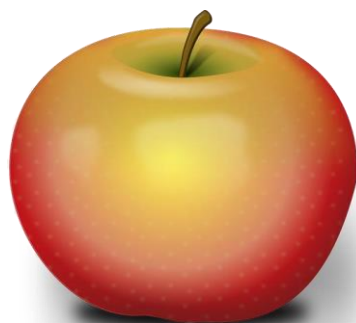
Digital Image: Which resolution always yields better quality, generally Higher Resolution is chose.

Bitmap: A representation for the graphic /image data in the same manner as they are stored in video memory

Bits/Pixel: It contributes to the quality of the image

Introduction

Digital images are basically divided into two distinct categories. They are either bitmap files or vector graphics. You need a good understanding of the advantages and disadvantages of both types of data. In this unit you learn the differences.



Title-Photorealistic vector art

Source-[OpenClipart](#)

Link-<https://pixabay.com/en/apple-red-fruit-nature-food-146453/>

Pixels and Resolution

The image that is displayed on the screen is composed of thousands (or millions) of small dots which are called pixels. The word "Pixel" is a contraction of the phrase "Picture Element". A pixel represents the smallest piece of the screen that can be controlled individually. Each one can be set to a different color and intensity (brightness). The number of pixels that can be displayed on the screen is referred to as the resolution of the image. This is normally displayed as a pair of numbers, such as 640x480. The first is the number of pixels that can be displayed horizontally on the screen and the second represents how many can be displayed vertically. The higher the resolution, the more pixels that would be displayed and, therefore, more content can be shown on the monitor at once. However, pixels are smaller at high resolution and detail can be hard to make out on smaller screens. Resolutions generally fall into predefined standard sets, only a few different resolutions are used by most PCs.

The aspect ratio of the image is the ratio of the number of X pixels to the number of Y pixels. The standard aspect ratio for PCs is 4:3, but some resolutions use a ratio of 5:4. Monitors are calibrated to this standard so that you can draw a circle and have it appear to be a circle and not an ellipse. Displaying an image that uses an aspect ratio of 5:4 will cause the image to appear somewhat distorted. The only mainstream resolution that currently uses 5:4 is the high-resolution 1280x1024. There is some confusion regarding the use of the term "resolution", since it can technically mean different things. First, the resolution of the image you see is a function of what the video card outputs and what the monitor is capable of displaying. To see a high resolution image such as 1280x1024 requires both a video card capable of producing an image this large and a monitor capable of displaying it. Secondly, since each pixel is displayed on the monitor as a set of three individual dots (red, green and blue), some people use the term "resolution" to refer to the resolution of the monitor. The term "Pixel Addressability" is referred to the number of discrete elements that the video card produces. In practical terms, most people use resolution to refer to the video image as it is done in this unit. The table below lists the most common resolutions used on PCs and the number of pixels each uses:

Resolution	Number of Pixels	Aspect Ratio
------------	------------------	--------------

320x200	64,000	8:5
640x480	307,200	4:3
800x600	480,000	4:3
1024x768	786,432	4:3
1280x1024	1,310,720	5:4
1600x1200	1,920,000	4:3

Resolution

The resolution can be defined in many ways such as pixel resolution, spatial resolution, temporal resolution, spectral resolution. We are going to discuss pixel resolution.

You have probably seen that in your own computer settings, there are different monitor resolutions such as 800 x 600, 640 x 480

e.t.c. in the options for selecting pixel resolution. The term resolution refers to the total number of count of pixels in an digital image. For example,if an image has M rows and N columns, then its resolution can be defined as M X N.

If we define resolution as the total number of pixels, then pixel resolution can be defined with set of two numbers. The first number is the width of the picture or the pixels across columns and the second number is height of the picture or the pixels across its width. We can say that the higher is the pixel resolution, higher will be the quality of the image. We can define pixel resolution of an image as 4500 X 5500.

Megapixels

We can calculate mega pixels of a camera using pixel resolution. Column pixels (width) X row pixels (height) / 1 Million.

The size of an image can be defined by its pixel resolution. Size = pixel resolution X bpp (bits per pixel).

Calculating the mega pixels of the camera

Lets say we have an image of dimension: 2500 X 3192. Its pixel resolution = 2500 * 3192 = 7982350 bytes.

Dividing it by 1 million = 7.9 = 8 mega pixel (approximately).

Aspect ratio

Another important concept with the pixel resolution is aspect ratio. Aspect ratio is the ratio between width of an image and the height of an image. It is commonly explained as two numbers separated by a colon (8:9). This ratio differs in different images, and in different screens. The common aspect ratios are:1.33:1, 1.37:1, 1.43:1, 1.50:1, 1.56:1, 1.66:1, 1.75:1, 1.78:1, 1.85:1, 2.00:1, e.t.c .

Advantage

Aspect ratio maintains a balance between the appearance of an image on the screen, means it maintains a ratio between horizontal and vertical pixels. It does not let the image to get distorted when aspect ratio is increased.

Pixel Color, Intensity, Depth of Color and the Color Palette

Each pixel of the screen image is displayed on a monitor using a combination of three different color signals: red, green and blue. This is similar (but by no means identical) to how images are displayed on a television set. Each pixel's appearance is controlled by the intensity of these three beams of light. When all are set to the highest level, the resultant color is white; when all are set to zero the pixel color is black, etc.

The amount of information that is stored about a pixel, determines its color depth, which controls how precisely the pixel's color can be specified. This is also sometimes called the Bit Depth, because the precision of color depth is specified in bits. The more bits that are used per pixel, the finer the color detail of the image. However, increased color depths also require significantly more memory for storage of the image, and also more data for the video card to process, which reduces the possible maximum refresh rate.

This table shows the color depths used in PCs:

Color Depth	Number of Displayed Colors	Bytes of Storage Per Pixel	Common Name for Color Depth
4-Bit	16	0.5	Standard VGA
8-Bit	256	1.0	256-Color Mode
16-Bit	65,536	2.0	High Color
24-Bit	16,777,216	3.0	True Color

True Color

True color is named as such because three bytes of information are used, one for each color such as red, blue and green signals that make up each pixel. A byte has 256 different values, which means each color can have 256 different intensities, allowing over

16 million different color possibilities. This allows for a very realistic representation of the color in images, with no compromises necessary and no restrictions on the number of colors an image can contain. In fact, 16 million colors is more than the human eye can discern. True color is a necessity for those doing high-quality photo editing, graphical design, etc.

High color uses two bytes of information to store the intensity values for the three colors. This is done by breaking the 16 bits into 5 bits for blue, 5 bits for red and 6 bits for green. This means 32 different intensities for blue, 32 for red and 64 for green. The reduced

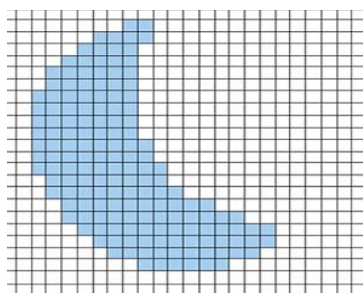
color precision results in a slight loss of visible image quality, but it is actually very slight -- as many people cannot see the difference between the true color and high color images, unless they are looking for them decisively. For this reason, high color are often used instead of true color- as it requires 33% (or 50% in some cases) less video memory and it is also faster for the same reason.

In 256-color mode the PC has only 8 bits to use; this would mean something like 2 bits for blue and 3 for each of green and red. Choosing between only 4 or 8 different values for each color would result in rather hideously blocky color, so a different approach is taken instead i.e. the use of a palette. A palette is created containing 256 different colors. Each one is defined using the standard 3-byte color definition that is used in true color: 256 possible intensities for each of red, blue and green. Then each pixel is allowed to choose one from the 256 colors in the palette, which can be considered as sort of "Color Numbers". So the full range of color can be used in each image, but each image can only use 256 of the available 16 million different colors. When each pixel is displayed, the video card looks up the real red, green and blue values in the palette based on the "color number" the pixel has assigned.

The palette is an excellent compromise: it allows only 8 bits to be used to specify each color in an image, but allows the creator of the image to decide what the 256 colors in the image should be. Since virtually no images contain an even distribution of colors, this allows for more precision in an image by using more colors than would be possible by assigning each pixel a 2-bit value for blue and 3-bit values each for green and red. For example, an image of the sky with clouds (like the Windows 95 standard background) would have many different shades of blue, white and gray and virtually no reds, greens, yellows would be chosen.

256-color is the standard for much of computing, mainly because the higher-precision color modes require more resources (especially video memory) and aren't supported by many PCs. Despite the ability to "hand pick" the 256 colors, this mode produces noticeably worse image quality than high color; most people can tell the difference between high color and 256-color mode.

Raster(Bitmap)



Screenshot

A raster image is defined by pixels. In raster images, the more pixels an image contains, the higher will be its resolution. For example, in a raster image a square is drawn as a grid of pixels (dots) and each of those pixels will have a specific color value. The amount of detail that can be seen in a picture depends on the resolution of the image i.e. how many times per inch these squares or pixels occur. 300 times per inch is what is needed for good quality production of a commercial printing press and 72 pixels per inch is required for monitor display. A line is made up of a row of pixels with each pixel having a color value and you work with this line by working with the group of pixels that makes up the line, not as a single object as you would find in a vector file. Programs such as Photoshop, PaintShop, and PhotoPaint all work with pixels (raster images). Raster images are the best choices for creating subtle gradations of shades and color, such as in a photograph.

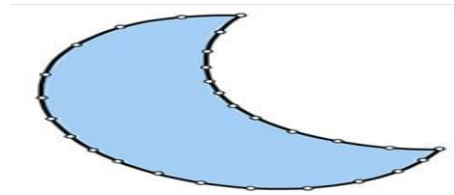
A raster image is resolution-dependent because it contains a fixed number of pixels that are used to create the image. Since there is a fixed and limited number of pixels, a raster image will lose quality if enlarged beyond that number of pixels as the computer will have to 'make up' the missing information. This is usually the cause of the image becoming "fuzzy" or "steppy".

The other disadvantage with bitmaps is when an image is enlarged, the individual coloured squares become visible and the illusion of a smooth image is lost to the viewer. This 'pixelation' makes the image look coarse.

Raster (Bitmap)

- Pixel-based
- Raster programs best for editing photos and creating continuous tone images with soft color blends
- Do not scale up optimally: Image must be created/scanned at the desired usage size or larger
- Large dimensions and detailed images equal large file size
- It is more difficult to print raster images using a limited amount of spot colors
- Some processes cannot use raster formats
- Depending on the complexity of the image, conversion to vector may be time consuming
- Raster images are the most common image format, including: jpg, gif, png, tiff, bmp, psd, eps and pdfs originating from raster programs
- Common raster programs: photo editing / paint programs such as Photoshop & Paint Shop, GIMP (free)

Vector (Lines/Calculated Points)



Screenshot

A vector image is defined by objects which are made of lines and curves that are defined mathematically in the computer. Vectors can have various attributes such as line thickness, length and color. For example, in a vector image, a square is drawn as four lines connected at the corners. Those lines can be set to different thickness and colors. The square can be empty or filled. A line is one object with attributes, and you work with this line as a single object, not as a group of pixels as you would in a raster image. All programs such as PowerPoint, Illustrator and Freehand work with vectors. Vector graphics are resolution-independent because the vector objects are drawn mathematically in the computer. They can be made larger or smaller without any loss of quality to the image. Vectors can be printed at any size, on any output device, at any resolution, without losing detail and without altering the resolution of the image. Vector images are the best choice of typefaces, charts and graphs, drawings and other graphics that must have sharp lines when scaled to various sizes.

Vector graphics, however, cannot reproduce 'continuous tone' photographic images like bitmaps.

Vector

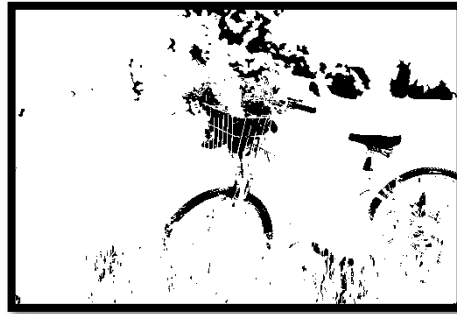
- Mathematical calculations that form shapes
- Vector programs best for creating logos, drawings and illustrations, technical drawings. For images that will be applied to physical products
- Can be scaled to any size without losing quality
- Resolution-independent: Can be printed at any size/resolution
- A large dimension vector graphic maintains a small file size
- Number of colors can be easily increased or reduced to adjust printing budget
- Vector art can be used for many processes and easily rasterized to be used for all processes
- Can be easily converted to raster
- It is not the best format for continuous tone images with blends of color or to edit photographs
- Common vector programs: drawing programs such as Illustrator,

CorelDraw, Inkscape (free)

Types of bitmap images

Bitmap images can contain any number of colors, but there are four main categories:

1. **Line-art:** These are images that only contain two colors, usually black and white. Sometimes these images are referred to as bitmaps because a computer has to use only 1 bit (on=black, off=white) to define each pixel.



Title-Line art

Source- pixabay.com

Link-<https://pixabay.com/en/bicycle-meadow-flowers-grass-bike-788733/>

2. **Grayscale images:** These contain various shades of gray as well as pure black and white. Typically 256 shades of gray (8-bit) are used even though the human visual system needs only 100 tints to perceive an image as life-like.



Title- Grey scale images

Source- pixabay.com

Link-<https://pixabay.com/en/bicycle-meadow-flowers-grass-bike-788733/>

3. **Multitones:** Such images contain shades of two or more colors. The most popular multitone images are duotones, which usually consist of black and a second spot color (often a Pantone color). The example below contains black and Pantone Warm Red.



Title- Multitone images

Source- pixabay.com

Link-<https://pixabay.com/en/bicycle-meadow-flowers-grass-bike-788733/>

- 4. Full-color images:** The color information can be described using a number of color spaces: RGB, CMYK or Lab for instance.



Title- Full Color images

Source- pixabay.com

Link-<https://pixabay.com/en/bicycle-meadow-flowers-grass-bike-788733/>

Characteristics of bitmap data

Bitmap data can take up a lot of room. A CMYK A4-size picture that is optimized for medium quality printing (150 lpi) takes up 40 MB. Compression can reduce the size of the file.

The image with the enlargement showed one of the main disadvantages of bitmap images. Once they are enlarged too much, they look unnatural and blocky. Reducing their sizes also has an impact on image quality as images lose a bit of sharpness.

Bitmaps are fairly simple to output, as long as your RIP or printer has sufficient memory.

File formats for Bitmap data

Bitmap data can be saved in a wide variety of file formats. Among these are:

BMP: An outdated and limited file format that is not suitable for use in prepress.

EPS: A flexible file format that can contain both bitmap and vector data. It is gradually being replaced by PDF.

GIF: It is mainly used for internet graphics

JPEG: Rather the JFIF file format, which is mainly used for internet graphics

PDF: A versatile file format that can contain just about any type of data, including complete pages, it is not yet widely used to exchange just images.

PICT: A file format that can contains both bitmap and vector data, but that is mainly used on Macintosh computers and is not very suitable for prepress.

PSD: The native file format of Adobe Photoshop (which can also contain vector data such as clipping paths).

TIFF: A popular and versatile bitmap file format

Applications for Bitmap format data

- Microsoft Paint
- Adobe Photoshop
- Corel Photo-Paint
- Corel Paint Shop Pro
- GIMP

All scanned images and digital camera images are bitmaps.

Converting between bitmap formats is generally as simple as opening the image to be converted and using your software's "Save As" command to save it in any other bitmap format supported by your software.

Bitmap images, in general, do not inherently support transparency. A couple of specific formats - namely GIF and PNG- support transparency. In addition, most image editing programs support transparency, but only when the image is saved in the software program's native format. A common misconception is the transparent areas in an image will remain transparent when an image is saved to another format or copied and pasted into another program. That just doesn't work, however, as there are techniques for hiding or blocking out areas in a bitmap that you intend to use in other software.

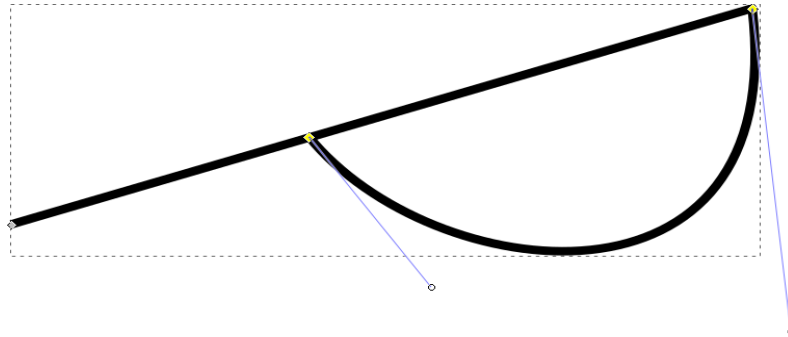
Key Points About Bitmap Images:

- Pixels in a grid
- Resolution dependent
- Resizing to a larger size reduces quality
- Easily converted
- Restricted to rectangle

- Minimal support for transparency

Vector graphics

Vector graphics are images that are completely described using mathematical definitions. The image below shows the principle. To the left, you see the image itself and to the right, you see the actual lines that make up the drawing.



Screenshot

Example of a vector based image, drawn using bézier curves.

Each individual line is made up of either a vast collection of points with lines interconnecting all of them or just a few control points that are connected using so called Bézier Curves. It is this latter method that generates the best results and is used by most drawing programs.

Characteristics of vector drawings

Vector drawings are usually pretty small files because they only contain data about the Bézier curves that form the drawing. The EPS file format that is often used to store vector drawings includes a bitmap preview image along the Bézier data. The file size of this preview image is usually larger than the actual Bézier data themselves.

Vector drawings can usually be scaled without any loss in quality. This makes them ideal for company logos, maps or other objects that have to be resized frequently. Please note that not all vector drawings can be scaled as much as you like:

- Drawings containing trapping information can only be scaled up to 20 percent larger or smaller.
- Thin lines may disappear if a vector drawing is reduced too much.
- Small errors in a drawing may become visible as soon as it is enlarged too much.

It is fairly easy to create a vector-based drawing that is very difficult to output. Especially the use of tiles (small objects that are repeated dozens or hundreds of times) and Corel Draw lens effects can lead to very complex files.

Applications for vector data

There are hundreds of applications on the market that can be used to create or modify vector data.

- Adobe Illustrator
- CorelDRAW
- Xara Xtreme
- Serif DrawPlus
- Inkscape

File formats for Vector data

Bitmap data can be saved in a wide variety of file formats. Oddly enough the most relevant formats for the printing industry are also capable of storing bitmap information:

EPS: The most popular file format to exchange vector drawings even though PDF is quickly gaining ground.

PDF: A versatile file format that can contain just about any type of data including complete pages.

PSD: The native file format of Adobe Photoshop.

AI: The native file format of Adobe Illustrator

AI: The native file format of Adobe Illustrator.

Note : By the way, PDF and EPS are technically compound file formats, meaning that they can handle both vector and bitmap artwork. However, for simplicity, they're more commonly known and categorized as vector file formats.

How to convert bitmap data to vector data and back Visual

Comparisons of Vector vs. Bitmap

300 dpi is generally considered the minimum resolution for printing bitmap work, like photos or complex artwork. There can be a marked difference between the way bitmaps and vectors are printed.

Below are some close-up images from a chapter on file types in 'The Print Handbook'. The book was printed using a Heidelberg Speedmaster XL75 litho printer. Each image's actual width is roughly 15 mm (just over half an inch).

JPEG OR JPG(300 dpi/Quality: High):

Developed by the Joint photographic expert's group, jpg became an imaging standard in 1992, which is roughly about three years before the web gained broad acceptance.

Jpg images support up to 24-bits of color in the RGB color space. Though typically used for photos and scanned images, jpg is what is called a lossy imaging format. By that, it

means every time an image undergoes jpg compression, color data is lost. The amount of compression is determined at the time of creation through the use of a quality slider or value. The default value is traditionally 80% or high quality, which kicks out a rather nice result. The issues appear when you take that same image and recompress it. Suddenly colors disappear and white dots or halos appear around object. This means the color information has been wiped out in those areas and can't be recovered. It is replaced by what is called a "Specular Color". Due to the relatively small file size, jpg has become a de facto imaging standard on the web or for any graphics displayed on a screen.

GIF

The grand daddy of web imaging formats, the Graphics Interchange Format , has been around since 1987 and was created by compuserve partly to provide 256 colors in the hexadecimal color space to otherwise black and white images.

The other objective behind its development was the image created which had to be small enough to be transferred over the slow dial-up modems that were common at the time. One case where the use of a GIF over a jpg image makes sense is a single- color logo or illustration being shown on a screen. Even though the low quality GIF fell out of grace with the rise of faster bandwidth, its animated GIF counterpart is undergoing a bit of a nostalgic renaissance.

To learn more about the GIF, this article is a great overview of its history. A huge variety of some of the hilarious GIF and animated GIF files are available in the web for ready reference.

PNG

More commonly called "Ping" images, the Portable Network Graphic format actually rose to prominence thanks to competing GIF copyright claims between Compuserve and Unisys. The reason was due to the fact it was a non-patented alternative to GIF. Like its jpg counterpart, png images use the 24-bit RGB color space. What has spurred its popularity on the web and in mobile, is the fact PNG images can also support an 8-bit Alpha channel (RGBA) which means this is the only imaging format- other than GIF- which permits transparency.

TIF

The Tagged Image File Format (TIF or TIFF) is the preferred imaging format for the print industry. The reason is this is the only format that fully supports the CMYK color space and can supports very high resolutions of 300 dpi/ppi or more. At those resolutions the file size of a tiff image, compared to its jpg or png cousins, is relatively massive. Interestingly, this format is under the control of Adobe which explains why Photoshop is the software of

choice when it comes to working with TIFF images.

Unit summary

In this unit, you've learned how image files can be divided into two distinct categories: vector-based and bitmap images. These two are different in the way that how to be processed by computers by calculating the pixels and Pixel Color and Intensity Depth in order to decide, which format will help you with your multimedia or web project. You need to have a good understanding of both kinds of images and know their advantages and disadvantages.

Assignment

1. What is a pixel made of?
2. What does "dpi" stand for, and what is its relationship to a digital file?
3. Describe mega-pixel
4. How the image is "pixelated"?
5. Differentiate between raster and vector graphics
6. What is a Bezier curve?
7. Describe the difference between screen resolution, print resolution and image resolution.
8. Elaborate the difference between a halftone (or bitmap) image and a greyscale image
9. Write down the advantages and disadvantages of the JPEG and Tiff file formats
10. Explain the relevance of the term 72dpi
11. What is "ppi", and how is it different from "dpi"?
12. If an image is three inches by four inches at a resolution of 200ppi, how many pixels does it contain?

Resources

- <https://google.com>
- <http://wikipedia.com>
- <https://www.prepressure.com>

DMA-03

2D Animation

Block – III: Graphics & Advertising (Practical)

Unit-1 Digital Layout Creation

Introduction

GIMP is software that is freely available and is meant for editing images and correcting colors. It is available for GNU/Linux, Windows, OS X, and other operating systems. Whether you are a graphic designer, an image editor, an illustrator, or a scientist, GIMP provides sophisticated tools and filters to aid in graphic designing, illustrations, scientific application and image editing tasks. Productivity of GIMP can be supplemented with various customization options using 3rd party plug-ins. The instructions for GIMP have been sourced from its documentation that has been accessed under GNU Free Documentation License.

Outcomes

Upon completion of this unit you will be able to:

- The basics of GIMP open source free image editor
- The use of various tools and functions associated with GIMP
- Various shortcut keys for ease of image editing

Terminology

RGB: Red, Green, Blue – Primary Colour

Rectangle tool: Rectangle selection tool is used to choose rectangular regions of an image or a picture.

Ellipse Tool: Ellipse Selection tool is used to create circular or elliptical regions from an image.

Fuzzy selection Tool: Fuzzy Select (also known as Magic Wand) tool is used to selection regions of the image based on similarity in color.

Path Tool: Paths tool allows for the creation of complex regions called Benzier Curves.

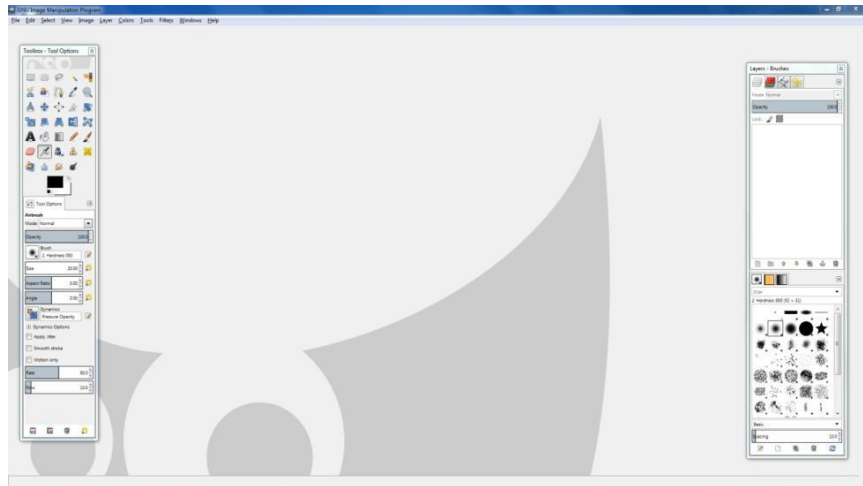
GIMP Installation

The GIMP software may be installed from their official website- <https://www.gimp.org/downloads/>

Select the Current Stable Version-

The current stable release of GIMP is 2.8.22 (2017-05-11). Download the official GIMP installer for Windows (approx. 100MB) by clicking on the above link. The installer contains both 32-bit and 64-bit versions of GIMP. The appropriate version shall be automatically installed.

GIMP – Main Window



Screenshot

The above screenshot shows the Main window of GIMP. The various sub-windows available in the main windows are listed below:

Main Toolbox, Tool options, Image window, Layers dialog, and Brush/Pattern/Gradient

Image Window-

Image Window of GIMP helps with the editing of multiple images at the same time. Each image is shown in its own separate window.

The following tools/functions are available-

- a. Title Bar
- b. Image menu
- c. Menu button
- d. Ruler Quick Mask Toggles
- e. Pointer co-ordinates,
- f. Unit menus
- g. Zoom button
- h. Status area
- i. Cancel Button
- j. Navigation control
- k. Inactive peddling area
- l. Image display
- m. Image window resize toggle

GIMP Basics

GIMP Image

GIMP image format contains many layers also includes several objects such as a selection mask, sets of channels and paths, undo history etc. making it complicated.

There can be three possible modes to define an image:

- a. RGB
- b. Grey scale
- c. Indexed

In GIMP, each Colour channel includes the alpha channel (which represents the opacity) with a range from 0 to 255.

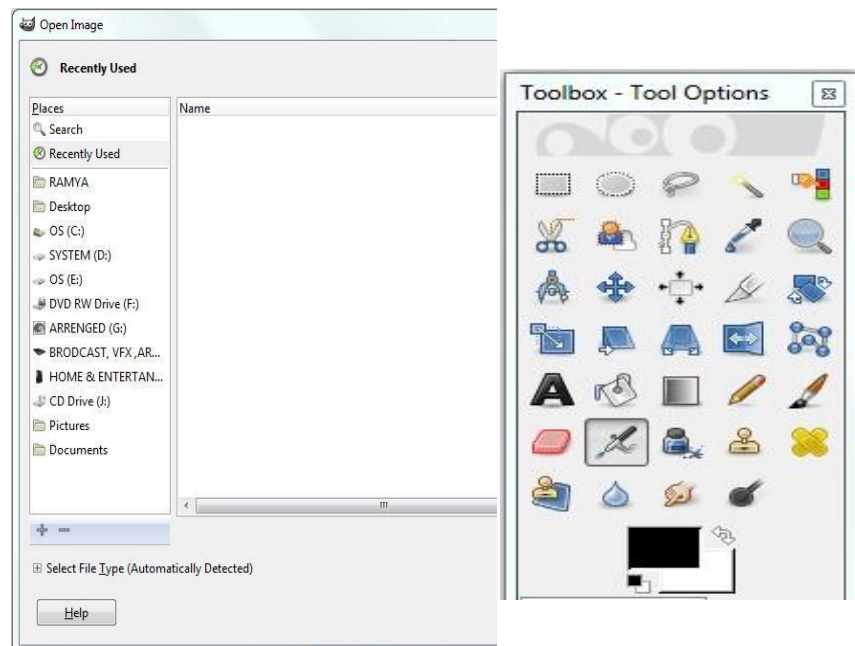
Creation of New Files

New files can be created by navigating to File → New

In the popup window, the initial width and height of the files can be defined.

Opening Files

Navigate to File → Open from Toolbox menu. Browse and open the required file from this window.

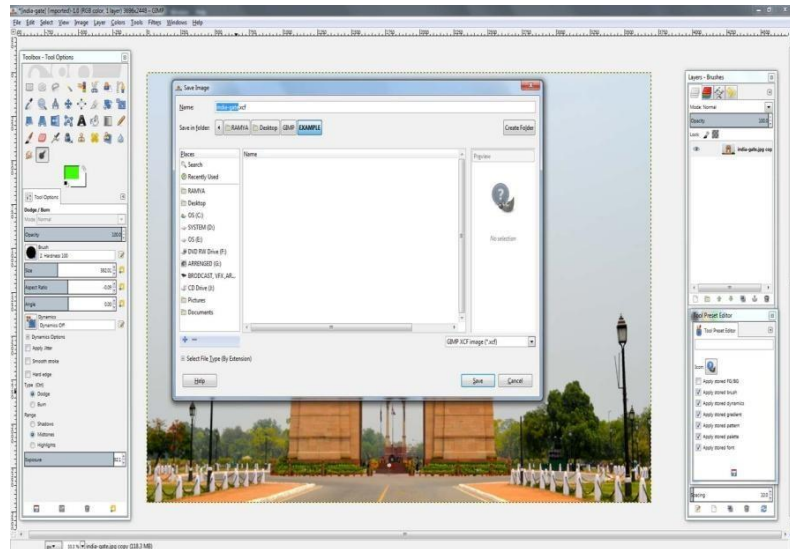


Screenshot

An image can also be opened by choosing the file URL or web address. Click File, open Location from Toolbox menu or Image menu and enter the image URL.

Some images can be simply copied and pasted by clicking on File → Acquire → Paste as New from toolbox Menu.

Saving Files



Screenshot

GIMP allows saving the image with all layers in a format which is known as XCF format. It is allowed only in Native XCF format. In other formats, it does not store all the data with all its layers and properties in a GIMP image. XCF format is GIMP default format which can save data with all its properties. Saving a file is available in several types of formats. The easiest way to save a file is to go to File and save it.

Main Toolbox

The main tool box is shown in the figure on the right. The various tools available in the main tool box are as listed below -

- Rectangle selection tool
- Ellipse tool
- Free select tool/lasso
- Fuzzy selection tool
- Select by colour
- Scissors
- Foreground
- Path tool
- Colour picker tool
- Zoom tool
- Measure tool
- Move tool
- Alignment tool
- Crop tool
- Rotate tool

- Scale tool
- Shear tool
- Prospective tool
- Flip tool
- Cage transform/deform tool
- Text tool

To demonstrate the use of the tools, we have taken the example of India Gate



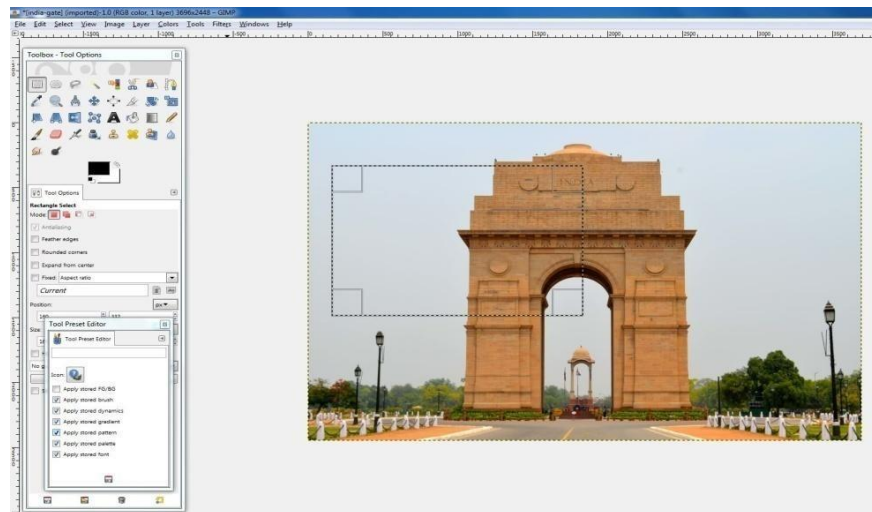
Title-India gate

Source- inspiretourism.com

Link- <http://www.inspiretourism.com/?s=delhi>

Rectangle Tool

Rectangle Selection tool is used to choose rectangular regions of an image or a picture. It is a basic yet useful selection tool. It is also used to produce a rectangle or square selection on an image to be filled or modified using other types of Tools.



Screenshot

Keyboard Shortcuts for Rectangle Regions

Ctrl Key: Click and hold down the left mouse button. Then press down the Ctrl key until the rectangle is created. The starting point will be used as the centre of the rectangle.

Shift Key: Click and hold down the left mouse button. Then press down the Shift key until a square is created.

Ctrl + Shift Keys: Click and hold down the left mouse button. Pressing both keys together combines the two effects give above, giving a square with its centre at the starting point.

Activating Tool: Rectangle Selection Tool can be accessed in different ways:

- Click on the Rectangle tool icon in toolbox
- Use the keyboard shortcut R or
- Go to the 'Tools' menu, hover over 'Selection Tools' and click on 'Rectangle Select'

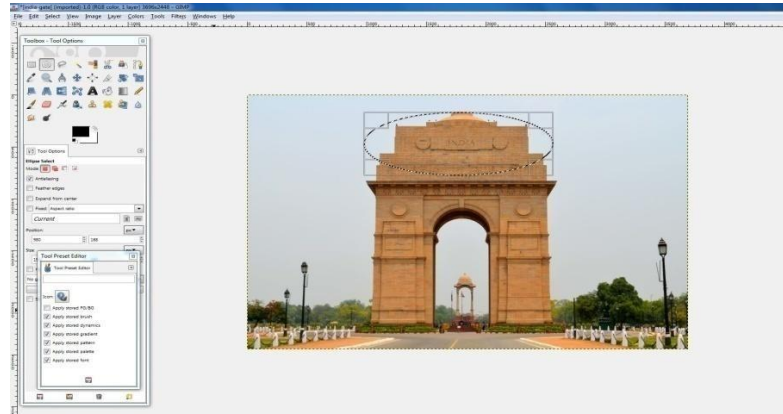
Ellipse Tool

Ellipse Selection tool is used to choose circular or elliptical regions from an image, with high-quality antialiasing if needed. It can produce a circular or elliptical region on an image and then fill it using the Bucket Fill Tool.

Activating tool

Ellipse Selection Tool can be activated in three different ways:

- First click on the Ellipse tool icon in toolbox.
- Use the keyboard shortcut E.
- Go to the 'Tools' menu, hover over 'Selection Tools', and click on 'Ellipse Select'.



Screenshot

Keyboard Modifiers

Ctrl Key: Click and hold down the left mouse button. Now press the Ctrl key until the ellipse has been created. The starting point is used as the centre of the selected ellipse.

Shift Key: Click and hold down the left mouse button. Now press the Shift key until the ellipse has been created. Holding Shift creates a circle instead of a ellipse.

Ctrl+Shift Keys: Click and hold down the left mouse button. Pressing both keys together will combine the two effects, giving a circular selection centred at the starting point

Free Selection Tool or Lasso

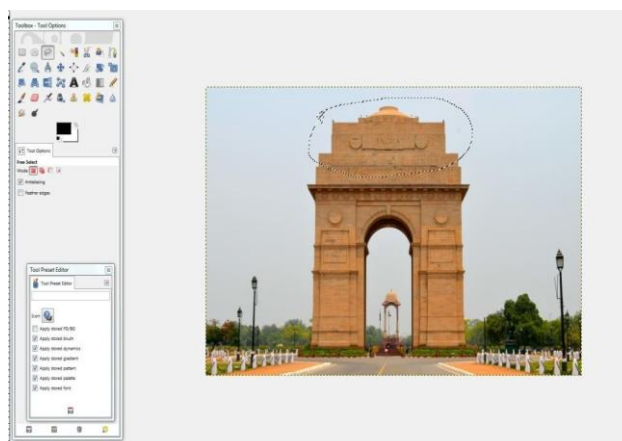
Free Selection tool or Lasso helps create a selection by clicking around an object (any part of the image). The Lasso is best used for outlining a selection. However, it is not precise. The practice image is in the folder Toolbox/Free Select Tool. Most users find the Lasso tool convenient to begin with, but then swiftly move on to Quick Mask mode to get an accurate selection. (You will learn more about Quick Mask later).

Activating tool

This tool can be activated in several ways as listed below -

- Click on the Lasso tool icon in toolbox;
- Use the keyboard shortcut F;

Go to the 'Tools' menu, hover over 'Selection Tools', and click on 'Free Select'



Screenshot

Tool handling

When you click around an area with the Lasso tool, each anchor point will change colour briefly. When you hover over the first point again, it will change its colour. Click on it and the selection will be created automatically.

Alternatively, when you hold down the left mouse button, the lasso becomes a free-hand tool and enables you to draw a selection. To delete the selection, navigate to the 'Select' menu and click 'None'.

Fuzzy Selection Tool

Fuzzy Select (also known as Magic Wand) tool takes colour similarities into account to select areas of the image. The Magic Wand works well when the objects have sharp edges. It works best for selection of a solid-coloured (or nearly solid-coloured) background area. As the selected area expands outwards from the centre, it spreads to pixels that are connected to each other by jumping over small gaps, depending on the Threshold option number selected.

To increase or decrease the threshold, drag the pointer downward (or to the right) or upward (or to the left) after the first click. The further you drag the mouse, the larger the selected region will become. You can reduce the selection region by dragging upwards or to the left. The Fuzzy Tool starts selecting as you click at a spot on the image and go outwards, thereby selecting colours which are same or similar to the initial colour.



Screenshot

Select By Colour Tool

This tool is used when you need to select areas of an image based on colour similarity. It works mostly like the Fuzzy Select tool ('Magic Wand').



Screenshot

The main thing that differentiates the two tools is that the Magic Wand selects adjacent regions with similar colours where all colours are connected to the starting point, but having no large colour barriers. Recall that the objects of separate colours prevent the Magic Wand from spreading everywhere in the Fuzzy Tool lessons.

On the other hand, the Select by Colour tool selects all pixels that are sufficiently similar in colour to the pixel clicked on, regardless of where they are located.

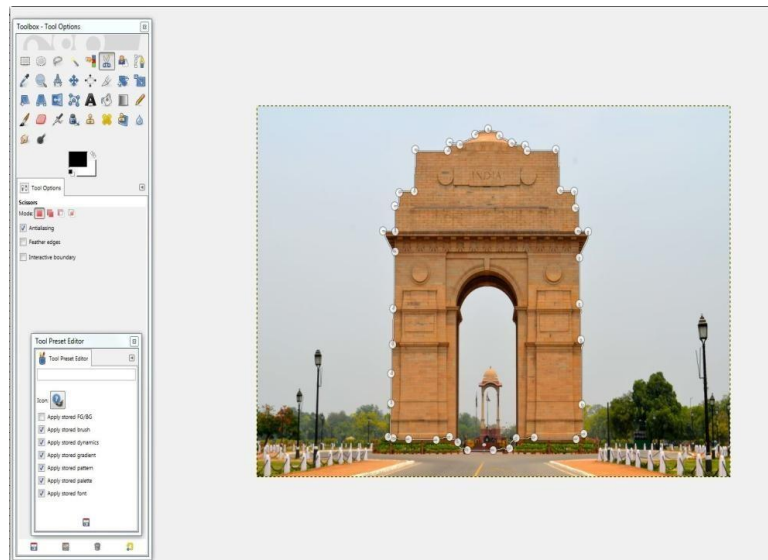
In case of Fuzzy Tool, the selection starts once clicked with the reference being the first clicked colour. With the Select by Colour tool you can change the threshold by dragging across the image in the same way as with the Fuzzy Tool.

Activating Tool

The 'Select by Colour' tool can be accessed in several ways as listed below

- From the image menu, Bar Tools then Selection Tools then By Colour Select
- Using the keyboard shortcut Shift +O

Scissors Select Tool



Screenshot

The Intelligent Scissors tool has an interesting function. It has some features in common with the both Lasso and the Path Tool while having some features of its own. If you are trying to select a region defined by strong colour-changes at the edges, this can be very useful. To use the Scissors, you need to create a set of "control nodes", also referred to as anchors or control points, at the edges of the region you are trying to select. The tool produces a continuous curve passing through these control nodes, following any high-contrast edges it can find. With some luck, the path that the tool finds will correspond to the contour you are trying to select.

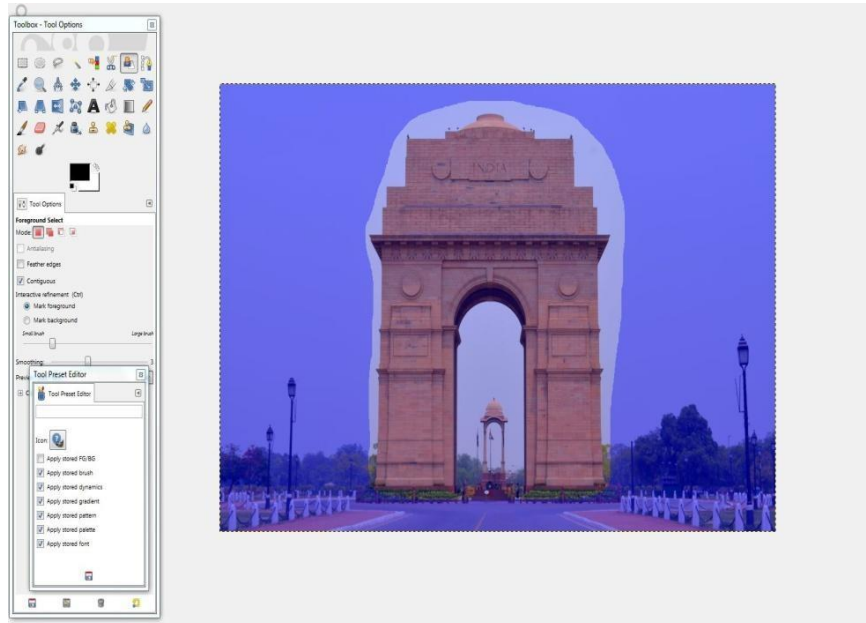
However, the edge-following logic for this tool results in the selection being pretty crude in many cases. A good way to clean them up is to switch to Quick Mask mode and use paint tools to paint the problematic areas.

Overall, Path tool is more useful than the Intelligent Scissors tool as the paths it produces are retained until you delete them and can be altered at any time.

Activating tool

From the image menu, go to Bar Tools, then Selection Tools, then Scissors or you may use the keyboard shortcut I.

Foreground Select Tool



Screenshot

This tool allows extraction of the foreground from the active layer or from a selection.

Activating Tool

Clicking on the tool icon in the Toolbox through Tools> Selection Tools> Foreground Select in the image menu.

Key modifiers

Ctrl- By pressing the Ctrl key, you can switch between foreground and background selection painting.

Path Tool



Screenshot

Path tool allows for the creation of complex regions called Bézier Curves. It is similar to Lasso but has the adaptability of vectorial curves. You can edit your curve; you can paint with your curve or even save, import and export the curve. Paths can also be used to create geometrical figures. These paths have their own dialog box.

Activating Tool

In the image menu through Tools then Paths or by using the keyboard shortcut B

Key modifiers Shift

This key has several functions depending on the context. See Options for more details.

Ctrl; Alt

Three modes are available to work with the Paths tool: Design, Edit and Move.

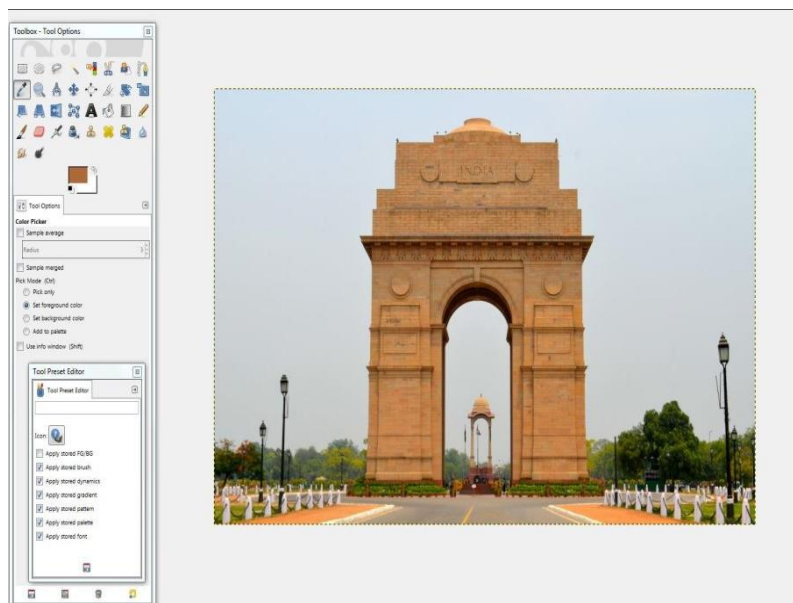
Ctrl key toggles between Design and Edit. Alt (or Ctrl+Alt) key toggles between Design and Move.

Colour Picker Tool

Colour Picker Tool, as the name suggests, is used to pick or select a colour from the screen. By clicking on an image, you can change the foreground colour or background colour to the colour that you have selected. To test this tool we will load a sample image. Go to Toolbox/Colour Picker folder and load carnations .jpg.

Colour Picker Options

Tool options are displayed in a window attached under toolbox the moment a tool is activated.



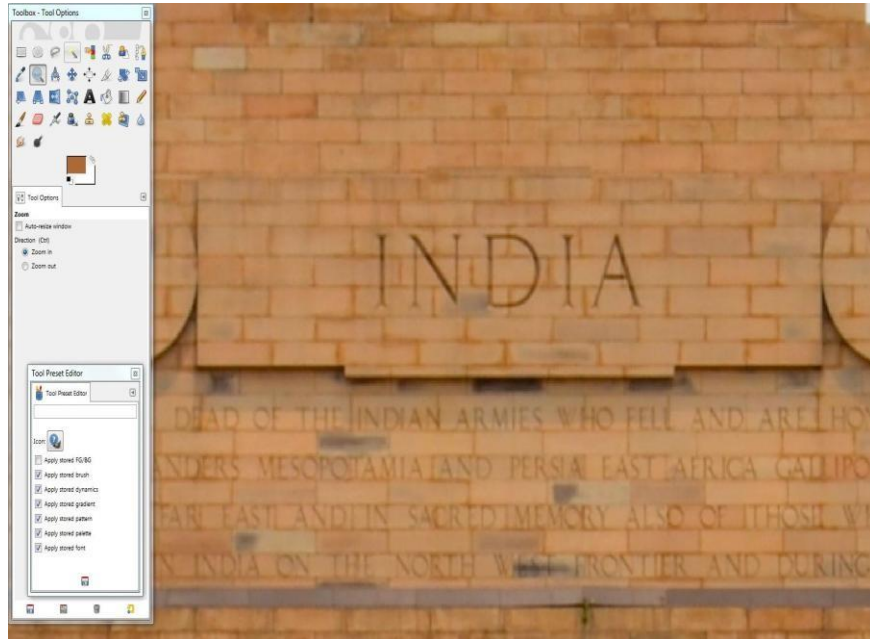
Screenshot

Zoom Tool

Open a new image that you want to zoom. A magnifying glass with a '+' sign will

appear on the image. The default action is to 'Enlarge' the image. This means with each left click of the mouse the image gets bigger.

To enlarge a specific area, simply click on that spot in the image. It can also be done by drawing around the area with the zoom tool. The image can be shrunk by holding down the Ctrl key and clicking the left mouse button. When you press Ctrl after selecting the Zoom tool a minus sign will appear inside the magnifying glass. You can also see the size of the image in pixels and the percentage of enlargement at the lower left part of the screen.



Screenshot

Measure Tool

The Measure Tool is used to measure pixel distances in the image. By clicking and holding the left mouse button, you can determine the angle and number of pixels between the point where you click and the place where the mouse pointer is subsequently located.



Screenshot

The Move Tool is used to move the image, layers, regions or guides along with text.

You should make it a habit to use this tool as it prevents the accidental use of a tool which may then corrupt the image.

Activate Move Tool

The Move Tool can be activated in the following ways:

- Click on the 'Move' Tool icon in the 'Toolbox'.
- Press keyboard shortcut M.
- Go to the 'Tools' menu, hover over 'Transform Tools' and select 'Move'.

Key modifiers for the Move Tool

Alt Key: This key should be used to move regions or layers without altering the image. Only the frame is moved and not the contents.

Using Arrow Keys:

Arrow keys can be used to move the active layer by one pixel, instead of using the mouse. Pressing Shift and the arrow key, moves it by 25 pixels.

Alignment Tool

The Align tool is used for aligning the image layers with various image objects. When this tool is selected, the mouse pointer turns into a small hand. By clicking on an element of a layer in the image, you can choose the layer which is required to be moved (with Shift + click, you can choose several layers to be aligned). This focalized layer has small squares in the corners. Several buttons in the dialog allow you to select the mode in which the layer will be moved. You can also select the image, an object (other layer, selection, and path) the selected layer to which other layers is required to be aligned on. This object is called Target.



Screenshot

Activating the Tool

You can activate the Align tool in several ways as listed below

- From the image-menu, through Tools , Transform Tools, to Align By using the keyboard shortcut Q.

Crop Tool



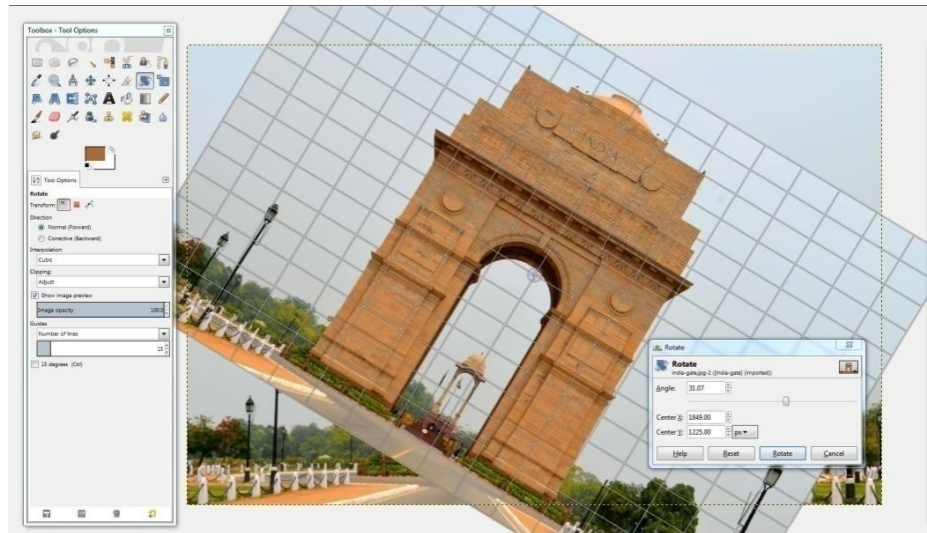
Screenshot

The Crop Tool is used to crop or clip an image or layer. This tool is often used to get a more focused working area, by removing the borders or unwanted areas. It can also be used if you need a specific image size that is different from the dimensions of your original image. To use the Crop Tool, click inside the image and drag a rectangular region before releasing the left mouse button. When you click, a dialog pops up showing you the dimensions of the cropped region and allows you to perform various actions. If you want to change the region, you can do so either by clicking and dragging the corners or by altering the values in the dialog box. When you are done, you can crop your image by clicking inside the crop region or by pressing the Crop or Resize buttons in the dialog box.

Activating Tool

The Crop Tool can be called from the image-menu: Tools Transform Tools Crop and Resize

Rotate Tool



Screenshot

The Rotate Tool: To Level the Horizon.

Navigate to toolbox/Rotate Tool folder. Select an image. Select the Rotate tool depicted by two blue rectangles.

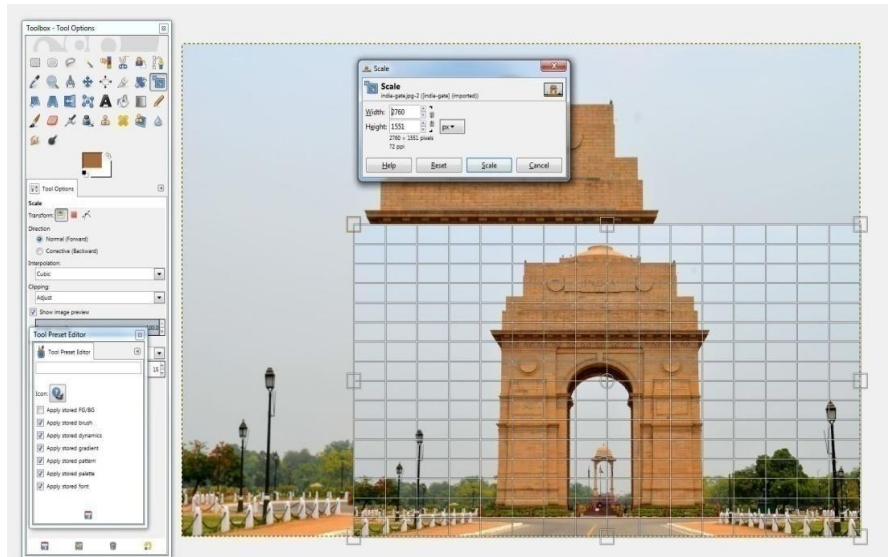
Set Clipping to 'Crop to Result'. Set Guides to 'Number of Lines'. Then gently drag the image up, from the right corner, to rotate it until the image horizon is between two guidelines. When the horizon is aligned, click 'Rotate' to create a horizontal horizon. The Rotate tool will crop the image automatically.

Scale tool

The Scale Tool is used to scale layers, regions or paths. When you click on the image using the tool, the Scaling Information dialog box is opened, allowing you to change dimensions of the image separately. At the same time a Preview with a grid or an outline is superimposed on the object and handles appear on corners of the image which you can click on and drag to change the width and height. A small circle appears at the centre of the Preview allowing us to move this preview.

Activating tool

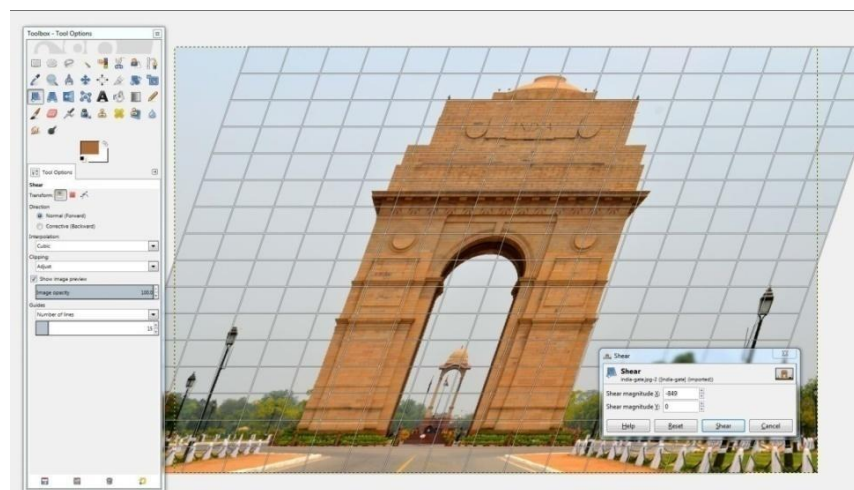
The Scale Tool can be called in the following order, from the image-menu: Tools - Transform Tools-Scale or by using the Shift T key combination.



Screenshot

Shear Tool

Shear tool is used to tilt an image. For example, the upper part of the image may be tilted to the left and the bottom tilted to the right. The image is not rotated (as with the Rotation tool) but deformed. See the example image below. Shear tool may also be used to distort a layer, a selection, or a path.



Screenshot

Shear dialog box

Shear magnitude X- Tilt the image to the left or to the right (horizontal movement). Positive numbers create a clockwise tilt. Negative numbers create a counter-clockwise tilt. The unit of measurement is half-pixels.

Shear magnitude Y- Tilt the image up or down (vertical movement). Of course, we can set X and Y dialog to create the complete Shear effect without activating tool twice.

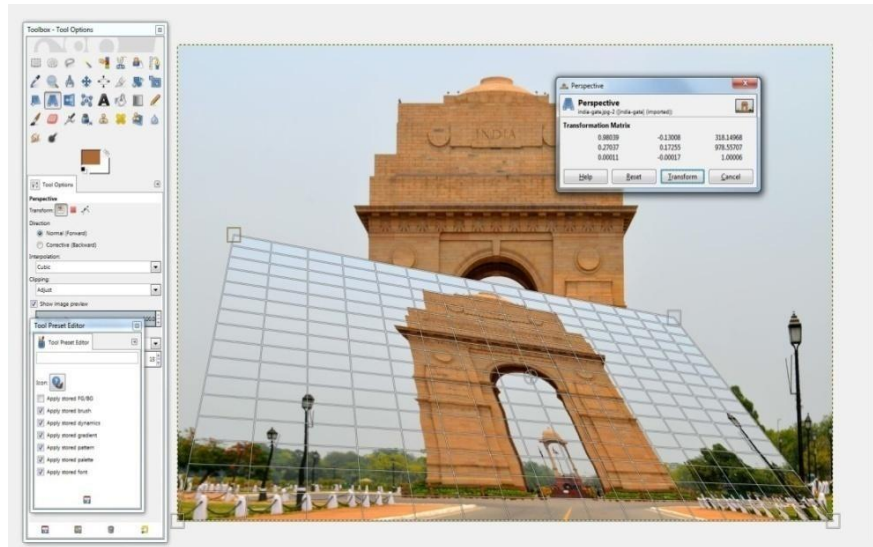
Activating tool

Click on the Shear icon in toolbox. Keyboard shortcut: Shift+S or go to Tools menu, hover over 'Transform Tools' and select 'Shear'.

Perspective Tool

Perspective Tool is used to change the position or angle of a part or whole image: Leaning buildings, monuments, pillars, etc. can all be corrected.

Select an image. Click on the image and a rectangular frame or a grid pops up around the image with a handle on each of the four corners. By moving these handles, using click-and-drag motion we can change the perspective. At the same time, a 'Perspective' box pops up seeking agreement to the transformation. At the centre of the grid, a circle also allows movement of the image by click-and-drag



Screenshot

Flip tool

This tool flips layers or regions either horizontally or vertically. When a selection is flipped, a new layer with a Floating Selection is created. This tool can also be used to create reflections.



Screenshot

Activating tool: Click the Flip tool icon in toolbox. Use the Shift F keys. Go to tools menu, hover over Transform Tools and select 'Flip'.

Key modifiers

Ctrl Key: Ctrl allows toggling the modes between horizontal and vertical flipping.

Flip Type:

This setting controls flipping in either horizontal or vertical direction. This tool can also be switched by using the Ctrl key modifier.

Flip Tool Actions:

The 'Horizontal flip' is very simple: Click on the 'Flip' tool, select 'Horizontal' from the 'Flip type' and click on the image. The image will flip horizontally.

Cage Transform/Deform Tool



Screenshot

Cage tool is a special transformational tool that allows us to select the transforming area by setting anchor points by free hand drawing, similar to the free selection-Lasso tool.

Activating Tool - From the image menu, go to Tools, then Transform Tools, then Cage transform

Text Tool



Screenshot

A text item created using the Text tool can be transformed into a path using the Create path from text button in the Tool Options for the Text tool. It can be used for converting text into a path, then transforming the path and finally either stroking the path or converting it to a selection and filling it. This action often leads to much higher-quality results than rendering a text as a layer and transforming the pixel data.

Bucket Fill Tool

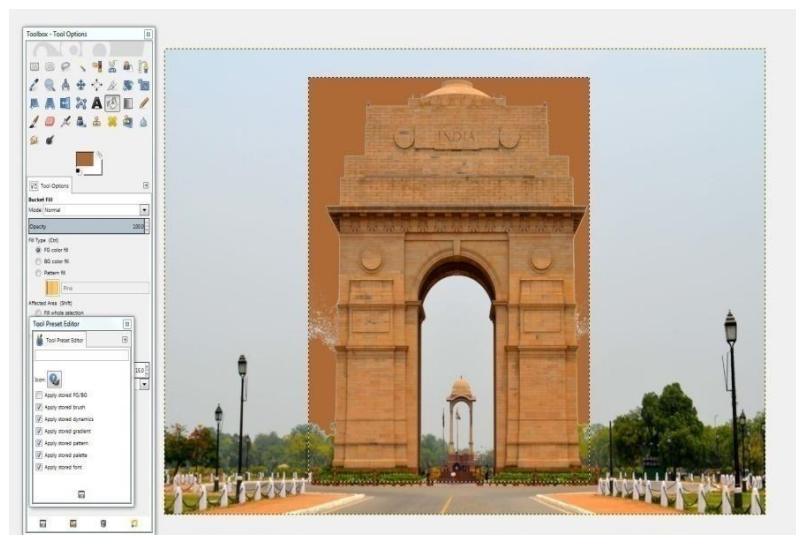
This tool fills a selection with the current foreground colour. If you Shift+click and use the Bucket tool, it will use the background colour instead. Depending on how the tool options are set, the Bucket Fill tool will either fill the entire selection or only parts whose colours are similar to the point you click on. The tool options also affect the way transparency is handled.

The amount of fill depends on the Fill Threshold specifications provided. The Fill Threshold determines how far the fill will spread (similar to the way in which the magic wand works). The fill starts at the point where you click and spreads outward until the colour or alpha value does not apply any more.

Activating tool

The Bucket Fill can be called as follows:

From the image-menu: Tools → Paint Tools → Bucket Fill



Screenshot

Blend Tool/Gradient Tool

Blend/Gradient tool fills the selected area with a gradient blend of the foreground and background colours by default, but there are many options. To use the blend, drag the cursor in the direction you want the gradient to go and release the mouse button when you feel you have the right position and size of your blend.



Screenshot

Activating Tool

The Blend Tool can be called in the following order: From the image-menu: Tools → Paint Tools → Blend

Pencil Tool



Screenshot

The Pencil tool is used to draw free hand lines with a hard edge. The pencil and paintbrush are similar tools

Activating Tool

The Pencil Tool can be called in the following order: From the image-menu: Tools → Paint Tools → Pencil or clicking N keyboard shortcut

Paintbrush Tool

The paintbrush tool is used to paint fuzzy (soft) or hard (sharp edged) brush strokes. All strokes are rendered using the current brush. The size of a brush is adjustable. The

Paintbrush is the tool used while employing the Quick Mask. It can also be used to paint on images, regions or layers.

Activating tool

The Paintbrush Tool can be called upon in the following ways:

- Click the Paintbrush icon in toolbox;
- Use the **P** keyboard shortcut;
- Navigate to 'Tools' menu, hover over 'Paint Tools' and select 'Paintbrush'.

Key modifiers

Ctrl Key: Changes the paintbrush to a Colour Picker.

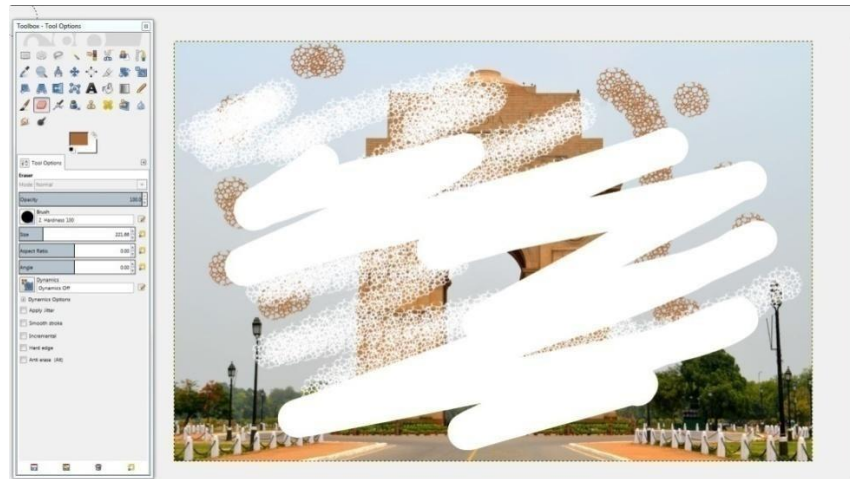
Shift Key: Pressing the Shift key places the paintbrush into straight line mode. Holding **Shift** key, left click the mouse will create a straight line. Consecutive clicks will continue drawing straight lines that originate from the end of the previous line.

Paintbrush tool options: Tool options are displayed in a window attached under toolbox as soon as a tool is activated: Mode; Opacity; Brush; Dynamics; Dynamics Options; Apply Jitter; Smooth Stroke; Incremental



Screenshot

Erase Tool



Screenshot

Eraser tool is used to delete anything in the image.

In case of over-deletion, you can press Ctrl+Z to recover lost areas of the image. Instead of painting with the eraser, it is advised to work click by click. You can recover the deleted areas by using Ctrl+Z. This will reverse one click at a time.

Airbrush tool



Screenshot

This tool is used to paint soft areas of colour. While it mostly works just like the paintbrush, it offers with a lighter touch. With multiple clicks, the Airbrush darkens the flow of paint.

Activating tool

Airbrush tool may be activated in several ways:

- Click on the Airbrush icon in toolbox
- Use the **A** keyboard shortcut

- Go to the 'Tools menu', hover over 'Paint Tools', select 'Airbrush'

Ctrl Key: It changes the airbrush to a Colour Picker. Choose the colour for the airbrush from the image and paint over the area of the image required to be enhanced.

Shift Key: It changes the airbrush to straight line mode. Hold down the Shift key and left click the mouse. Release the left button of the mouse and move the mouse across the image and click again. A straight line of multiple images could be seen.

Tool options: These are displayed in a window attached under Toolbox as soon as a tool is activated. See image above.

Rate: The Rate slider adjusts the speed of colour application. A higher setting produces darker brush strokes in a shorter amount of time.

Flow: This slider controls the amount of colour that the airbrush paints. A higher setting here will result in darker strokes.

Ink Tool

The Ink tool simulates an ink pen with a controllable nib to paint solid brush strokes with an ant aliased edge. The size, shape and angle of the nib can be set to determine how the strokes need to be rendered.

Activating the Tool

In the Image menu navigate to Tools then Paint Tools then Ink or by using the K keyboard shortcut.



Screenshot

Clone Tool

The Clone tool uses a 'brush' to copy from an image. It is used to repair problem areas in digital images, by 'painting over' them with stuff copied from other areas. Hold down Ctrl key while selecting the source, if cloning from an image.



Screenshot

Heal Tool



Screenshot

Heal tool is used for removal of wrinkles, lines and fixing of discoloured spots in portrait image graphs. Areas of the image are not simply copied, but the area around the wrinkle, line or spot is assessed and reproduced before the healing process begins.

First load an image. Then, set up Heal tool as shown above. All other settings can remain untouched (default). To use the Heal tool, you need to first set a brush size slightly larger than the flaw on the skin. You can zoom in to the image for easy viewing.

Hold down the Ctrl key and click on a perfect area of the skin which is close to the flaw. Release the Ctrl key and drag the Heal tool to the flaw. Left click on the mouse. If the

defect is slight and not very different from its surrounding skin, it will get corrected quickly. Painting with the heal tool is possible if the brushing is confined to a small area.

Blur/Sharpen Tool



Screenshot

The Blur/Sharpen tool uses the current brush to locally blur or sharpen your image. Blurring with it can be useful if some image elements stand out too much and you would like to soften it. If you want to blur a whole layer or a large part, it is probably better using one of the Blur Filters. The direction of a brushstroke has no effect. If you want directional blurring, use the Smudge tool.

The “Sharpen” mode works by increasing the contrast where the brush is applied. A little bit of this may be useful, but over- application will produce noise. Some of the Enhancement Filters, particularly the unsharp Mask, do a much cleaner job of sharpening areas of a layer.

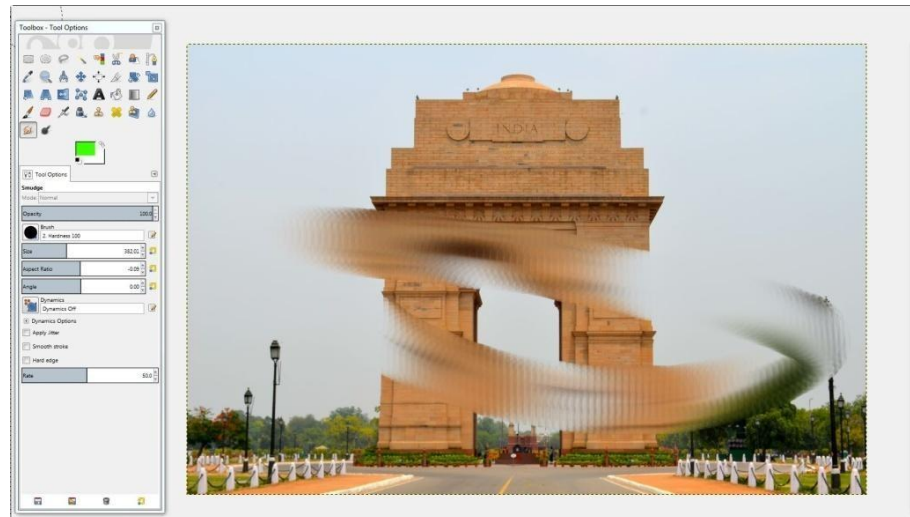
Activating the Tool

From the image-menu: Tools → Paint tools → Blur/Sharpen OR by using the keyboard shortcut Shift+U.

Key modifiers Ctrl

Holding down the Ctrl key toggles between Blur and Sharpen modes; it reverses the setting shown in the Tool Options.

Smudge Tool



Screenshot

The Smudge tool uses the current brush to smudge colours on the active layer or a selection. It picks colour while moving the brush and uses it to mix it to the colours it meets next.

Activating tool

The Smudge tool can be activated in several ways as listed below:

- Click on the Smudge tool icon in toolbox.
- Hit the **S** key on keyboard.
- Navigate to the Tools menu, hover over 'Paint Tools', select 'Smudge'.

Key modifiers

Shift Key - The **Shift** key places the smudge tool into straight line mode. Holding **Shift** while holding the left click on the mouse will smudge in a straight line. Consecutive clicks will continue smudging in straight lines that originate from the end of the last line.

Ctrl Key - Using **Ctrl** with **Shift**, constrains the angle between two successive lines to vary by steps of 15°.

Dodge/Burn Tool



Screenshot

The Dodge or Burn tool uses the current brush to darken or lighten the colours in your image. The mode will determine the types of pixels that will be affected.

Activating Tool

From the Image menu: Tools → Paint Tools → Dodge / Burn. The Tool can also be called by clicking the tool icon or by using the Shift+D keyboard shortcut.

Key modifiers

Ctrl - Toggles between dodge or burn types. The type will remain switched until Ctrl is released.

Shift - Shift places the Dodge or Burn tool into straight line mode. Holding Shift, while clicking the mouse Left Button, will Dodge or Burn in a straight line. Consecutive clicks will continue Dodge or Burn in straight lines that originate from the end of the last line

Summary

In this unit, you have learned about animation. It would introduce and expand the knowledge, understanding and skills for a diverse range of different types of animation by exploring relevant techniques and processes. Also, it explains the history of animation. You should be able to apply the 12 principles of animation and production processes to create an animation film.

Assignments

- Explain what is animation
- Examine the basic types of animation
- List various steps for creating a 2D animation
- Explain basic techniques used in 2D animations

- Describe animation process
- List principles of animation
- Explain stop motion animation
- What is layout design
- List the types of colour use in inking and colouring

Resources

- <http://resumbrae.com>
- <https://upload.wikimedia.org>
- <https://cdn.pixabay.com>
- <https://google.com>

Unit 2 Professional Image Editing

Introduction

Images produced by scanners and digital cameras are mostly quite good, though not always perfect. They may suffice as records of a scene or event, but they rarely have the dramatic impact of a great print. If your aim is to make prints that go beyond simple records to capture the essence of people and places-- to create prints that stand as works of art-- you will need to edit the image.

Image editing is at the heart of creative photographic printing-- it is where you transform a well-crafted snapshot into a work of art. One reason you need to edit is that a print can rarely capture the tonal range of an actual scene, particularly a naturally illuminated landscape. If you try to transfer a scene literally to a print, the contrast may be too low, resulting in a flat appearance. A print has a maximum tonal range of not more than 100:1. Scenes have widely varying tonal ranges, often much greater. More often it's too high, blocking out highlights and shadows.

Our eyes function differently while viewing prints and viewing scenes. As they move about a scene, they constantly adapt to differences in illumination using all sorts of cues not present in a print. The scene we experience is the result of numerous adaptations, both small and large. When we look at a print, our eyes adapt very little. They grasp the print as a whole. In order to capture the feeling of a scene, those adaptations have to be put into the print. You can achieve this by editing selected portions of the print.

Some of the specific goals of image editing are -

- Adjustment of geometry: crop, rotate, correct perspective distortion, etc.
- Removal of dust specks and scratches.
- Correction for lens aberrations, if needed: distortion (barrel and pincushion), chromatic aberration (colour fringing) and light falloff (in wide angle lenses).
- Adjustment of brightness, contrast, colour tint and colour saturation of the image as a whole.
- Adjustment of portions of the image to bring them into balance with the image as a whole. This typically involves the use of masks and may be facilitated by sophisticated techniques such as contrast masking.
- Sharpening of the image and if necessary, reduced grain.

Outcomes

Upon completion of this unit you will be able to:

- Understand various tools of professional image editing using GIMP.
- Learn to use various tools like colour tools and filters using GIMP.
- Leading to advanced image editing skills.

Terminology

Hue-Saturation: This is used to adjust hue, saturation and lightness levels on a range of color weights for the selected area of active layer.

Threshold: It can be used to enhance a block and white image (a scanned text for example) or to create section masks.

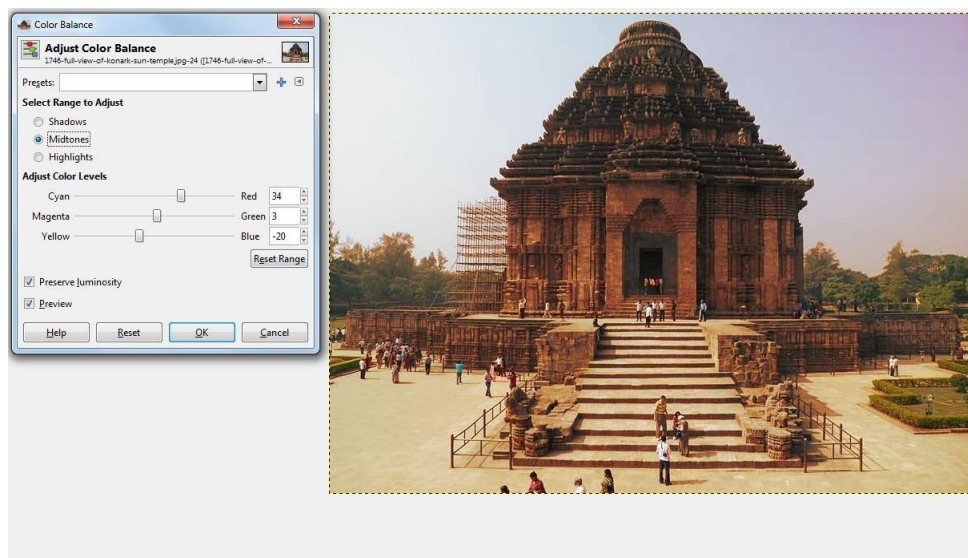
Curves: The Curves tool is by far the most sophisticated tool and is used to adjust the tonality of images.

Gradient map: This filter uses the current gradient, as shown in the Brush/Pattern/Gradient area of the Toolbox, to recolor the active layer of the image to which the filter is applied.

Colour Tool

Colour Balance

Helps modify the colour balance of the active selection or layer.



Screenshot

Activation -

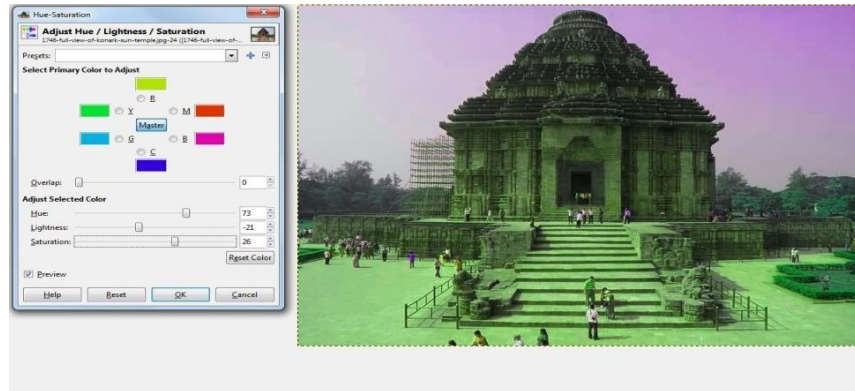
- The Colour Balance Tool can be called in the following order, from the image menu: Tools>Colour Tools>Colour Balance.

Hue-Saturation

This is used to adjust hue, saturation and lightness levels on a range of colour weights for the selected area or active layer.

Activation

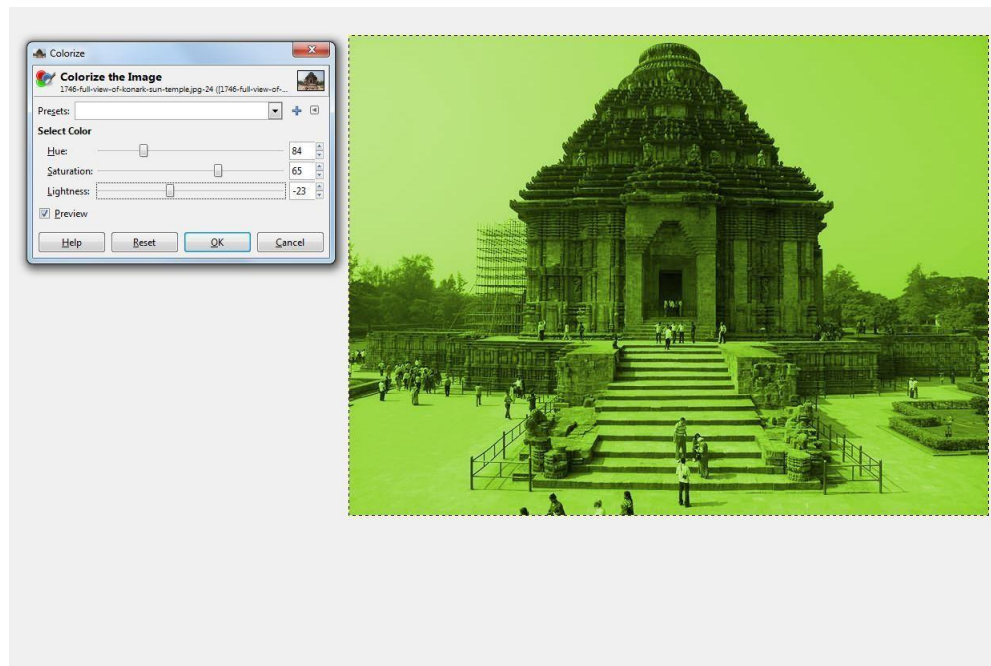
You can call the Hue-Saturation Tool in the following order, from the image-menu:
Tools>Colour Tools>Hue - Saturation.



Screenshot.

Colourize

This helps to render the active layer or selection into a greyscale image seen through a coloured glass. See HSV Colour Model for Hue, Saturation and Luminosity.



Screenshot

Activation

The Colourize Tool can be called in the following order, from the image-menu:
Tools>Colour Tools>Colourize.

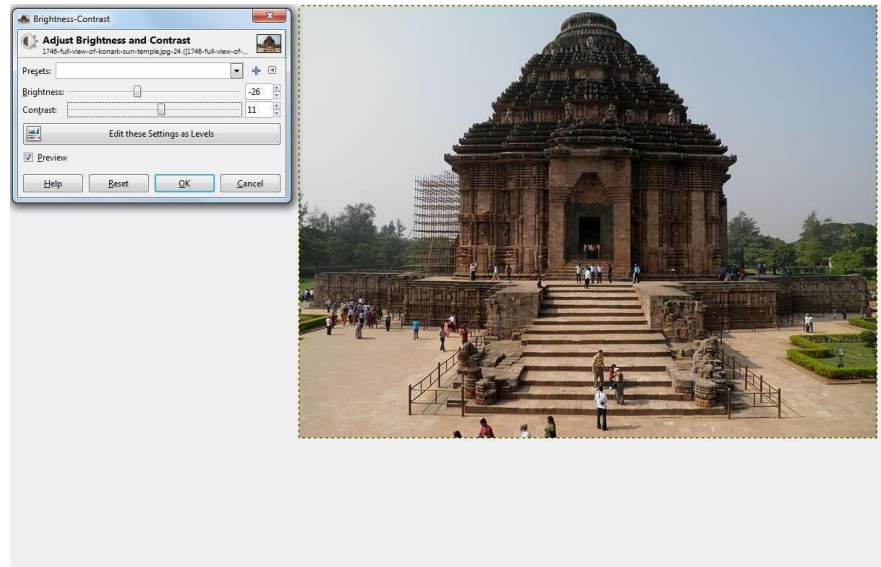
Brightness-Contrast

This tool helps to adjust the brightness and contrast levels for the active layer or selection. This tool is easy to use, but relatively unsophisticated. The Levels and Curve tools not only allow you to make the same types of adjustments, but also give you the ability to treat bright colours differently from darker colours. Although Brightness-Contrast tool is

great for doing a quick adjustment in a few seconds, but if the image is important and you want it to look as good as possible, some other tools have to be used.

In GIMP 2.4, a new way of operating this tool has been added by clicking the mouse inside the image, and dragging it while keeping the left mouse button down. Moving the mouse vertically changes the brightness and moving it horizontally changes the contrast.

Once are satisfied with the result, you can either press the "OK" button on the dialog, or hit the Return key on your keyboard.



Screenshot

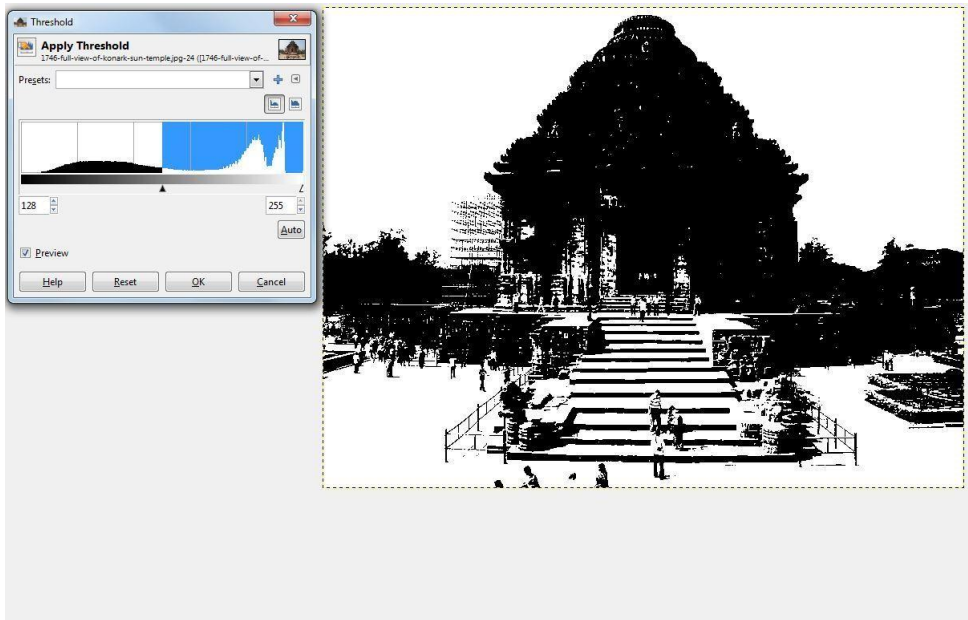
Activation

The Brightness-Contrast Tool can be called from an image menu: Tools>Colour Tools

Brightness - Contrast. If you find yourself using this tool often, you can add it to the Toolbox using the Tools dialog.

Threshold

It helps to transform the current layer or the selection into a black and white image, where white pixels represent the pixels of the image whose Value is, in the threshold range and black pixels represent pixels with Value, out of the threshold range. It can be used to enhance a black and white image (a scanned text for example) or to create selection masks. As this tool creates a black and white image, the anti-aliasing of the original image



disappears. If this poses a problem, consider using the Levels tool.

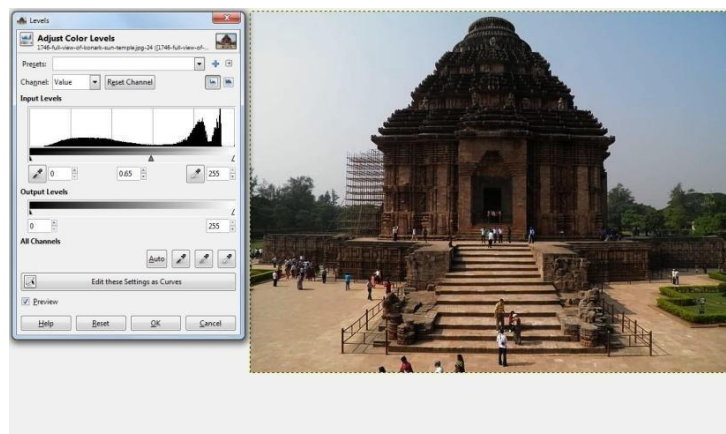
Screenshot

Activation

The Threshold Tool can be called in the following order, from the image-menu: Tools>Colour Tools>Threshold or by clicking on the icon in Toolbox, if this tool has been installed in it. You can do that through the Tool dialog.

Levels

This tool not only provides features similar to the Histogram tool but can also change the intensity range of the active layer or selection.



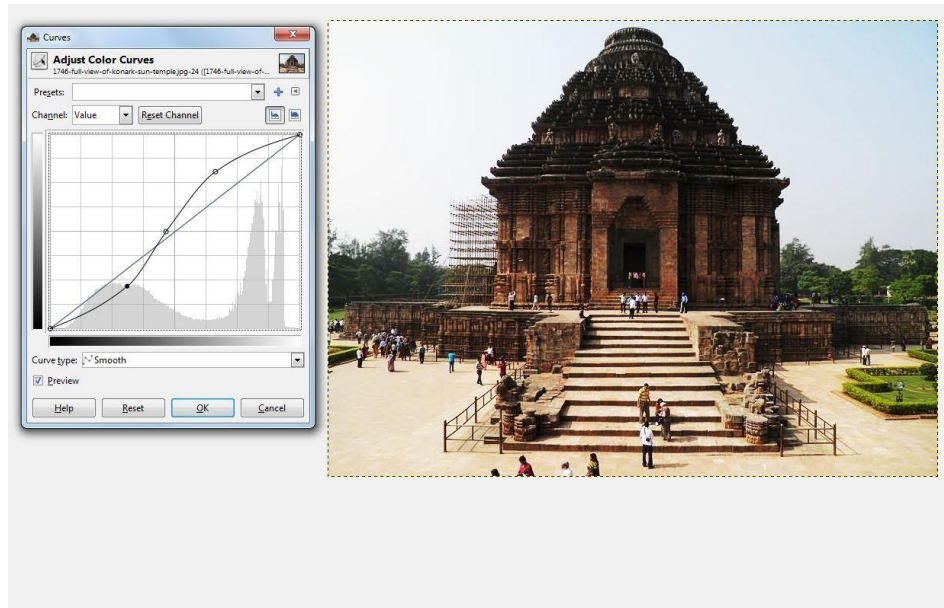
Screenshot

Activation

You can call the Level Tool in the following order, from the image- menu: Tools> Colour Tools> Levels

Curves

The Curves tool is by far the most sophisticated tool and is used to adjust the tonality of images.



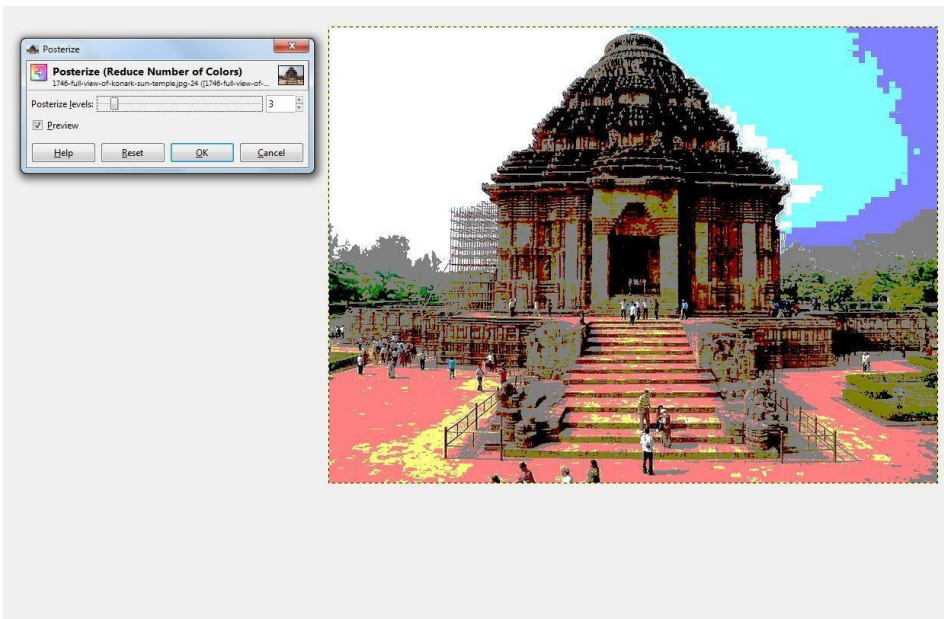
Screenshot

Activation

The Curves Tool can be called in the following order, from the image-menu: Tools > Colour Tools > Curves.

Posterize

This is designed to intelligently weigh the pixel colours of the selection or active layer and reduce the number of colours while maintaining a semblance of the original image characteristics.



Screenshot

Activation

The Posterize Dialog can be called in the following order, from the image-menu: Tools > Colour Tools> Posterize or by double-clicking on the icon in ToolBox, if Colour Tools has been added to it.

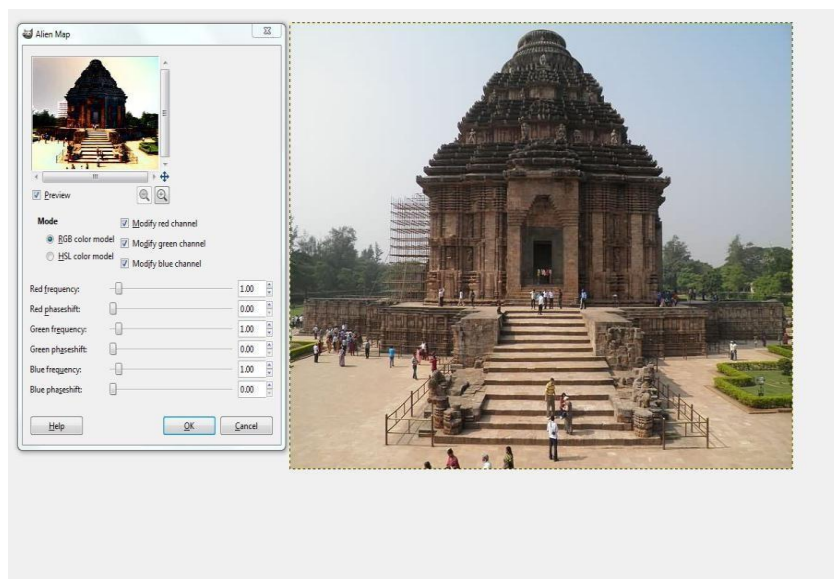
Colour

Introduction to Colour Filters

This tool contains several filters to modify colours in an image, a layer or a selection. You can find filters to compose, decompose, uncolour and many other effects.

Alien Map 2

Found in Filters> Colours Map> Alien map 2, this filter renders much modified colours by applying trigonometric functions. Alien Map can work on RGB and HSV.



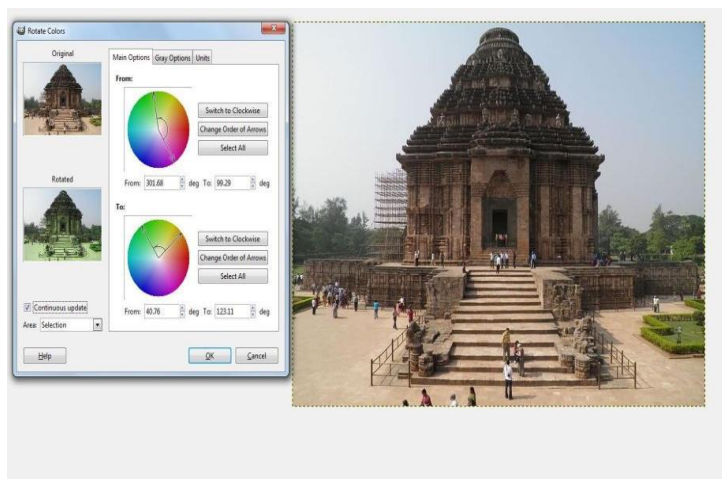
Screenshot

Two Colours Exchange

This filter is found in Filters> Colours Map> Colour Exchange. This filter replaces a colour with another one.

Colourmap Rotation

This filter is found in Filters> Colours Map> Colour Map Rotation. Colourmap Rotation lets you exchange one colour range with another range.



Screenshot

Main Options

There are two colour circles, one for the "From" colour range and the other for the "To" colour range.

Grey Options

In this tab, you can specify how to treat grey. By default, grey is not considered as a colour and is not taken into account by the rotation. You can convert slightly saturated colours into grey and vice-versa.

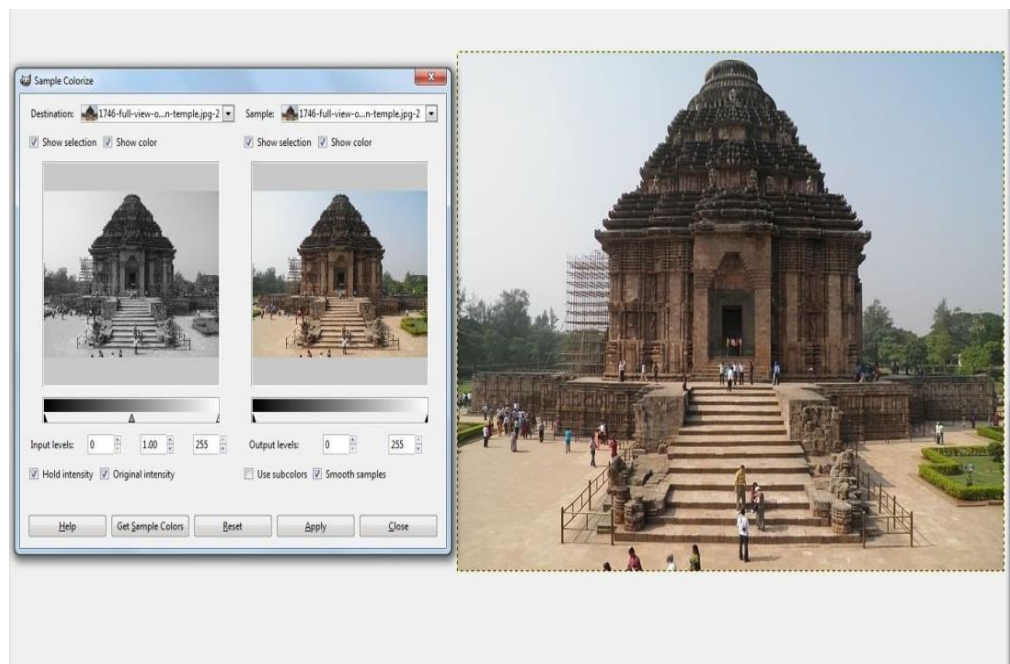
Map Colour Range

Found in Filters> Colours Map> Colour Range Mapping, the Map Colour Range filter maps a defined colour range against another defined colour range.

Sample Colourize

This filter is found in Filters> Colours Map> Sample Colourize. This filter allows you to colourize old black and white images by mapping a colour source image or a gradient against it. Any grey- tone image must be changed to RGB before using this filter (Image/Image>Mode>RGB).

Options - The filter window is divided into two parts: Destination on the left and Sampling on the right.



Screenshot

Gradient map

This filter uses the current gradient, as shown in the Brush/Pattern/Gradient area of the Toolbox, to recolor the active layer of the image to which the filter is applied. To use it, first choose a gradient from the Gradients Dialog, and then select the part of the image you

want to alter and activate the filter by choosing Filters, Colours Map, and Gradient Map from the image menu. The filter runs automatically, without showing any dialog or requiring any further input. It uses image colour intensities (0 - 255), mapping the darkest pixels to the left end colour from the gradient and the lightest pixels to the right end colour from the gradient. Intermediate values are set to the corresponding intermediate colour.



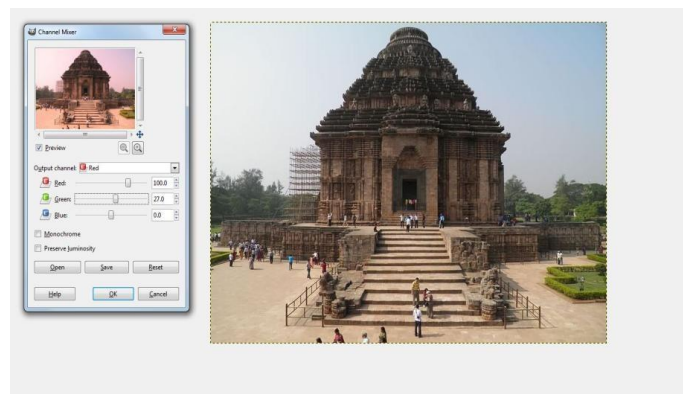
Screenshot

Border Average Overview

Found in Filters> Colours> Border Average, this tool calculates the average colour in a border around active layer or selection. Calculated colour becomes the foreground colour in Toolbox. This filter is interesting when you have to find a Web page colour background that differs as less as possible from your image border. The action of this filter is not registered in Undo History and cannot be deleted with Ctrl+Z.

Channel Mixer

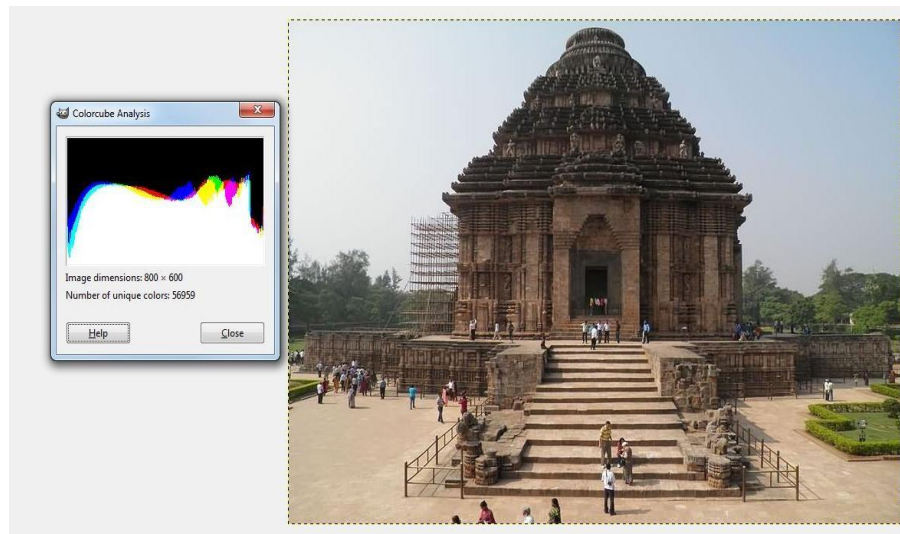
Found in Filters> Colours> Channel Mixer, this filter combines the values of the RGB channels. It works with images with or without an alpha channel. It also has a monochrome mode and a preview.



Screenshot

Colourcube Analysis

Found in Filters > Colours > Colourcube Analysis, this tool gives data about the image: dimensions, file size, colour number and compression ratio.



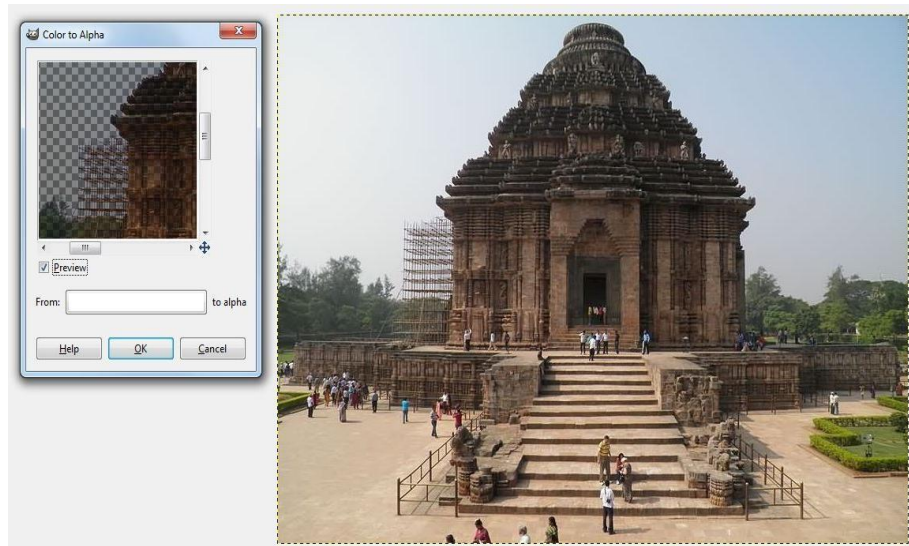
Screenshot

Colourify

Found in Filters > Colours > Colourify, this filter renders a greyscaled image like it is seen through coloured glass.

Colour to Alpha

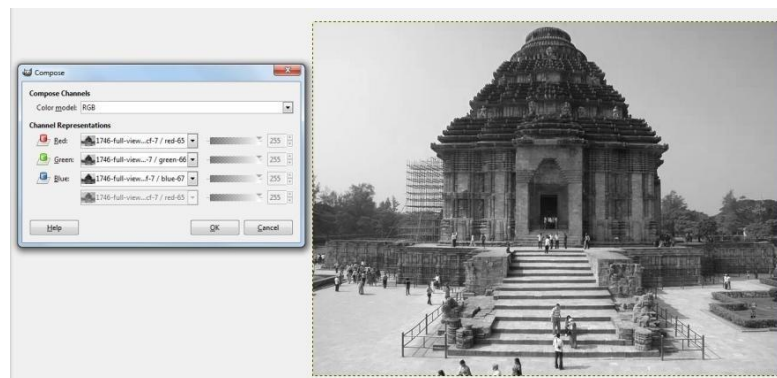
Found in Filters > Colours > Colour to Alpha, this filter makes all pixels transparent with a selected colour. An Alpha channel is created. It will attempt to preserve anti-aliasing information by using a partially intelligent routine that replaces weak colour information with weak alpha information. Thus, areas that contain an element of the selected colour will maintain a blended appearance with their surrounding pixels.



Screenshot

Compose

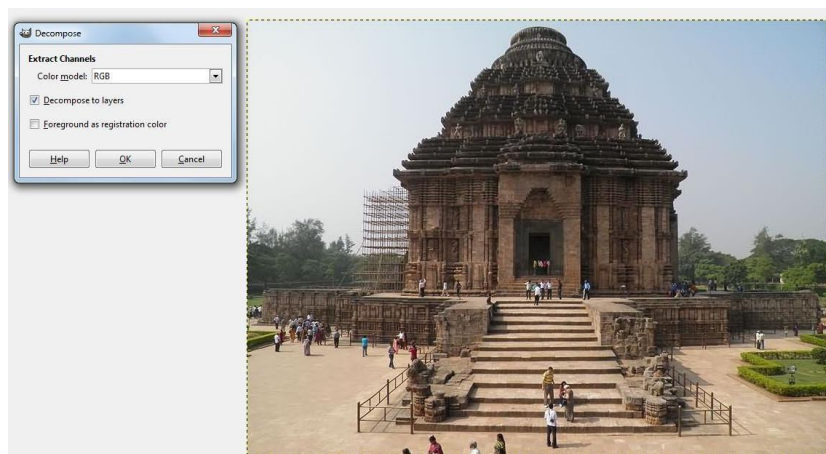
This filter is found in Filters > Colours > Compose. This filter is active in Filters/Colours after using Decompose. This filter is used to reconstruct an image from its RGB, HSV... components.



Screenshot

Decompose

Found in Filters > Colours > Decompose, this filter separates an image into its different components (RGB, HSV).



Screenshot

Filter Pack

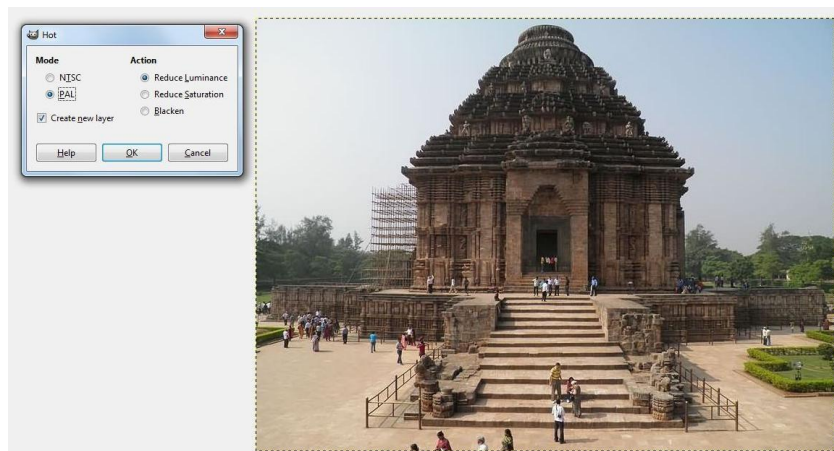
This tool provides a collection of unified filters to treat the image. Of course, same functions can be performed by particular filters, but what one can have here is an interesting and intuitive overview.

Starting filter

This filter is found in the image menu via Filters > Colours > Filter Pack.

Hot Overview

This filter is found in the image menu via Filters>Colours Hot. It identifies and modifies pixels which might cause problems when displayed onto PAL or NTSC TV screen.



Screenshot

Filter - Introduction

Filters are special kind of tools that are designed to take an input layer or image by applying a mathematical algorithm to it and return the input layer or image in a modified format. The GIMP uses filters to achieve a variety of effects and those effects are discussed here.

- Blur
- Noise
- Edge-Detect
- Enhance
- Generic
- Glass Effects
- Light Effects
- Distorts
- Artistic

- Map
- Render
- Combine

1. Blur filters

Blur filters: Introduction

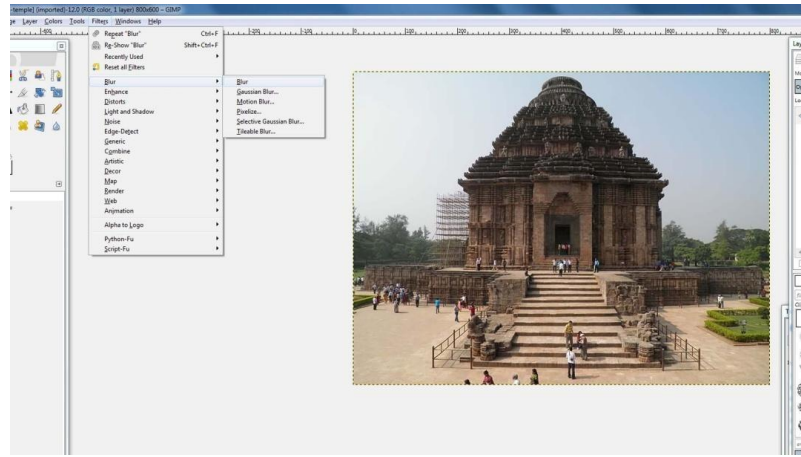
This includes a set of filters that blurs images or parts of them in various ways. If there is a selection, only the selected parts of an image will be blurred. There may, however, be some leakage of colours from the unblurred area into the blurred area. To help you pick the one you want, we will illustrate what each does when applied to the image shown at right. These are of course only examples; most of the filters have parameter settings, which allow you to vary the magnitude or type of blurring.

Gaussian blur is one of the most used filters. This filter makes an image blurry in the most basic way. It has an efficient implementation that allows it to create a very blurry blur in a relatively short time. If you only want to blur the image a little bit-- to soften it, you might use the simple "Blur" filter. In Gimp 2.2 this runs automatically, without creating a dialog. The effect is subtle enough that you might not even notice it, but you can get a stronger effect by repeating it. In Gimp 2.0 the filter shows a dialog that allows you to set a "repeat count". If you need a strong blurring effect, this filter is too slow to be a good choice; the Gaussian blur can be used instead.

Blur

This simple Blur filter produces an effect which is similar to that of an out of focus camera shot. To produce this blur effect, the filter takes the average of the present pixel value and the value of adjacent pixels and sets the present pixel to that average value. The advantage of this filter is its calculation speed. It suits big images. The drawback of this filter is that its action is hardly perceptible on big images, but very strong on small images.

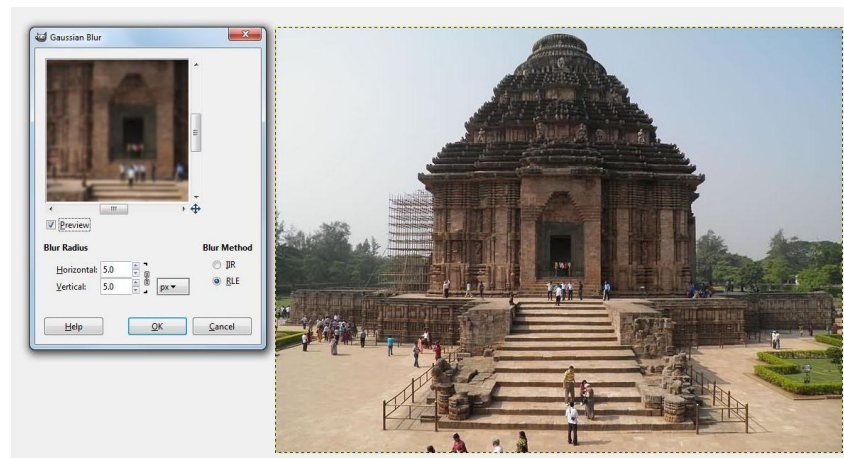
Activation - This filter can be called from the image menu: Filters> Blur> Blur



Screenshot

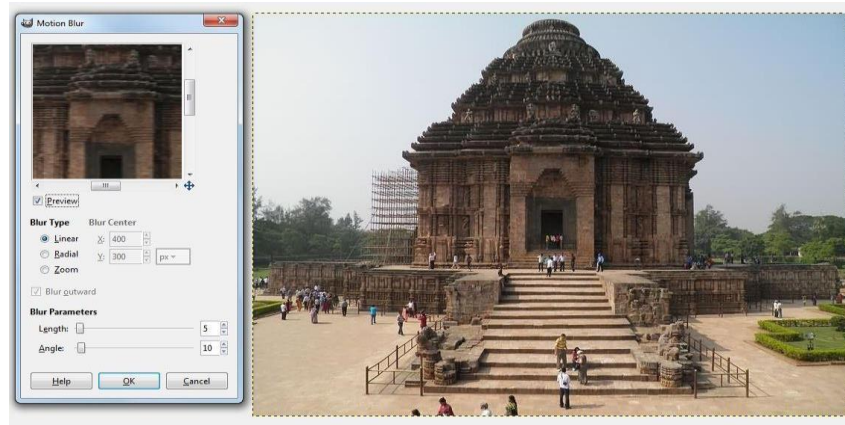
Gaussian Blur

This filter can be found in the image menu under **Filters > Blur > Gaussian Blur**. The IIR Gaussian Blur plug-in acts on each pixel of the active layer or selection, setting its value to the average of all pixel values, present in a radius defined in the dialog. A higher value will produce a higher amount of blur. The blur can be set to act in one direction more than the other by clicking the Chain Button so that it is broken and altering the radius. GIMP supports two implementations of Gaussian Blur: IIR G.B. and RLE G.B. They both produce the same results, but each one can be faster in some cases.



Screenshot

Motion blur

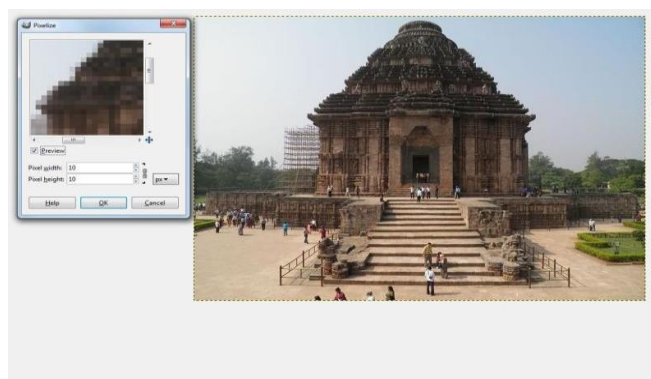


Screenshot

This filter can be found in the image menu under Filters>Blur> Motion Blur. The Motion Blur filter creates a movement blur. The filter is capable of Linear, Radial and Zoom movements. Each of these movements can be further adjusted, with Length, or Angle settings available.

Pixelise

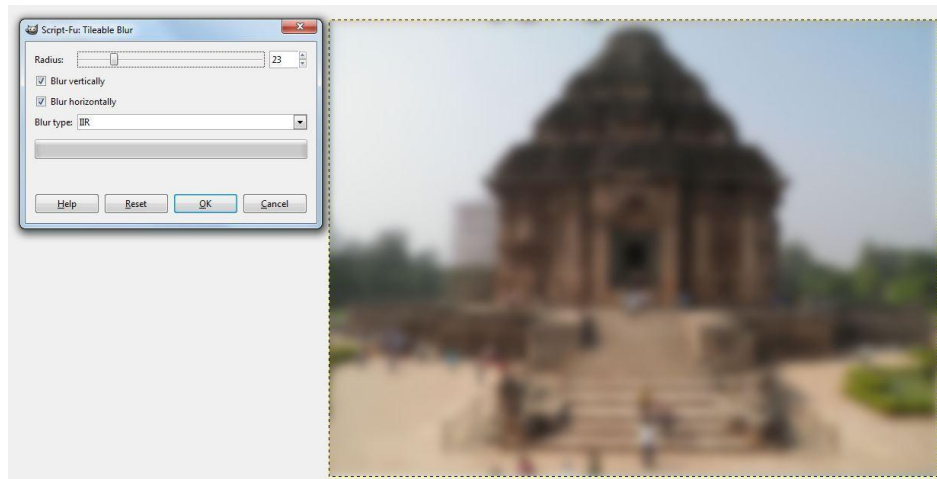
This filter can be found in the image menu under Filters> Blur>Pixelise. The Pixelise filter renders the image using large colour blocks. It is very similar to the effect seen on television when masking a criminal during trial.



Screenshot

Tileable blur

This filter can be found in the image menu under Filters> Blur>Tileable Blur. This tool is used to soften tile seams in images used in tiled backgrounds. It does this by blending and blurring the boundary between images that will be next to each other after tiling. If you want to treat only image borders, you can't apply filter to the whole image. The solution to get the desired effect is as follows: Duplicate layer (Layer Duplicate Layer) and select it to work on it. Apply "Tileable Blur" filter with a 20 pixels radius to this layer. Select all (Ctrl+A) and reduce selection (Selection Shrink) to create a border with the wanted width. Delete selection with Ctrl+K. Merge layers with Layer Merge down



Screenshot

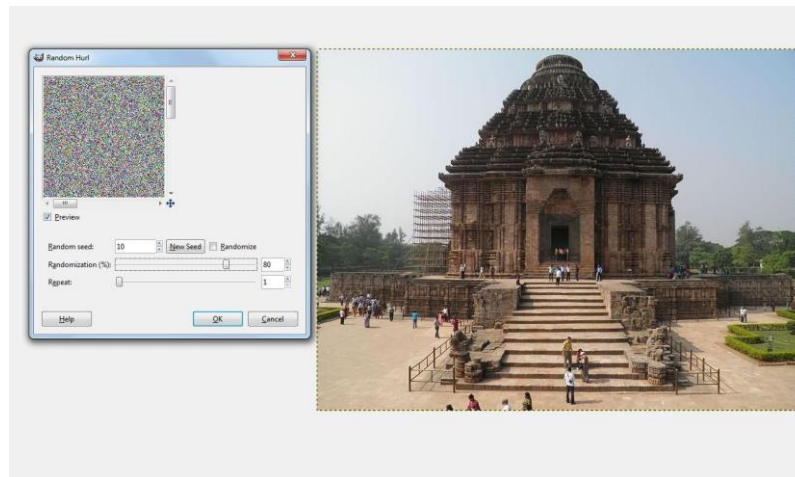
2. Noise filter

Noise filters - introduction

Noise filters add noise to the image. To remove small defects from an image, see Despeckle filter.

Hurl Overview

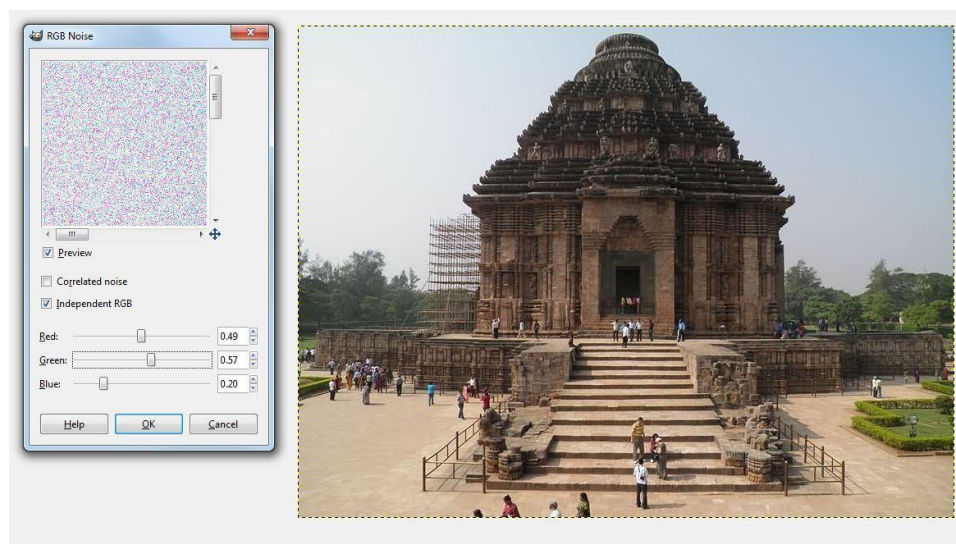
Found in Filters>Noise> Hurl. The Hurl filter changes each affected pixel to a random colour, so that it produces real random noise. All colour channels, including an alpha channel (if it is present) are randomized. All possible values are assigned with the same probability. The original values are not taken into account. All or only some pixels in an active layer or selection are affected, the percentage of affected pixels being determined by the Randomization (%) option.



Screenshot

Scatter RGB

Found in the image window menu under Filters> Noise> Scatter RGB, this filter adds a normally distributed noise to a layer or a selection. It uses the RGB colour model to produce the noise (noise is added to red, green and blue values of each pixel). A normal distribution means, that only slight noise is added to most pixels in the affected area, while fewer pixels are affected by more extreme values. If you apply this filter to an image filled with a solid grey colour and then look at its histogram, you will see a classic bell-shaped Gaussian curve. The result is very natural looking noise.



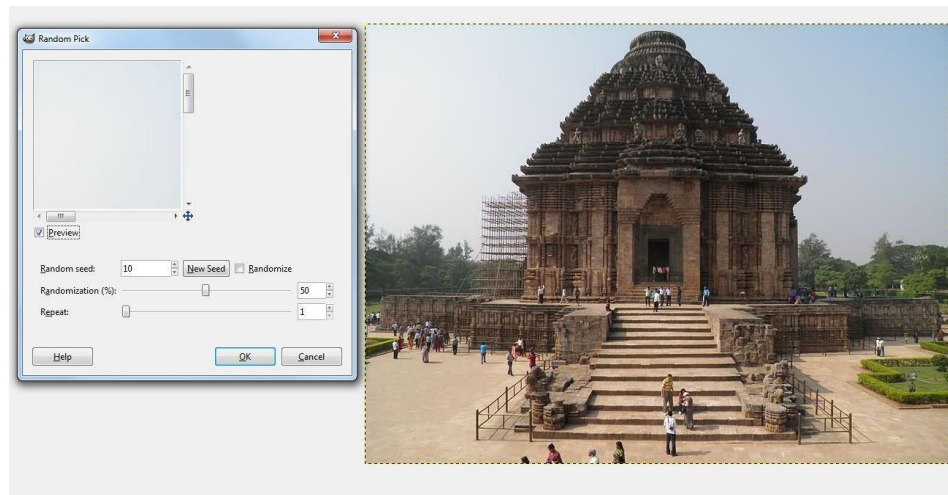
Screenshot

Pick

Overview

Found in Filters> Noise> Pick, this filter replaces each affected pixel by a pixel value which is randomly chosen from its eight neighbors and itself (from a 3×3 square the pixel is centre of). All or only some pixels in an active layer or selection are affected. The percentage

of affected pixels is determined by the Randomization (%) option.



Screenshot

3. Edge detect filters

Edge-detect: Introduction

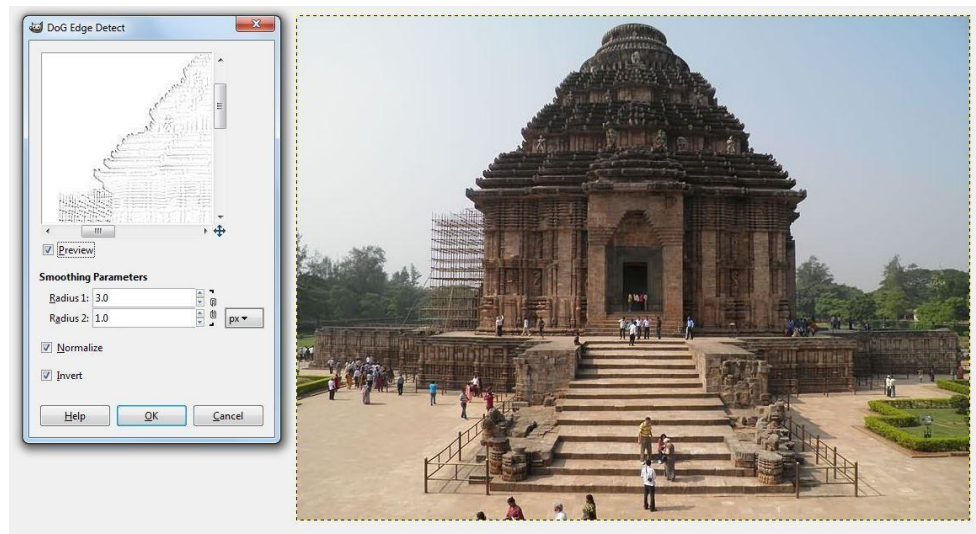
Edge detect filters search for borders between different colours so that they can detect contours of objects. They are used for making regions and for many artistic purposes.

Based on gradient calculation methods, most of them give thick border lines. Look at fig.1 which represents colour intensity variations. On the left is a slow colour gradient which is not a border. On the right is a quick variation which is an edge. Now, let us calculate the gradient and the variation speed of this edge i.e the first derivative (fig.2). We have to decide that a border is detected when gradient is more than a threshold value (the exact border is at top of the curve, but this top varies according to borders). In most cases, threshold is under top and border is thick. The Laplacian edge detection uses the second derivative (fig.3). The top of the curve is now at zero and clearly identified. That is why Laplace filter renders a thin border, only a pixel wide. But this derivative gives several zeros corresponding to small ripples, resulting in false edges. Some blurring before applying edge filters is often necessary as it flattens small ripples in signal and so prevents false edges.

Difference of Gaussians

This filter is located at Filters> Edge detect> Difference of Gaussians. This filter is new in GIMP 2.2. It does edge detection using "Difference of Gaussians" algorithm, which works by performing two different Gaussian blurs on the image with a different blurring radius for each and subtracting them to yield the result. This algorithm is very widely used in artificial vision and is pretty fast because there are very efficient methods for doing Gaussian blurs. The most important parameters are the blurring radii for the two Gaussian blurs. It is probably easiest to set them using the preview, but it may help to know that increasing the

smaller radius tends to give thicker-appearing edges and decreasing the larger radius tends to increase the "threshold" for recognizing something as an edge. In most cases you will get nicer results if Radius 2 is smaller than Radius 1, but nothing prevents their reversal. In situations where you have a light figure on the dark background, reversing them may actually



improve the result.

Screenshot

4. Enhance filters

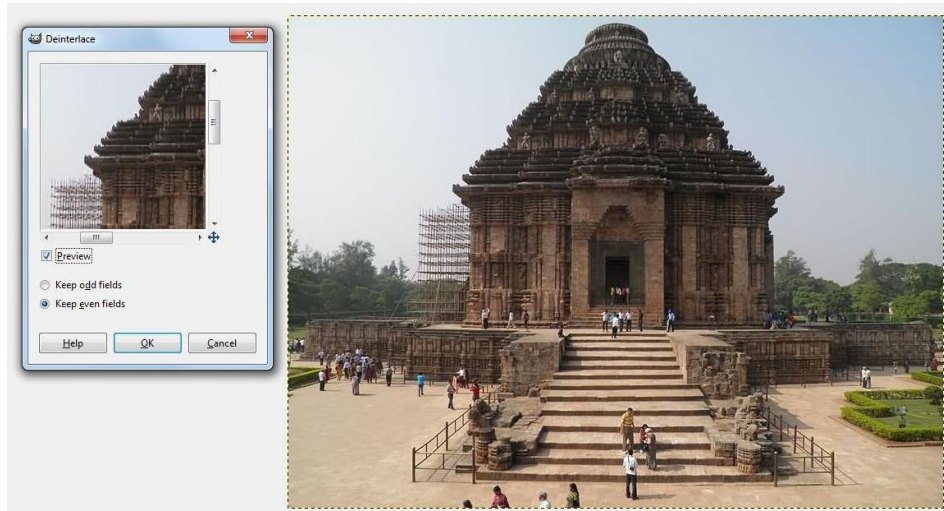
Enhance filters: Introduction

Enhance filters are used to compensate for image imperfections, which include dust particles, noise, interlaced frames (mostly coming usually from a TV frame-grabber) and insufficient sharpness.

Deinterlace

Overview

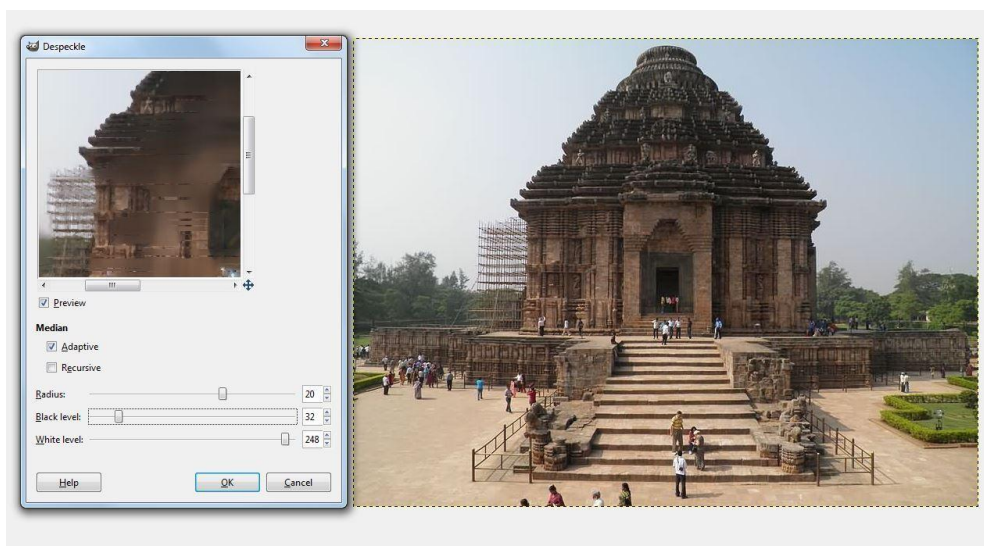
This filter is found in Image>Filters/Enhance/Deinterlace. Images captured by videocards, especially when fast movement is recorded, may look blurred and stripped with splitted objects. This is due to the way cameras work. They don't record 25 images per second but 50, with half vertical resolution. There are two interlaced images in one frame. The first line of the first image, it is followed by the first line of the second image then second image followed by second line of first image, etc. Thus, if there has been an important move between the two images, objects will appear splitted, shifted and stripped. The Deinterlace filter keeps only one of both images and replaces missing lines by a gradient between previous and following lines. The resulting image or selection will be somewhat blurred, but can be improved by Enhance filters.



Screenshot

Despeckle

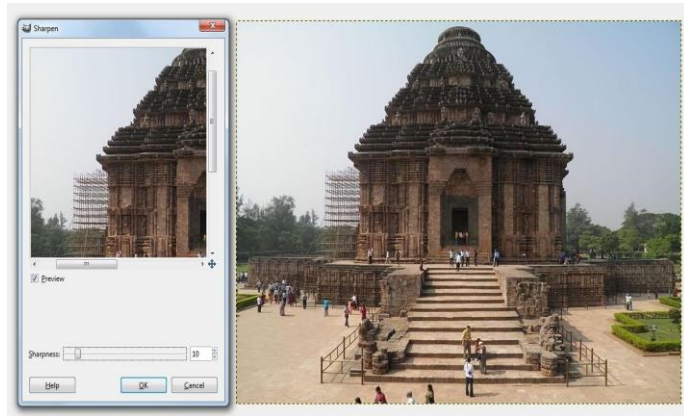
Found in Image>Filters/Enhance/Despeckle, this filter is used to remove small defects due to dust, or scratches on a scanned image and also Moiré effect on image scanned from a magazine. One must select isolated defects before applying filter.



Screenshot

Sharpen

This filter is found in Image>Filters/Enhance/Sharpen. Most of digitized images need correction of sharpness. This is due to the digitizing process that must chop a colour continuum up in points with slightly different colours. The elements thinner than sampling frequency will be averaged into a uniform colour, so sharp borders are rendered a little blurred. The same phenomenon happens when printing colour dots on paper, the Sharpen filter accentuates not only edges but also any noise or blemish. It may also create noise in graduated colour areas like the sky or a water surface. It competes with the Unsharp Mask filter, which is more sophisticated and renders more natural results.



Screenshot

5. Generic filters

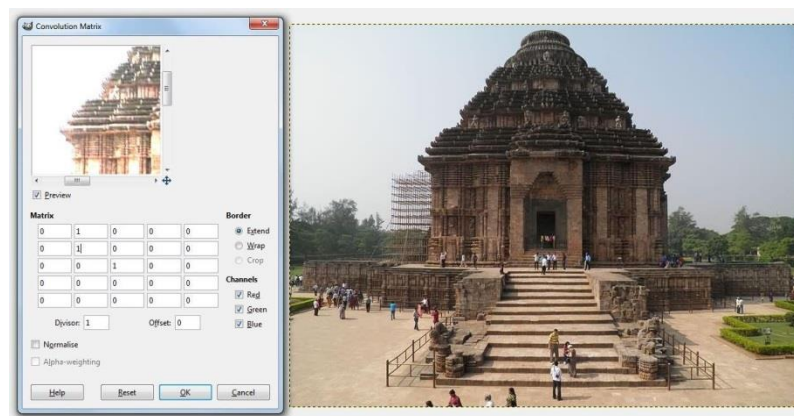
Generic filters introduction

Generic filters are filters that you can build your own filters with. Convolution Matrix filter could help you understand this better.

Convolution matrix Overview

This filter can be found via the image menu under Filters> Generic> Convolution Matrix. Most filters use convolution matrix. With the Convolution Matrix filter, one can build a custom filter.

It is possible to get a rough idea about Convolution Matrix without using mathematical tools. Convolution is the treatment of a matrix by another one which is called "Kernel". The Convolution Matrix filter uses a first matrix which is the Image to be treated. The image is a bi-dimensional collection of pixels in rectangular coordinates. The used kernel depends on the effect you want. GIMP uses 5x5 or 3x3 matrices. We will consider only 3x3 matrices as they are the widely used and are enough for all required effects. If all border values of a kernel are set to zero, then system will consider it as a 3x3 matrix. The filter studies every pixel of the image successively. For each of them, which we will call the "initial pixel", it multiplies the value of this pixel and values of the 8 surrounding pixels by the kernel corresponding value. Then it adds the results and the initial pixel is set to this final result value.



Screenshot

Dilate

Overview

Found in Filters> Generic> Dilate, this filter widens and enhances dark areas of the active layer or selection. For every image pixel, it brings the pixel Value (luminosity) into line with the lowest Value (the darkest) of the 8 neighboring pixels (3x3 matrix). So, a dark pixel is added around dark areas. An isolated pixel on a brighter background will be changed to a big pixel, composed of 9 pixels and that will create some noise in the image.



Screenshot

6. Glass Effects filters

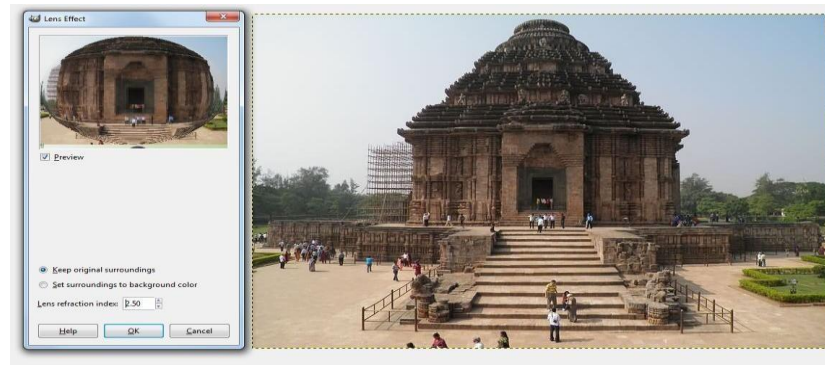
Glass Effects filters: Introduction

Glass Effects filters result in an image as if it were seen through a lens or glass tiles.

Apply lens

Overview

This filter can be accessed via the image menu under Filters> Glass effects> Apply Lens. After applying this filter, a part of the image is rendered as through a spherical lens.



7. Light Effects filters

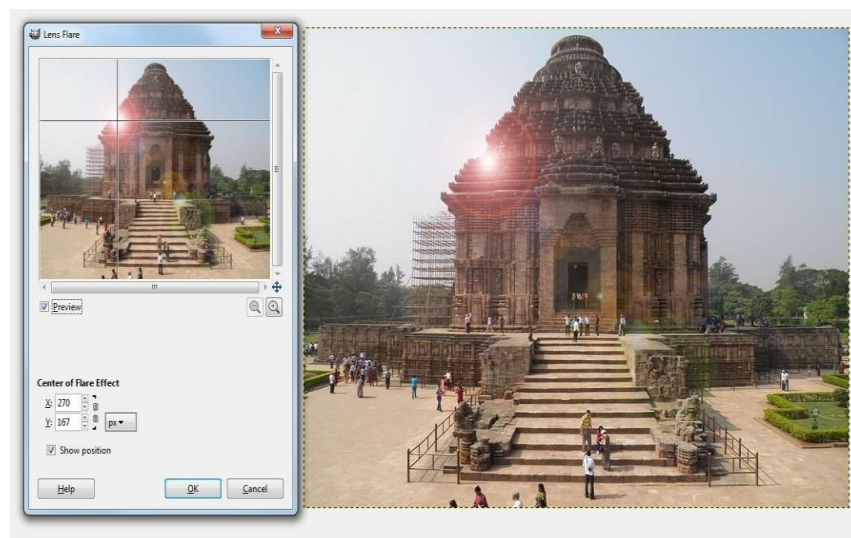
Light Effects filters: Introduction

Light Effects filters render several illumination effects of the image.

FlareFX

Overview

Found in Filters> Light Effects>FlareFX, this filter gives the impression that the sun hit the objective when taking a shot. You can locate the reflection with a reticule you can move, but you would not have the possibilities that Gflare filter offers.

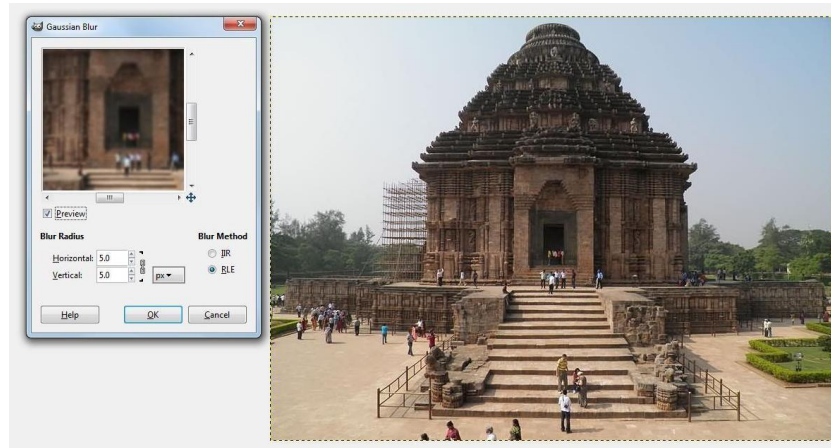


Screenshot

Gflare

Overview

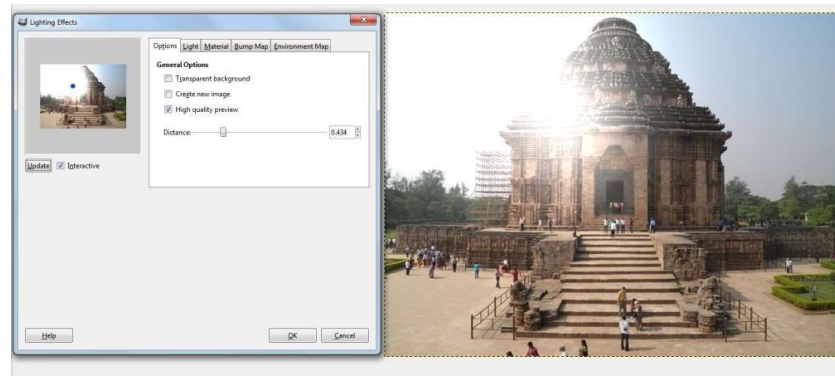
Found in Filters> Light Effect>Gflare, this filter reminds you of the effect you get when you take a photograph of a blinding light source, with a halo and radiations around the source. The Gflare image has three components: Glow which is the big central fireball, Rays and Second Flares



Screenshot

Lighting Effects

Found in Filters> Light Effects, this filter simulates the effect you get when you light up a wall with a spot. It does not produce any drop shadows and of course, does not reveal any new details in the dark zones.



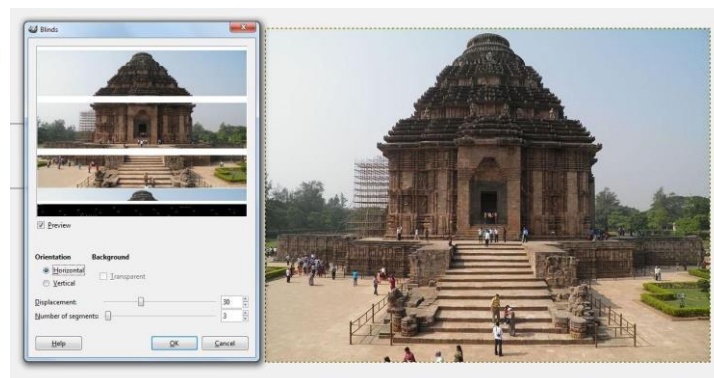
Screenshot

8. Distort filters

Distort filters: Introduction

The distort filters transform images in many different ways.

Blinds

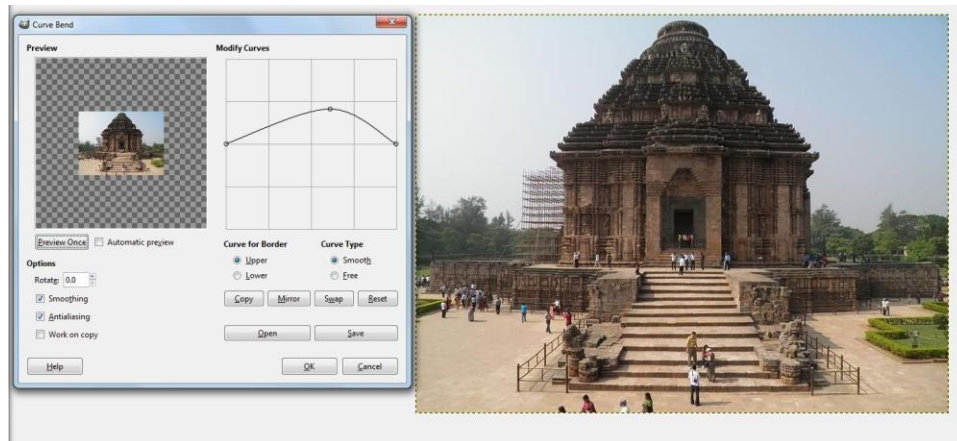


Screenshot

Found in Image>Filters/Distorts/Blinds, this filter generates a blind effect with

horizontal or vertical battens. You can lift or close these battens, but you cannot lift the whole blind up.

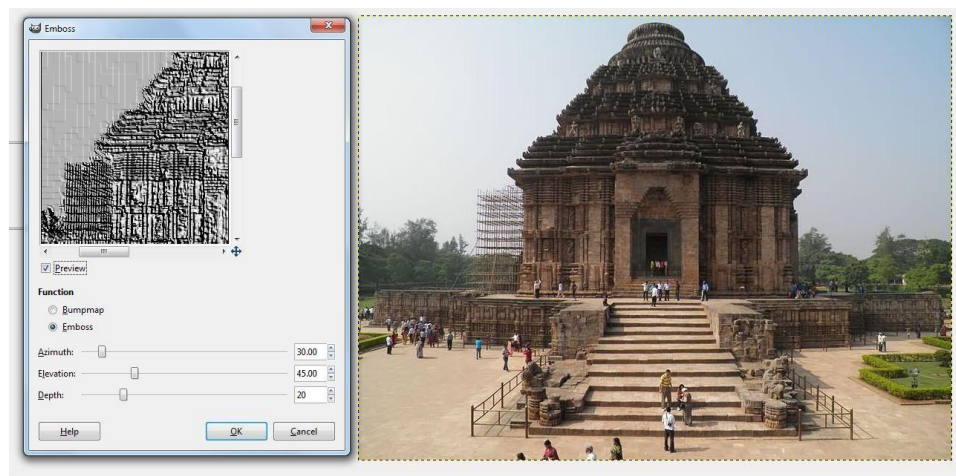
CurveBend



Screenshot

Found in Filters> Distorts> Curve Bend, this filter allows you to create a curve that will be used to distort the active layer or selection. The distortion is applied gradually from an image or selection border to the other.

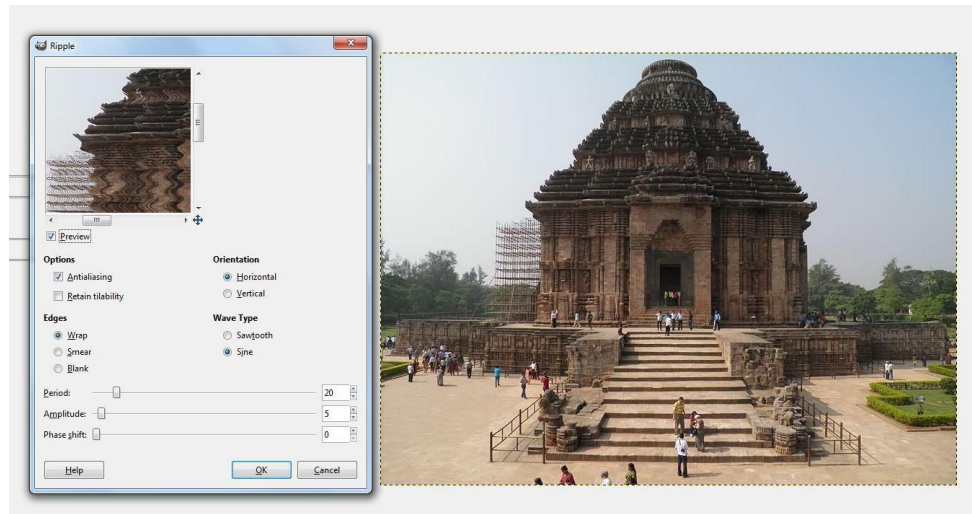
Emboss



Screenshot

Found in Image>Filters/Distorts/Emboss, this filter can be used only with RGB images. If your image is greyscale, it will be greyed out in the menu. It stamps and carves the active layer or selection, giving it relief with bumps and hollows. Bright areas are raised and dark ones are carved. You can vary the lighting.

Ripple



Screenshot

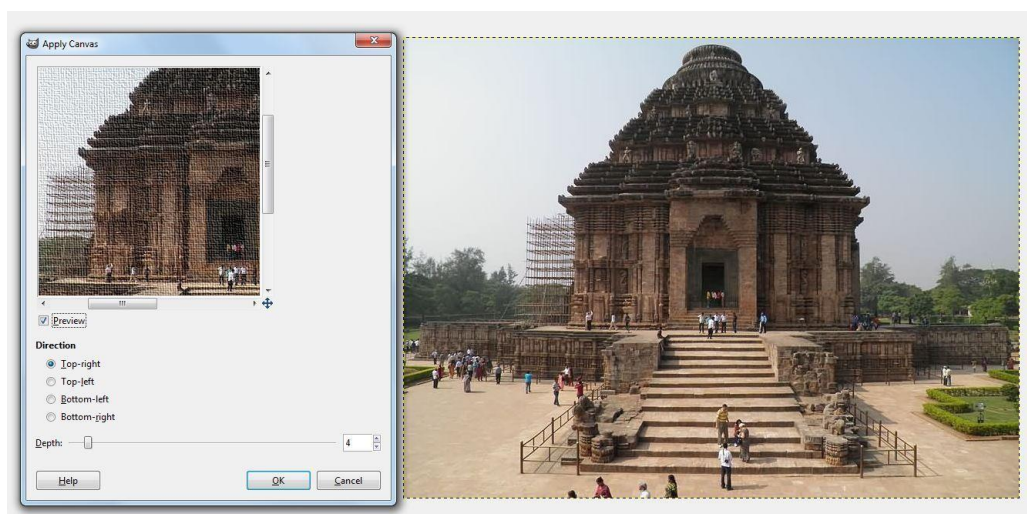
Found in Image>Filters/Distorts/Ripple, this filter displaces the pixels of the active layer or selection to waves or ripples thus simulating a reflection on disturbed water.

9. Artistic Filters

Artistic filters: Introduction

Artistic filters create artistic effects like cubism, oil painting, and canvas.

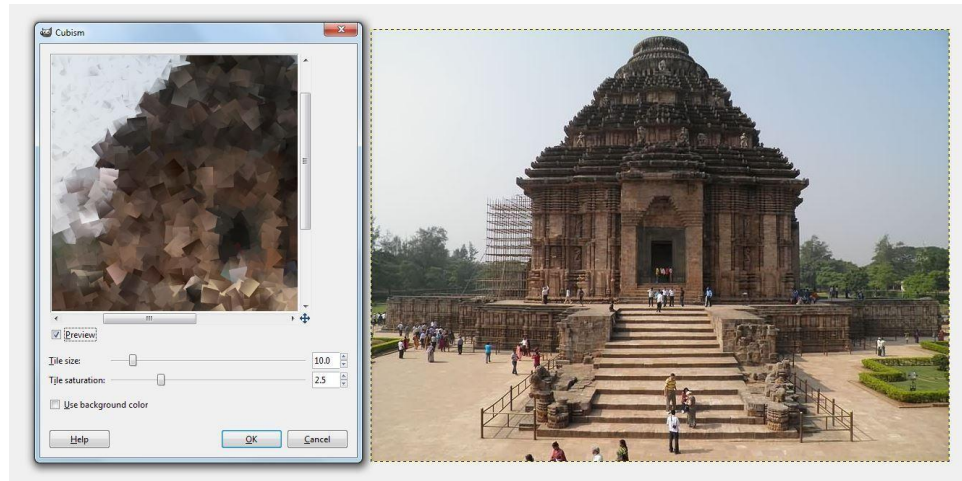
Apply Canvas



Screenshot

Found in Image> Filters/Artistic/Apply Canvas, this filter applies a canvas-like effect to the current layer or selection. It textures the image as if it is an artist's canvas.

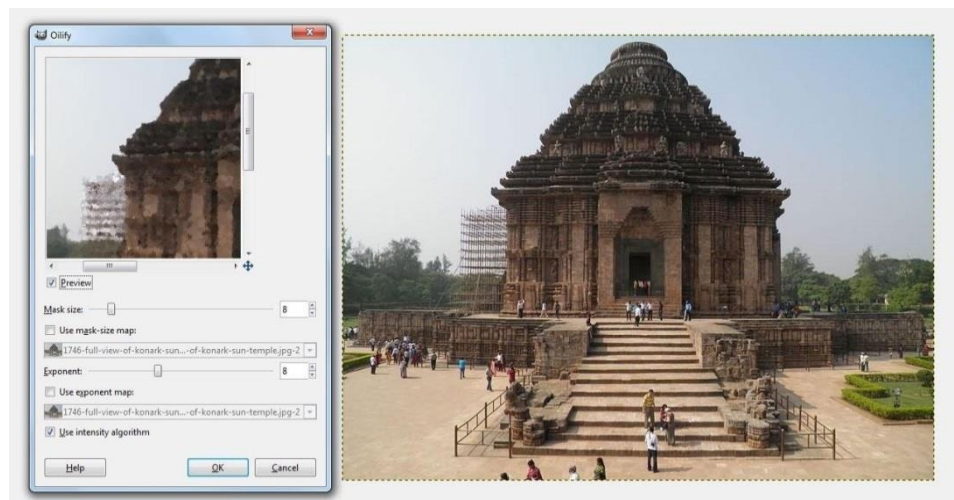
Cubism



Screenshot

Found in Filters > Artistic > Cubism, this plugin modifies the image so that it appears to be constructed of small squares of semi-transparent tissue paper. If setting possibilities of this filter are not enough for you, see GIMP ressessionist filter, which offers more options.

Oilify



Screenshot

Found in Filters > Artistic > Oilify, this filter gives the image a semblance of an oil painting. The Mask Size controls the outcome. A high value gives the image less detail, as if you had used a larger brush. The GIM Pressionist filter can produce similar effects, but it also allows a much wider variety of options.

10. Map filters

Map filters: Introduction

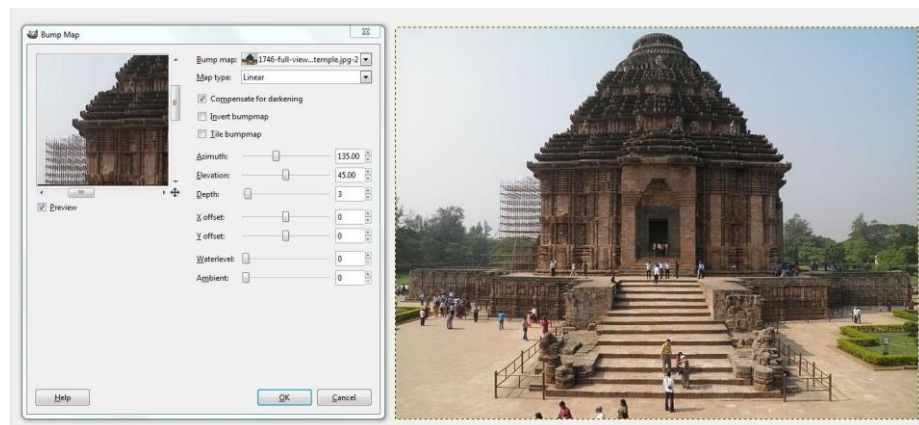
Map filters use an object named map to modify an image in which you map the image to the object. Thus, you can create 3D effects by mapping your image to another previously embossed image ("Bump Map" Filter) or to a sphere ("Map Object" filter). You can also map

a part of the image elsewhere into the same image ("Illusion" and "Make Seamless" filters) or bend a text along a curve ("Displace" filter).

Bump Map

Overview

Found in the image window menu under Filters> Map> Bump Map, this filter creates a 3D effect by embossing an image (the card) and then mapping it to another image. Bump height depends on pixel luminosity and you can set light direction. See Emboss for more information about embossing. You can bump map for any type of image, unlike the Emboss filter.

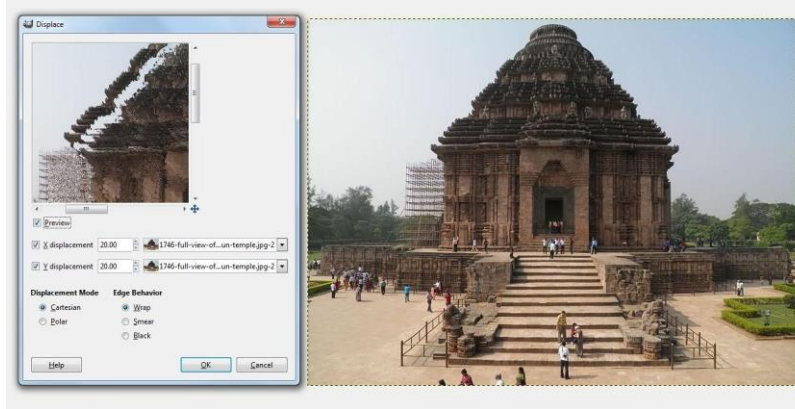


Screenshot

Displace

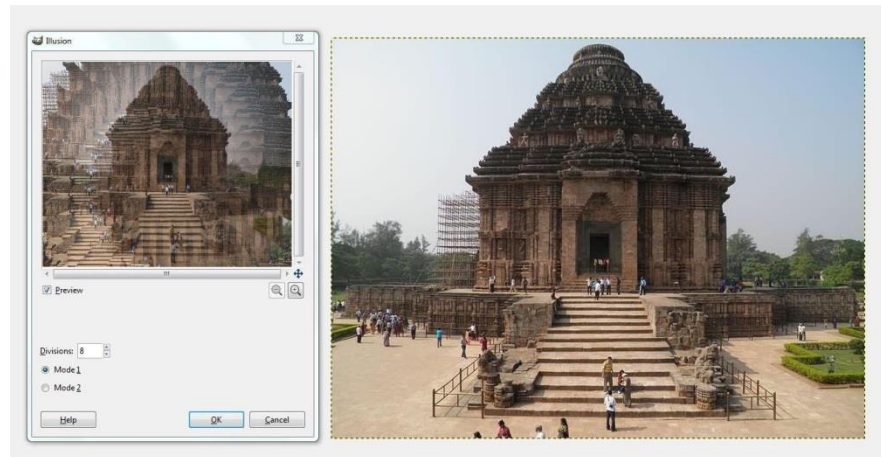
Overview

This filter can be accessed from the image menu Filters> Map> Displace. It uses a 'displace-map' to displace corresponding pixels of the image. This filter displaces the content of the specified drawable (active layer or selection) by the amounts specified in X and Y Displacement multiplied by the intensity of the corresponding pixel in the 'displace map' drawables. Both X and Y displace maps must be grey-scale images and have the same size as the drawable. This filter allows interesting distortion effects.



Screenshot

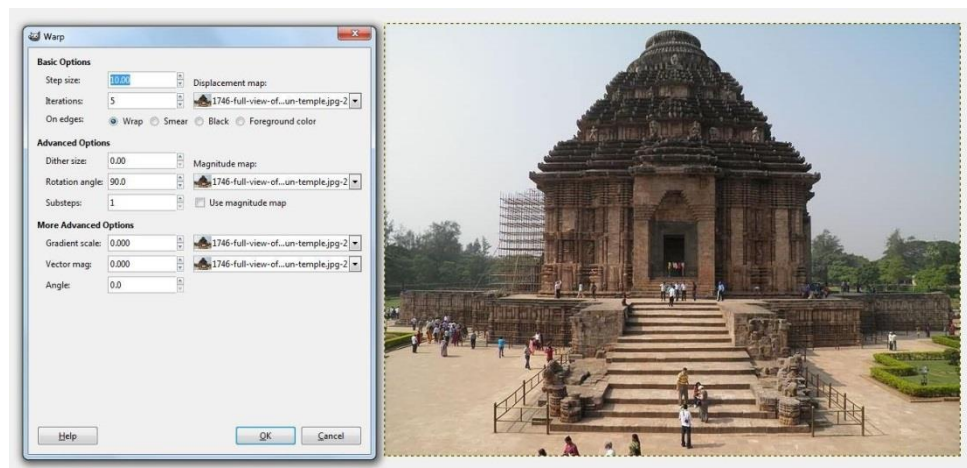
Illusion



Screenshot

This filter can be accessed from the image window menu under Filters > Map > Illusion. With this filter, your image (active layer or selection) looks like a kaleidoscope. This filter duplicates your image in many copies, more or less dimmed and split and puts them around the centre of image.

Warp



Screenshot

Found in the image window menu under Filters > Map > Warp, this filter has no Preview. This filter displaces pixels of active layer or selection according to grey levels of a Displacement map. Pixels are displaced in accordance with the gradient slope in the

displacement map. Pixels corresponding to solid areas are not displaced. Higher the slope, the higher is the displacement.

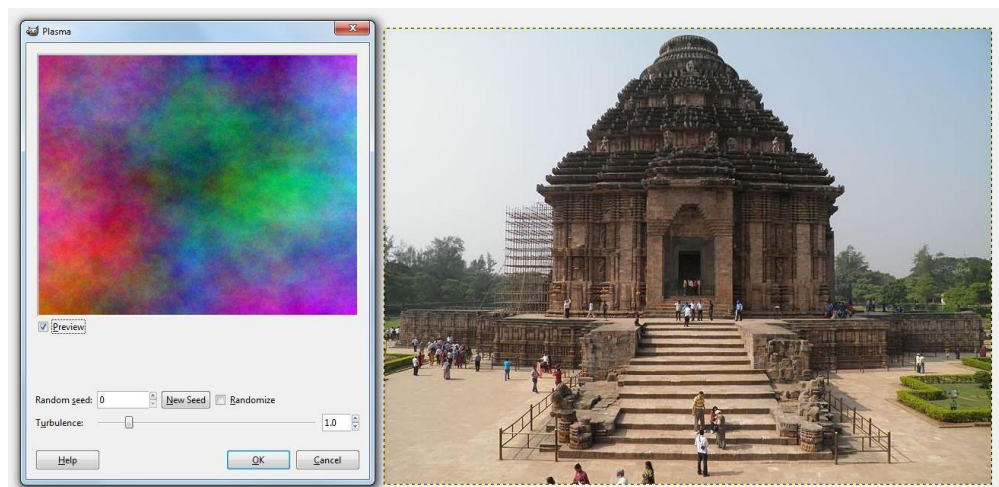
11. Rendering filters

Render filters introduction

Although most Gimp filters act on a layer by transforming its contents, the filters in the "Render" group are a bit different. They create patterns from scratch, in most cases obliterating anything that was previously in the layer. Some create random or noisy patterns, others have regular fractal patterns and one (Gfig) is a general-purpose (but rather limited) vector graphics tool.

Plasma

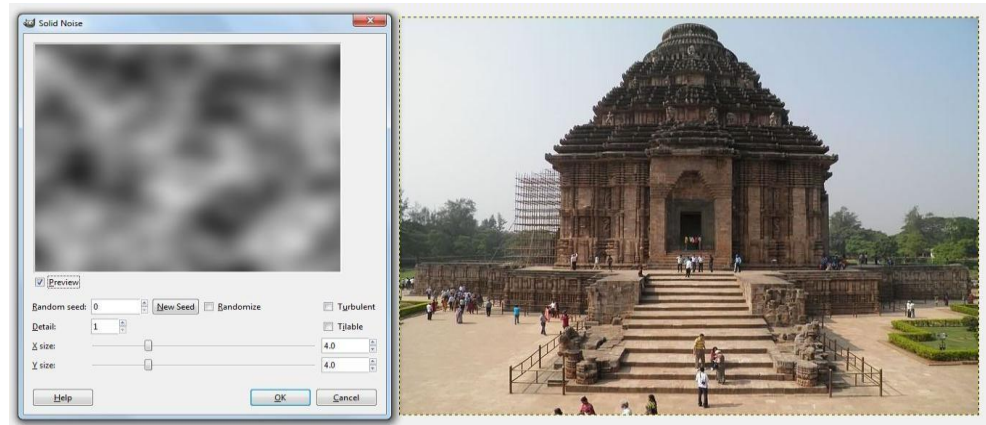
This filter can be found in the image menu following Filters> Render> Clouds Plasma. You can generate colourful clouds through Plasma, which can be used for textures. The turbulence in the plasma cloud can be controlled with the Turbulence slide. All of the colours produced by Plasma are completely saturated. Sometimes the strong colours may be distracting and a more interesting surface will appear when you desaturate the image using Layer/Colours/Desaturate. An enhanced version of the Plasma plug-in called Plasma2, with many more options and parameters, is available from the Gimp Plugin Registry.



Screenshot

Solid noise

This filter can be accessed through the image menu through Filters> Render> Clouds> Solid noise. Solid Noise is a great texture maker. Note that this noise is always grey, even if you apply it to a very colourful image (it doesn't matter what the original image looks like -- this filter completely overwrites any existing background in the layer it is applied to). This is also a good tool for creating displacement maps for the plug-in. With the "turbulence" setting active, the results look quite a bit like real clouds.



Screenshot

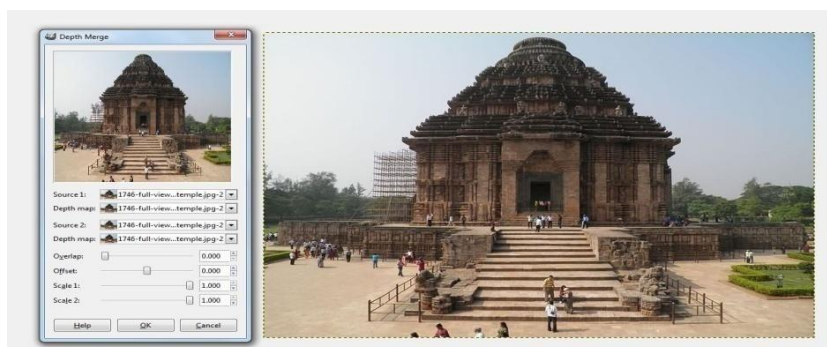
12. Combine filters

Combine filters: Introduction

The combine filters associate two or more images into a single image.

Depth merge

It combines the two pictures selected as "sources" by blending them. Darkest values are predominant in the resulting image. This could be done using blending modes but in this case there aren't any options. To work with this filter, at least two images are needed that have to be of the same size. This filter can be accessed through Filters/Combine/Depth Merge.

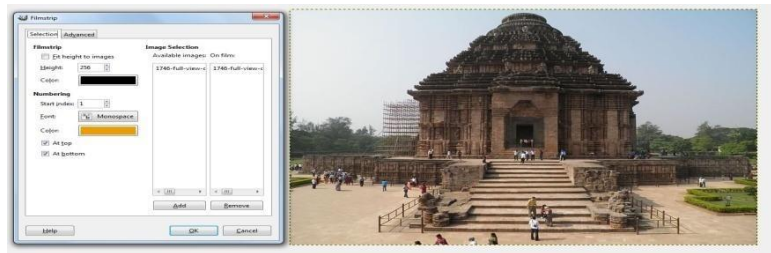


Screenshot

Film

The film filter allows a user to merge several pictures into a photographic film drawing. This filter does not invert colours, hence it does not imitate negative film of the sort used to produce prints. Instead you should think of the result as an imitation of slide film or cinema. This filter can be accessed via Image/Filters/Combine/Film Options. A double click

on the tool buttons opens the Tool Options dialog.



Screenshot

Unit Summary

In this unit you have learnt about advanced image editing using GIMP open source software. We have learnt about Colour Tool and various filters using examples from a screenshot. In Colour Tool we have learnt about Colour Balance Tool, Hue Saturation Tool, Colorize Tool, Brightness Contrast Tool, Threshold Tool, Levels Tool, Curves Tool and Posterize Tool. In Filters, we have learnt about various filters and their sub functions like Blur, Noise, Edge-Detect, Enhance, Generic, Glass Effects, Light Effects, Distorts, Artistic, Map, Render and Combine filters.

Assessment

1. What are filters?
2. What are the various types of filters and their uses?
3. What is the current stable version of GIMP?

Resources

1. All images describing the Toolbox functions are screenshots taken while working with India Gate image.
2. Some of the key modifiers are referenced from <https://docs.gimp.org/odftest/en.pdf> which is an open source material with no copyrights by GIMP.

Unit 3 Advertising and Illustration

Introduction

Pixlr is a cloud-based set of image tools and utilities that include a number of photo editors, a screen grabber browser extension and a photo sharing service. The apps provide tools for simple to advanced photo editing. Pixlr can be used on PCs and on smartphones or tablets using a mobile app. Time put Pixlr on its list of the top 50 websites of 2013. It has web-based 'paint' features similar to online image manipulation software such as Sumo Paint.

Pixlr Editor- It is an open source online photo editor of PIXLR used for advanced photo editing. It is free and no download is required.

Pixlr Express- It is another open source online photo editor of Pixlr and as the name suggests it is used for minor photo editing. It is free and easy to use.

Pixlr-o-Matic- It is a photography/darkroom tool that makes it easy to add style to photos using effects, overlays and borders.

Outcomes

Upon completion of this unit you will be able to:

- a) Dynamic ways to transpose images.
- b) To use Lasso, Clone Stamp, and the Magic Wand tool to edit your pictures.
- c) The fundamental techniques to animate and revive any picture
- d) Advanced techniques to animate and edit images

Terminology

Pixlr Editor: Image Editing Software.

Cropping: Cropping lets you “cut” unwanted parts from sides, top or bottom of a picture.

Moire effect: Moire is a pattern that is created in some photos by grids or series of lines.

Pixlr Express: Pixlr Express is a faster way to crop, resize, rotate, adjust and add photo effects to your photos.

Pixlr Editor

Pixlr Editor is a type of browser photo editor that addresses your editing needs. It allows you to have full control over your images, including layers and effects. It is the most popular advanced online photo editor and contains features that are available in desktop graphic design applications. Tools have features such as red-eye reduction, a spot healing tool, drawing tools, clone tools, sharpen, blur and many more. Similarly, filters include mimic HDR, glamour glow, tilt-shift, Gaussian blur, vignetting, noise and many others. Adjustments include advanced concepts like Levels, Curves, Cross Process, Desaturate, Auto

Levels, Hue/Saturation and Brightness/Contrast.



Screenshot

Advantages of Pixlr Editor

- Account is not necessary. You can create an account for free storage space if you wish to do so.
- No special download or installation. You can fire it up in your browser when needed
- The Pixlr Editor provides tools such as Layers, Lasso Tool, Brush controls, Cloning and Filters.
- An optional private Pixlr Library where you can store all your photos and images.

Website- <https://pixlr.com/editor/>

Getting Started

1. At the initial screen, choose Open Pixlr editor.
2. You have to choose from the following:
 - a. Create a new image - To make a brand new image, or to cut-and-paste an image from somewhere else.
 - b. Open image from computer - Open a picture stored in your computer or on a flash drive.
 - c. Open image from URL - Open a picture by putting in its unique Internet address.
 - d. Open image from library - Open from an account at Pixlr, Facebook, etc.
3. At the point when the picture is open in Pixlr, you can modify the span of the picture window by dragging it in or out (see the red hover in the picture underneath). You can zoom in and out by holding down the [Ctrl] key and squeezing either the [+] or [-] keys.



Screenshot

The Pixlr screen. Main menu is at top (green oval).

Basics

Pixlr is much similar to a basic variant of Photoshop. Apparatuses are on the left, the work territory is in the center and boards are put on the correct side of the screen. The program offers full help for layers. Huge numbers of the apparatuses -, for example, the Clone Stamp Tool - work particularly like their partners in business programming programs and are simpler to use than with some other Web 2.0 picture editors.

The Move Tool is the best instrument to choose for a lot of your work in Pixlr. Consider it the "default" apparatus.

Fix the last activity by squeezing the [Ctrl] and [Z] keys all the while. Then again, select Edit from the best menu of the Pixlr window and pick Undo.

At whatever point you pick a device, its choices are shown simply under the menu at the highest point of the Pixlr window. Infrequently these settings significantly influence the utilization of the instrument.

Bear in mind that this arrangement of apparatuses is easy to utilize and can add some exceptionally fun impacts to pictures.

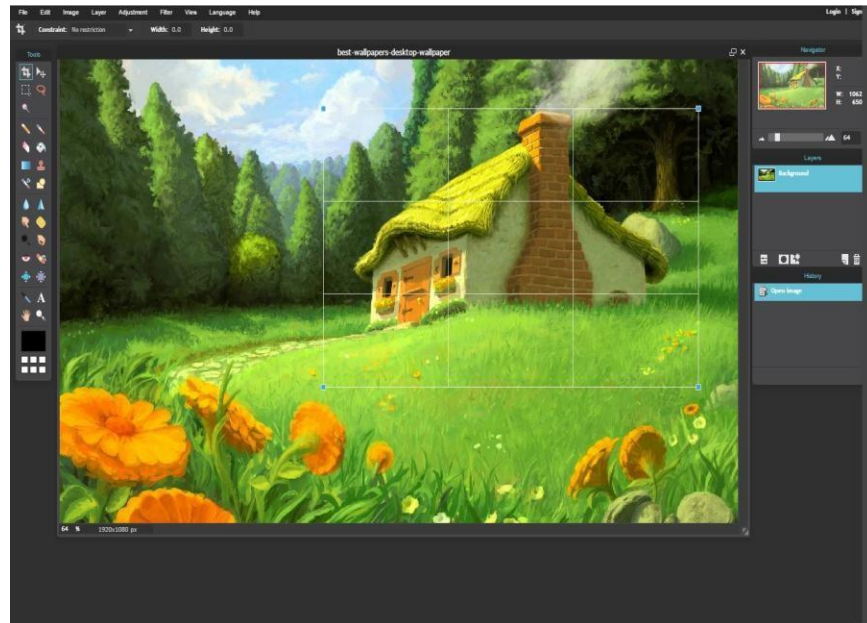
Try not to fear the "propelled" mode. It isn't difficult to utilize, and is by a long shot the most effective piece of Pixlr.

Cropping an Image

Via cropping, you can "reduce" undesirable parts from the sides, pinnacle or bottom of an image. you can additionally absolutely change the character of a picture by disposing of distracting or unnecessary elements of it.

1. Select the Crop Tool from the Tools at the left.

2. Click on the image and "drag" out a "box". This is the area that will remain after cropping.
3. Adjust the cropping area:
 - a. Click the blue boxes at the corners of the cropping area and drag them to resize the part of the image to crop.
 - b. Place your cursor on the cropping area. It should change to a "plus sign" with four arrows, then click and drag the cropping area to where you want it.
4. Press the [Enter] key to crop.



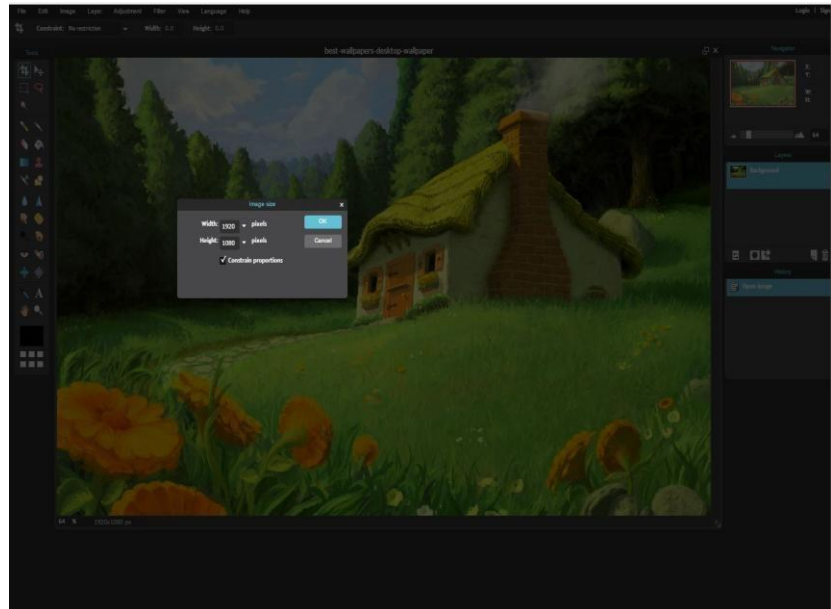
Screenshot

Resizing an Image

This tool is used to change the dimensions of a image. After cropping the above photograph, it measures 1388 x 777 pixels (width is continually indexed first). that is too extensive for use in maximum of the functions and approximately four-five times too wide for an internet web page.

1. Select the Move Tool.
2. From the menu at the top of the Pixlr window, select Image, then choose Image size
3. The Image size window should appear. Make sure the Constrain proportions box (circled in red) is checked, to keep the image from being distorted in the resize.

Type in the width or height you want and the other dimension will automatically be adjusted. Click [OK].



Screenshot

Rotating an Image

You can rotate an image in Pixlr in two ways – select Image from the menu for simple rotation (90 or 180 degrees), and choose the appropriate amount of rotation.

To get the finer control of rotation, you can use Free Transform:

1. Just select the Move Tool and click the image.
2. In the Menu, select Edit and Free transform, the "frame" of which should appear around the image.
3. Move the cursor around the outside edge of the image to rotate, until it changes into an arrow bent into a circle. Click and drag to rotate the image.
4. Then click any tool in the Tools to finish editing in free transform. You have to choose [Yes] to apply the changes made.



Screenshot

Note: Free transform can also be used to resize an image, by dragging the "handles" at its sides or corners

How to save an Image

Saving an image in Pixlr is easier and simpler as it allows you to save an image to your Facebook account.

1. Choose File and select Save
2. Type the filename for the image in the Name box
3. Select the Format (several formats to choose from):

JPEG—It is the best final format for most photos (which are not required to be edited again in Pixlr).

You can adjust the Quality control to change the appearance and file size of the image.

PNG - PNG format is used when the image has a transparent background. Else, JPEG is a better choice.

BMP—It is also known as a Bitmap file format. Since it is an uncompressed format, file size tends to be very large.

TIFF—It stands for Tagged Image File Format, another file format with very large file sizes. Again, JPEG will be a better choice.

PXD—This is called Layered Pixlr image. You can use this format if you plan to open the file again in Pixlr. This maintains layers, while other formats "flatten" them.

4. Look in the lower-right corner to make sure the file size is acceptable, and then click

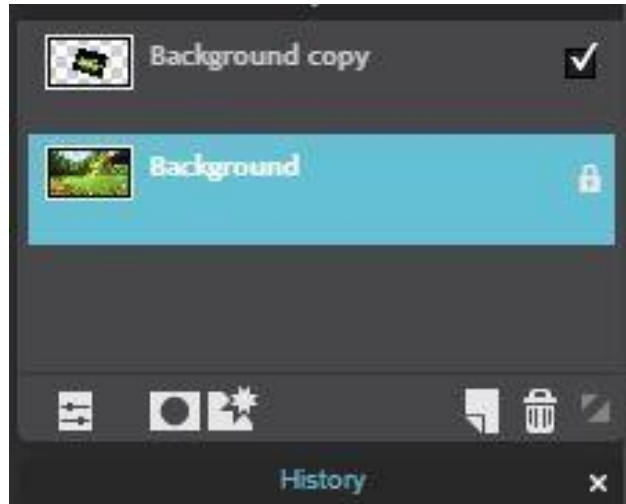
Working with Layers

Pixlr, like Photoshop and many other expert-stage applications, allows you to work on photographs with layers.

By unlocking and renaming the historical past layer, adjustments to an picture can't be made till the principle layer of the picture is unlocked. Pixlr calals this the heritage layer.

1. First, open an image in Pixlr
2. Ensure the Layers panel is visible to the right of the image. If not select View, choose Layers to make it visible
3. In the Layers panel, just double-click the padlock icon (circled in red in the image to the right) in the Background layer, which will change the padlock to a check box and unlock the layer to enable you to edit

4. The name of the layer has been changed from Background to Layer 0.
Double-click the name and type in something descriptive



Screenshot

Adding Text in a new layer

Typing text in a new layer will allow you to move the text around, edit it, and delete it without causing disturbance to the rest of the image.

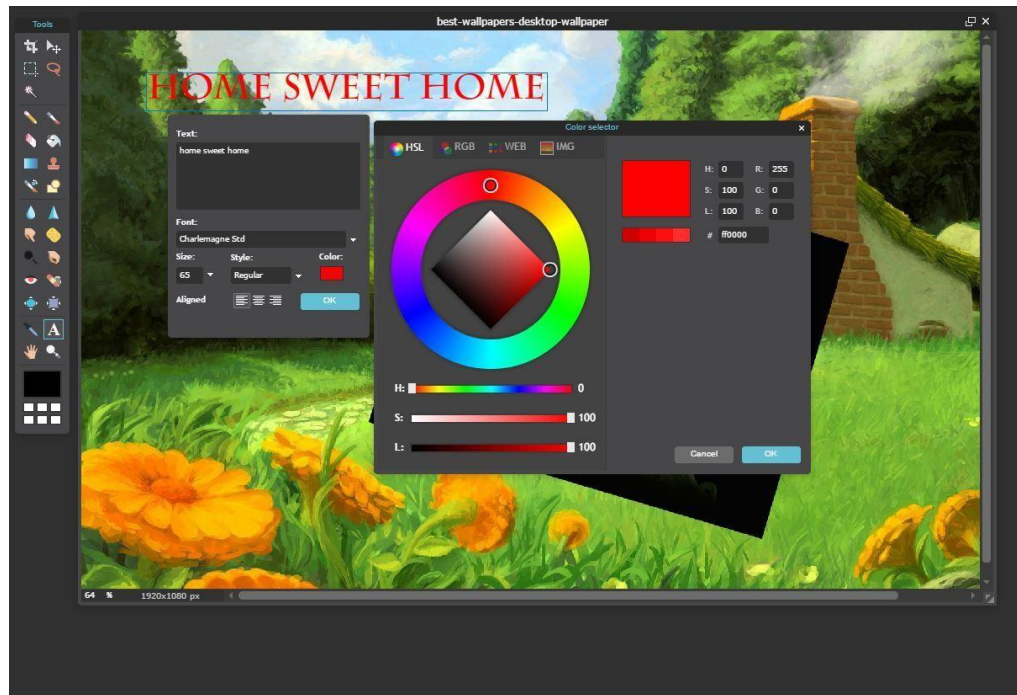
1. First, select the Type tool to find if your cursor changes
2. Then click on the image where you want your text to appear
3. Type the text, which will probably be black in colour

Moving text

1. Choose the Move tool
2. Check the Layers panel to ensure text layer is selected. If not, click the text layer
3. Now, you can move the text anywhere on the image

Modifying text

1. First, select the Type tool
2. And choose the layer for the text in the Layers panel
3. Now click the text and editing window should appear
4. Edit the Text. You can change the Font and change the Size or the Style.
5. Click the colour picker (circled in red, below) to change the Colour. You have to choose a tab at the top of window for the colour format and select a colour. Remember to click [OK] in both windows.



Screenshot

Layer order

Keep in mind the layers as being on clean plastic. Layers are visible at one time, however the Layers panel controls how they overlap. The layer on the top inside the Layers panel seems "closest" to the viewer. you have to click a layer and drag it up or down to exchange the order of layer.

Hiding layers

An image comprises several layers. By selecting the layers to hide and to keep them visible, many images can be saved from one "master" image.

1. In the Layers panel, select the checkbox to remove the check mark and hide the layer.
2. To make the layer visible again, click the checkbox.

Using layers to make a composite image

Setting multiple photograph collectively with layers is easy. you presently have a JPG image for the historical past, however the popcorn picture is a GIF with a "obvious" heritage, because of this when it's miles inserted into some other photograph, the popcorn flashes.

1. You have to download the images below and save them to your computer.
2. Then open the photo.
3. Select the Move Tool.
4. Choose Layer and select Open image as layer.
5. Browse to and open the popcorn image. Notice that a new layer has been

created.

6. Double-click the name of the new layer and rename it.
7. Make sure the layer for the image is selected, then click and drag it to where, you want it to appear.
8. To resize/rotate the image
 - a. Select the image layer in the Layers panel.
 - b. Hold down the [Ctrl] key and press [T]. This will turn on the Free Transform mode for the layer.
 - c. Move the cursor near the Free Transform box and it should turn into an arrow bent into a circle (see image, below). Click and drag to rotate the contents of the Free Transform box.
 - d. To resize, hold down the [Shift] key to prevent distortion and click any of the corners of the Free Transform box. Click and drag inwards or outwards to resize.
 - e. Select any tool in the Tools to finish editing in free transform. Choose [Yes] to apply the changes you've made.



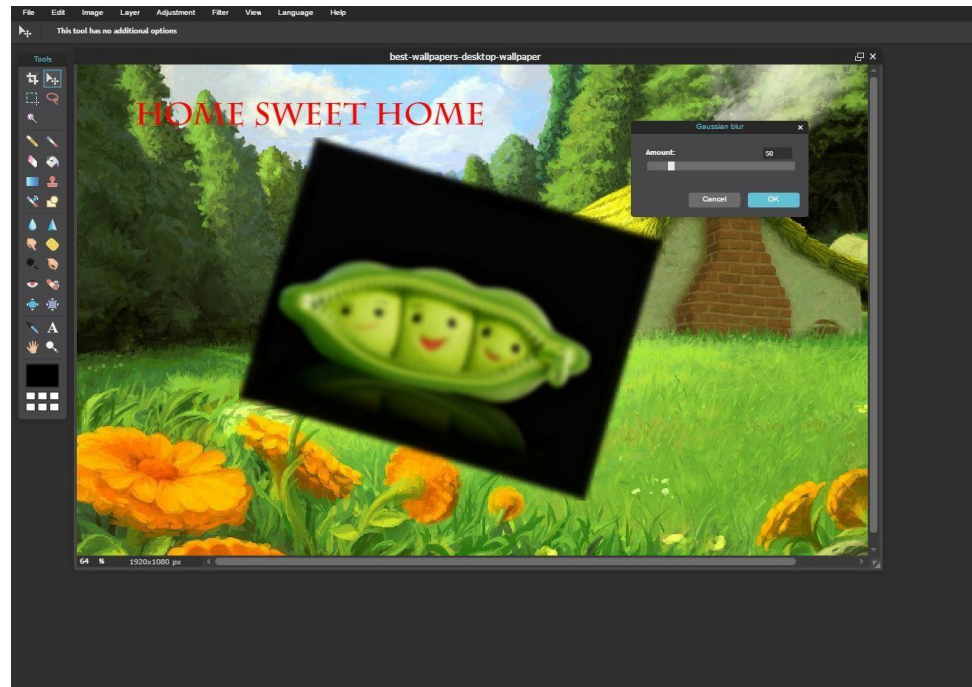
Screenshot

Advanced Techniques

Pixlr offers you options to adjust the image's look:

Moire Effect

Moiré pattern is created in pix by using grids or collection of traces. It now and again props up in television images, whilst the camera faces trouble with sure patterns on clothing, and is visible while a digital camera is used to take a photograph of a television display screen. Let us now see the description of the Moiré effect:



Screenshot

Moiré effect is a visual perception that occurs when viewing a set of lines or dots that is superimposed on another set of lines or dots, where the sets differ in relative size, angle or spacing. The Moiré effect can be seen when looking through ordinary window screens at another screen or background.

Using Gaussian Blur to remove the Moiré effect

To remove Moiré effect, Gaussian Blur is used. Any kind of blur is applied after image editing is complete, but it's an exception when you are using the Gaussian blur to remove Moiré patterns.

The effect is visible in this drawing at some resolutions: Choose Filter from the menu and select Gaussian blur.

Carefully adjust the amount of blur, to try to lessen the Moiré effect without blurring the image in general.

Quick adjustment auto levels

Auto levels are supposed to adjust colour, brightness, contrast, etc. in one quick-and-easy step.

1. Select Adjustment from the menu and choose Auto levels. Observe the changes (if any) in your picture.
2. Use Edit > Undo to reverse the adjustment, if desired. You may wish to try some of the adjustments described below.

Adjusting hue, saturation

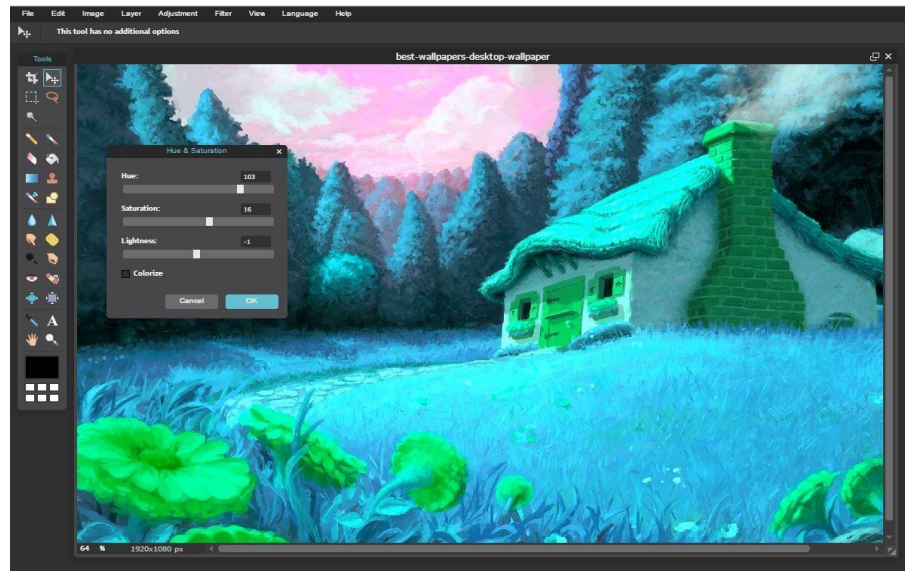
1. First choose adjustment from the menu and select Hue and Saturation.

- Next, you have to use the sliders for Hue, Saturation and Lightness to adjust your image.

Hue is used to change the colours in an image.

Saturation alters the intensity of colours. In the extremes, change the image colours to pure, saturated colours. Else, you can just wash the colour completely out of a picture.

Lightness changes the colours along a lightness–darkness scale.

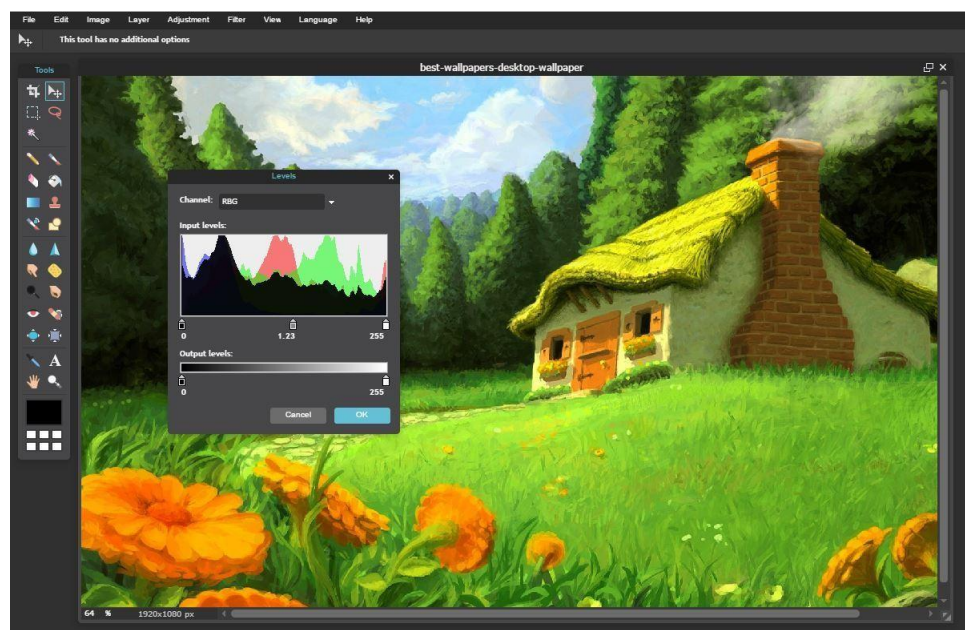


Screenshot

Adjusting the levels manually

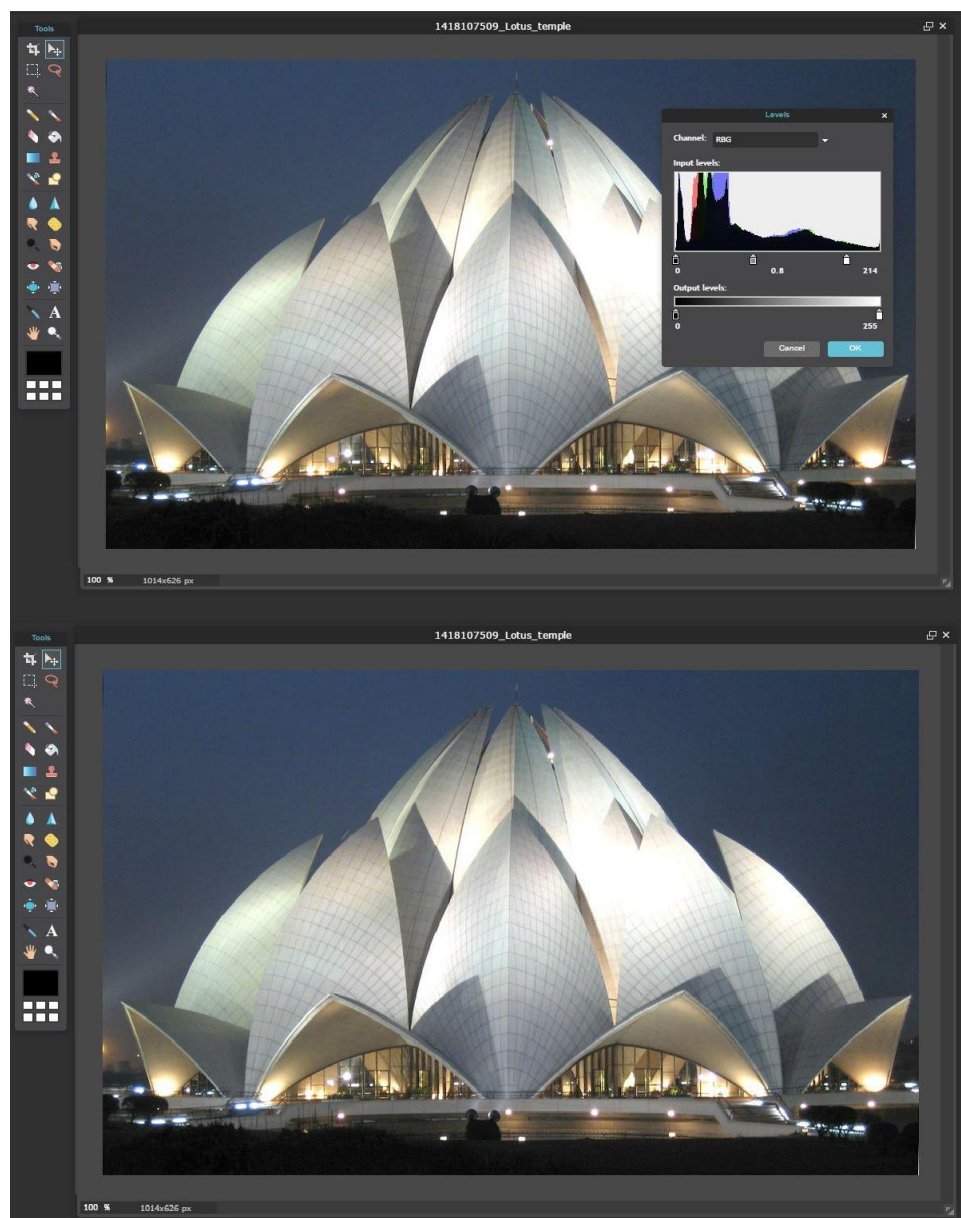
This is a perfect feature to use with "murky" images not having a true black or a true white anywhere. The process is a bit intimidating, but it's simple and easy.

The following image is well-composed and framed. It is somewhat "washed out." Colours may be brighter and the photo contains only a small amount of "true black" colour. You can use the levels to improve the photograph.



Screenshot

1. Select Adjustment and choose Levels...
2. The Levels window shows a histogram, with three "sliders" at the bottom of it. The curve shows how colour lightness values are distributed in the image.
3. To achieve a true black in the image, move the leftmost slider (circled in red in image below) inwards, onto the bulk of the histogram.
4. To adjust the image to have a true white, move the rightmost slider (circled in green in image below) inwards to meet the right edge of the bulk of the histogram. This will also lighten colours in the photo.
5. The middle slider can be used to adjust mid-tone values.
6. If you wish, you can also click the Channel selector and adjust the red, green and blue colour channels individually. In our example, we'll just try the small adjustments shown below.



Using the colour curves to modify an image

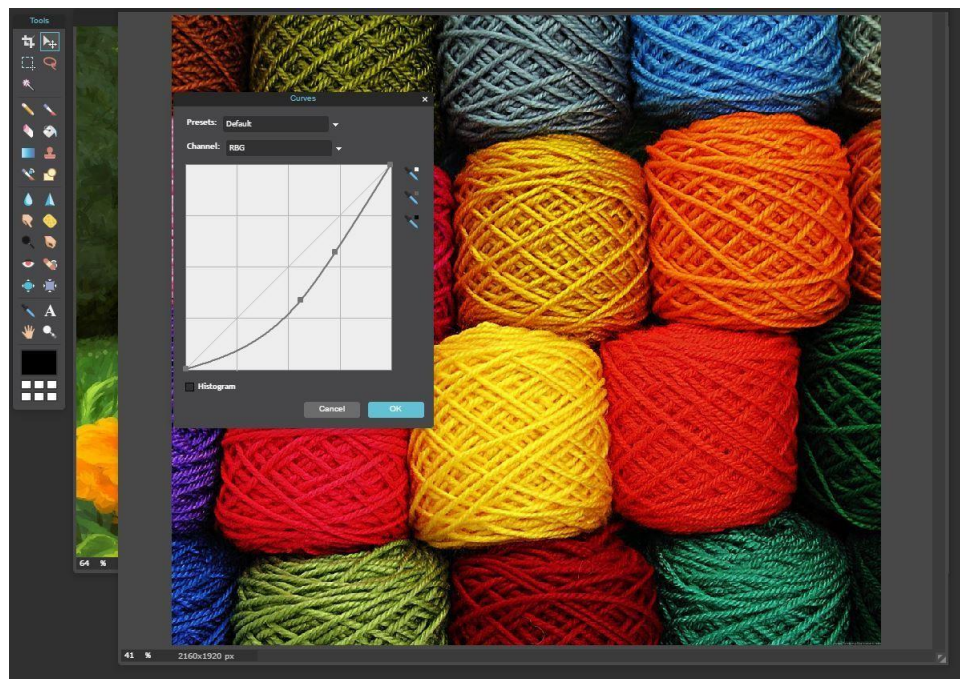
The challenging Colour Curves give the fastest and most powerful tools to edit an image. Each "curve" appears as a straight and diagonal line. There are many ways to modify the curves:

- Use the Channel selector at the top of the window to adjust, Red, Green or Blue channels or leave it set to RGB to adjust all three at once.
- Move either endpoint of the line.
- Click anywhere on the line and drag, to "bend" it into a curve.
- Click and drag other points to create a complex shape. Let's look at two easy changes you can make:

Correcting tonality

This will help make dark colours more distinct and brighter, and improve colour balance of a picture.

1. First choose Adjustment and select Curves.
2. Click the Histogram box to make its shape visible.
3. Move the left endpoint horizontally toward the histogram.



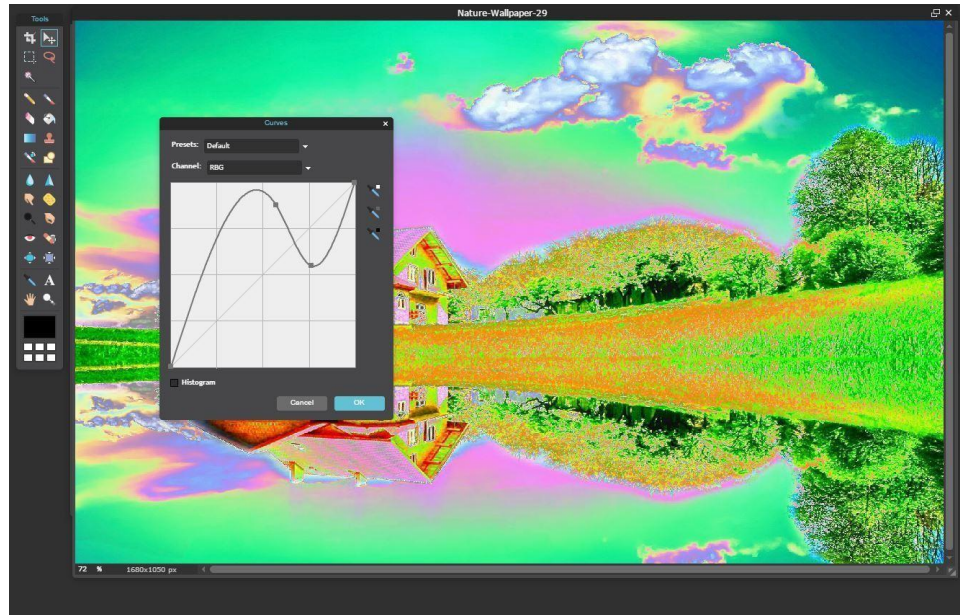
Screenshot

Using the Curves to "Solarize" Images

When a film is exposed to light during or after the developing process, it is called "Solarization". This extra exposure could cause extreme brightness or even colour inversion

in the photo. To do in Pixlr, you have to select Adjustment and choose Solarize. Use of Curves gives you more control over the finished effect. Choose Adjustment and then select Curves.

1. Click the Histogram box to make its shape visible.
2. Move the RGB curve to match the shape of the histogram roughly. There are many possibilities.



Screenshot

Removing a background to create a Transparent Image

To remove a background from a Pixlr image is different from the process in other image editors, but it isn't tough to do. Some YouTube tutorials talk about copying of the main layer and the creation of another file, but these steps are necessary if you unlock the background layer.

1. Open the image
2. Choose the Move tool
3. In the Layers panel, double-click the padlock icon that is circled in yellow in the image to the right in the Background layer. This will change the padlock to a check box and unlock the layer to enable for edit
4. Select the Wand Tool
5. Click the background of the image to select it to see dotted lines "running" around the background. Now, unlock the background layer
6. Press the Delete key to remove background, which will be replaced with a checkerboard pattern, indicating that it is transparent.
7. Select File and choose Save. Change the format to PNG and see the background in

the preview image changed to transparent (checkerboard). Click [OK].



Screenshot

Free, High-Quality Images

You should not use bad clip art in the Web pages, PowerPoints or lesson plans. Neither should you use copyrighted images.

Wikipedia (en.wikipedia.org) - Free or Fair to use images. Click an image on the browser if think it is usable. Some images are either in the public domain or are available for fair use for the educators.

MorgueFile (www.morguefile.com)- Free images. The morgueFile database of free pictures is extensive and you can search the images subject. You should avoid the Dreamstime images, which are not free.

Pixlr Express

As the name suggests, Pixlr Express is a faster way to crop, resize, rotate, adjust and add photo effects to your photos. It's a great tool to use if you want a quick fix to a photo in a hurry!

1. In Google, type in Pixlr
2. Once you are at the Pixlr site, select Pixlr Express
3. Select Open image from computer or from URL
4. When your photo appears, select Basic to crop, resize, rotate or flip

Note: You may need to do each task in the order that they appear. For some reason, if you rotate and Flip first and then Crop or Resize, your image will rotate back to the original position.

Cropping Photos

Select Crop. Frame your photo by dragging the blue boxes in each corner. Click on Apply when you have finished.

Resizing Photos

Pixel width and the height will automatically change.

Typically a pixel (or DPI) is 300 per inch. For instance, if you want a 3 X 4 photo, you can change the pixel width to 900 X 1200.

If you aren't going to print your photo, but are going to post it online or insert it into a power point slide show, the proportions aren't critical. If, however, you plan to print the photo, you may need to go back to crop and play around with the dimensions again to get a closer width to length proportion.

Rotate and Flip

Click to rotate left or right or flip horizontally or vertically. Click on Apply when you have finished.

Photo Adjustments

Once you are satisfied with the basic size of your photo you can try out some, out of many adjustments.

Click on Adjustments and you will find a list of options.

The most used options are usually Red eye removal, Auto levels and Brightness & Contrast.

Practice with your photo to see what kinds of adjustments you can make! You can undo anything you don't like. Click on the green back arrow above the word Basic to undo a move.

Adjust the size of your photo by dragging the radio button just to the right of the green arrows to zoom in on the area you want to change or adjust.

Click on Done when you have finished.

Save your photo before going to Photo effects. You can open it up again as needed.

The above photo is an example of what happens when you select invert.

Note: Pixlr Express will save your photo in whatever format it was in originally. However, if you change the name of the photo, you'll need to add .jpg or .gif after the name to save the photo as a .jpg or .gif.

Photo effects

Open your saved photo. You can now play with some of the many photo effects. Once you are done with your final image, save it.

Unit Summary

In this unit, we have learnt the use of online tool Pixlr to edit images professionally. We discussed in detail about the Pixlr Express, which is used for minor editing, and Pixlr Editor, which is used as a professional image editing tool.

We have learnt the use of Pixlr to edit images using its various online tools. We have learnt how to open, crop, resize and rotate images and subsequently save them. We have seen how to work in layers, add layers to an existing project, hide layers and turn an image into a composite one by using layers.

We have gotten comfortable with cutting edge methods, for example, auto levels, utilizing Gaussian obscure to remove Moire impact, altering tint and immersion, physically changing the levels, utilizing the shading bends to adjust a picture, revising tonality, utilizing bends to solarize pictures, expelling foundation to make straight forward pictures and so forth.

Assignment

1. What are the three different types of Pixlr tools?
2. True/False
 - a. Tools in Pixlr are on the left side of the screen
 - b. In Pixlr, work area is on the right of the screen
 - c. In Pixlr, panels are in the middle of the screen
3. What is the major difference between Pixlr Editor and Pixlr Express?
4. What is the Moire effect? Give examples?
5. What is used to remove the Moire effect?

Resources

1. All images saved from screenshots which are done manually using the above editors.
2. Some material is referenced from <http://pixlrtutorial.blogspot.in/p/tutorials-navigation.html> The material is not copyrighted.

Unit 4 Vector Composition & 2D Animation

Introduction

Animation is the rapid display of a sequence of images in order to create an illusion of movement. Traditionally, 2D animation is created by drawing each displayed image individually. These images are called "Frames", thus the method is called "Frame-by-Frame Animation". To create a good illusion of movement, you need to draw many frames. As such, the method requires a lot of time and resources. Synfig Studio is open-source 2D vector animation software designed to produce film having quality animation with fewer people and resources. It is built to eliminate the need to draw each frame individually. The instructions in this unit have been sourced from Synfig Studio's user documentation that is available under Creative Commons Attribution license.

Outcomes

Upon completion of this unit you will be able to:

- Learn the use of Synfig vector 2D animation open source software
- Study the use of various functions of Synfig like toolbox, canvas, panels
- Understand the process of adding colours, linking, and animation basics
- Learn to animate shapes and add layers

Terminology

Canvas: It displays the artwork and animation

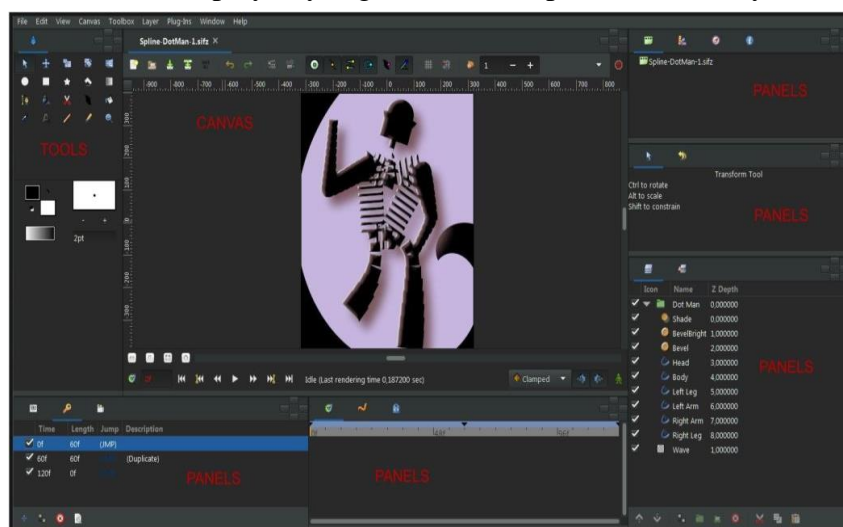
Panel: It contains tools and information about certain elements of your project

Navigator: It shows a thumbnail image of what the currently selected canvas looks like.

You can also zoom in and move the focus around with this panel

Getting Started

The screenshot below displays Synfig Studio's complete window layout



Screenshot

Illustration 1: Standard Synfig Studio's window layout

The main interface components of Synfig Studio are:

Toolbox — is the main Synfig Studio window. It contains system menu and buttons, tools and more to create and edit your artwork. Closing it exits the application.

- Canvas — displays your artwork and animation.
- Panels — contain tools and information about certain elements of your project. Some panels will allow you to modify those elements.

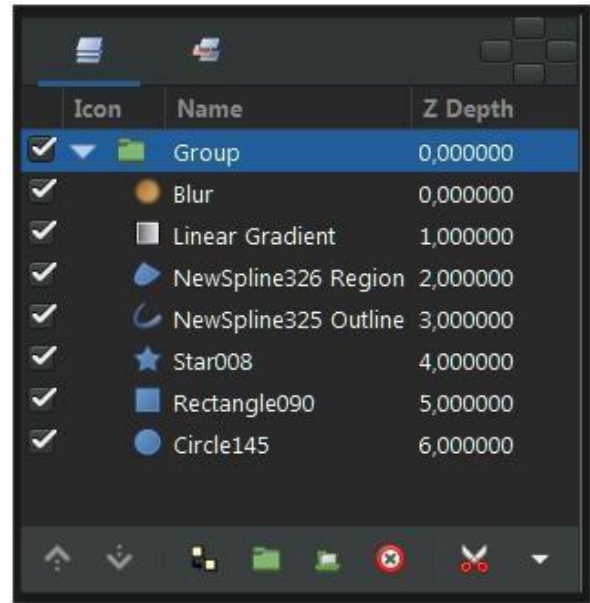
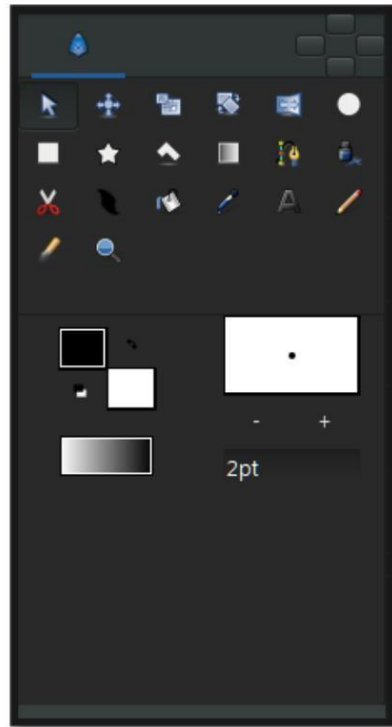
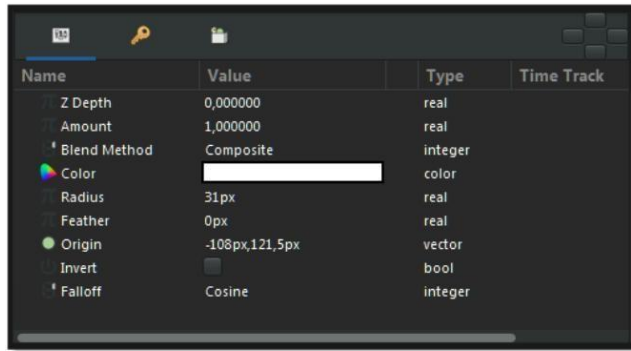
Note

To reset Synfig to its default window arrangement, you have to select "Panels/Reset Windows to Original Layout" from the "File" menu of the Toolbox.

The centre window is the Canvas Window. A new Canvas Window appears each time Synfig Studio starts. The window represents the Root Canvas. In the upper left corner of the Canvas Window, you'll see a button with a caret. If you click on this caret button, the canvas window menu will pop up. If you right-click on the canvas area and there is no Layer under the mouse position, this menu will also appear. The other two windows (one on the bottom, and one to the right) are customizable dock dialogs. Each dock dialog contains a set of panels, arranged horizontally or vertically. Some panels share the same space inside the dock dialog and you can switch between them by clicking on their tabs. You can rearrange the contents of dock dialogs as you wish by dragging the panel tab to your need. You can even create a new dock dialog by dragging a tab out of its dock dialog. If you accidentally close a panel, (by dragging it out of the dock dialog or closing the new dock dialog that gets created) you need not worry. Simply go to the Toolbox, select "File/Panels" in menu and click on the name of the panel you need.

The most important panels are:

- **Layers Panel** — shows the hierarchy of the layer of your working canvas. It also allows you to manipulate these layers.
- **Parameters Panel** — shows the parameters of the layer currently selected. When multiple layers are selected, only the parameters that the selected layers have in common are displayed
- **Tool Options Panel** — shows any options specific to the currently selected tool.
- **Navigator** — shows a thumbnail image of what the currently selected canvas looks like. You can also zoom in and move the focus around with this panel.
- **History Panel** — shows you the history stack for the current composition. You can also edit the actions in history.



Screenshot

There are also many other panels in Synfig Studio. In order to know what a panel does, simply hold the mouse over its icon and a tooltip will pop up describing its function.

First steps

Let's create something to work with.

First, go over to the toolbox and click on the Circle Tool (if you don't know which one it is, just mouse over them until you find the one with the tooltip that says "Circle Tool").

When you click on the Circle Tool, you should notice that the Tool Options Panel has changed. But we'll get to that later.

With the Circle Tool selected, you can now create circles in the Canvas Window. This works as you might expect — click on the canvas, drag to change length of the radius and release the mouse button when you are done. Go ahead and create two circles. If you accidentally release the mouse button before dragging, you end up creating a circle with 0 radius and it is effectively invisible! However, you can easily fix this. In the Parameters

Panel, you can change the parameters of the selected object. If you just made a 0 radius circle, it should be the current selected object. You can change its radius to some value other than 0, say 10 and manipulate it to your liking with the handles later.

Note

Some users might experience the following problem: when you click and drag on the canvas using the Circle Tool, either nothing seems to happen or you end up making insanely huge circles. To fix this, go to "File/Input Devices" and disable all the devices you can find there.

Now go back to the toolbox and click on the Transform Tool (the button with the arrow on it). After you do this, click on one of your circles. You will see a "bounding box" a green dot at the centre and a cyan dot on the radius. Those dots are called "Handles". If you want to modify the circle, grab a handle and drag it around.

You can select a Layer by clicking on it. If you want to select more than one layer, hold down Ctrl key while you are clicking — this works in both the Canvas Window and the Layers Panel. You can do this in several ways. First, you can hold down Ctrl and individually click the handles that you want to select, but this can be tedious. However, there is a much faster method — just create a selection box by clicking the mouse and drag it over the handles that you want.

Go ahead, select two circles and select all of their handles. With several handles selected, moving one handle will move all of them.

Note

Synfig Studio has an auto-recovery feature. If it crashes, even if the current file has not been saved, you will not lose more than 5 minutes of work. At restart, it will automatically prompt you to recover the unsaved changes. Unfortunately history isn't recovered yet.

The rotate and scale tools work much like the Transform Tool, except in the case where you have multiple handles selected. Select a few circles then select all of their handles and try using the rotate and scale tools.

Note that tools manipulating with handles have options associated with them. If a particular tool isn't doing what you want, take a look at the Tool Options Panel to see the available options.

Linking

Suppose we always want these two circles to be of same size. Select two circles and then select both of their radius handles (the cyan dots).

To select multiple handles, you have to either drag a rectangle around them or select

the first one and then hold the Ctrl key while selecting the rest. Once you have selected the two radius handles, right click on either of them and a menu will pop up. Select "Link". Now the parameters are linked together. You can prove it to yourself by selecting just one of the circles and changing its radius.

Linking is a fundamental concept in Synfig. You can create links not only for handles, but also between parameters as well, by selecting multiple layers then right clicking on the parameter in the Parameters panel and selecting "Link".

Colour selection

Let's say you want one of the circles to be a different colour. If you look in the toolbox below the tools, you'll see the outline/fill colour selector, the outline width selector and some other stuff like the default blend method and gradient. The outline/fill colour widget works exactly as you might expect — you can click on the fill colour and a modest colour chooser will appear. Now you can change the colour pretty easily.

But sometimes you may just want to click on a colour and go. This is where the palette editor tab comes in.

Click on the Palette Editor Panel tab and have a look — it's the one with the palette-ish looking icon. Clicking on colours with the left mouse button will immediately change the default outline colour and clicking with the middle mouse button will change fill colour.

That's all great, but we still haven't changed the colour of the circle. There are three ways to do this. The first is to click on the "Fill Tool" from the toolbox and then click on the circle in the Canvas Window. This works with more than just circles. Also, you can select the circle layer you want to modify. Go to the Parameters panel, right-click on the Colour parameter and select "Apply Fill Colour" or "Apply Outline Colour" at your preference or simply double-click on the "Colour" parameter- a colour selector dialog will show up and you can just tweak away. To start, try out to set the Feather Parameter to 5.

Animation Basics

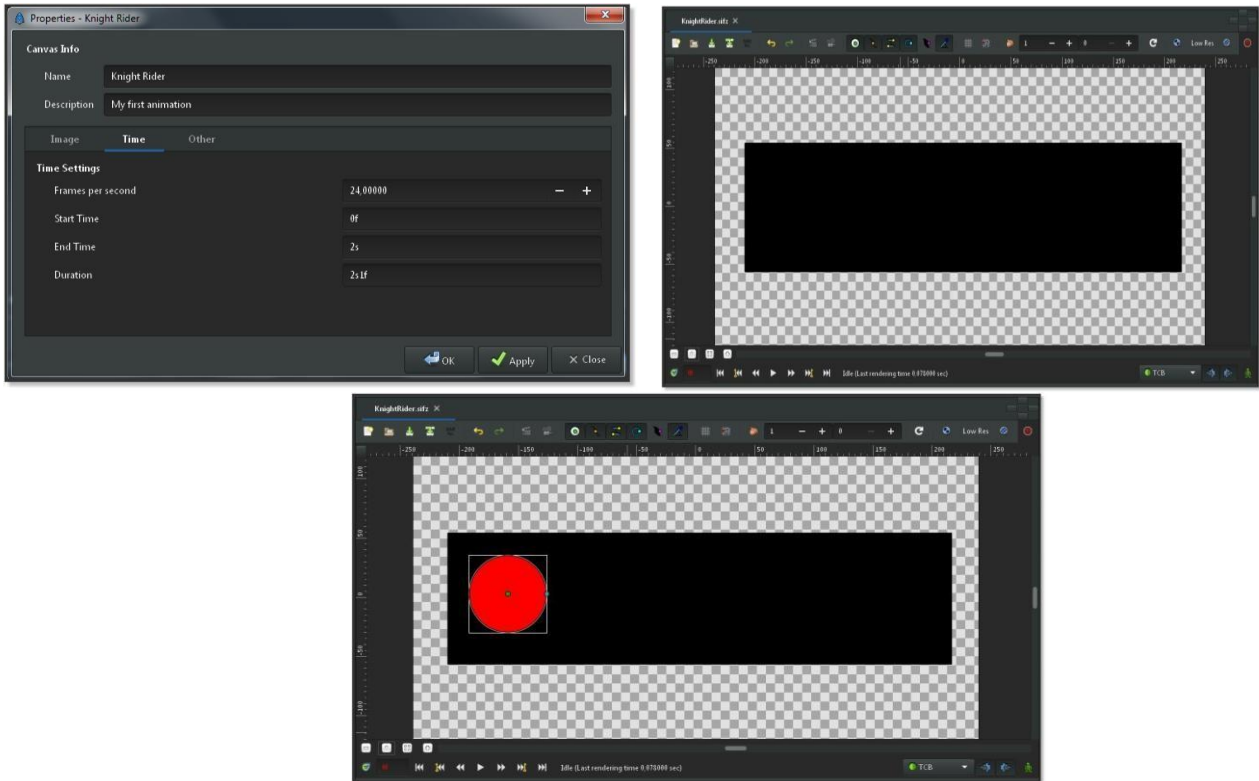
Creating an animation in Synfig Studio is really easy. It basically means to change a drawing — you just need to create the first stage and last stage of a change and Synfig takes care of the steps in between.

Let's look at a simple example. Consider a moving light like the one at the front of the Knight Rider car. Drop the realism, you get a circle moving from left to right and back. In other words, you need to create three 'steps' or 'stages':

1. The circle is on the left.
2. The circle is on the right.
3. The circle is back on the left.

Setting up

Let's do it. Start Synfig Studio. A new file is created at the start automatically. Click the caret menu (between the horizontal and vertical rules, in the top left hand corner of the canvas), then select "Canvas/Properties" or select "Canvas/Properties" from the menu and the Canvas Properties Dialog will appear.



Screenshot

Now we need a circle. Change the fill colour to red, select the Circle Tool and create a circle. It doesn't matter if it's not perfect: You can edit it. Select the Transform Tool and click the circle. It will go into an editing mode which is easy to detect by the small green dot in the middle and the white rectangle around it. You can move the circle by grabbing it on its green dot (the Origin) in the middle.

Give a name and description for your canvas, then click "Apply" (don't click "OK" yet—we're not quite done with the Properties dialog). Go to the "Time" tab and make sure to edit "End Time". Change "5s" to "2s" — that will make our animation 2 seconds long. Now click "OK". Select the Rectangle Tool and create a simple black rectangle that will serve as our background.

These are the first steps to draw an object and to move it, but not an animation yet.

Adding movement

In the beginning, you entered a value of 2 seconds in the Properties dialog. Because the length of your animation is non- zero, your canvas window (the one where you draw) has

a grey time slider at the bottom of the Timebar. You can click on it and a small orange indicator will appear indicating your position in time. Try clicking in several places on the time slider and you will notice that the entry field on the left of the time slider is changing its values to something like "12f", "1s 15f", etc. You can set your position on the time slider by changing values in that field. For example, if you enter "1s" and press ↵ Enter, the orange indicator will move in the middle of the time slider and entering "2s" will move it to the end of the time slider.

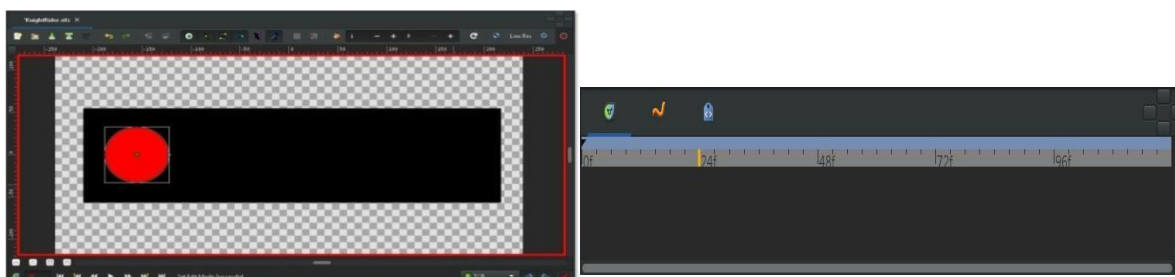
Note:

At 2s the orange indicator won't be visible. That's because "2s" is at the far right boundary of the time slider, putting the indicator out of view.

You may notice that nothing changes on the canvas at this point. Return to "0s" and switch to Animate Editing Mode by clicking the green man button to the right of the grey time slider. The canvas will display a red outline. It reminds you that changes to your objects now affect your animation at the time shown in the time slider.

In animate editing mode, every change to your object's parameters creates a waypoint that associates the changes with the current time. As you will see, Synfig can create smooth intermediate changes between waypoints and you can even choose the way in which the intermediate changes take place. You will probably find it helpful to associate some or all of

Time	Length	Jump	Description
0f	1s		
1s	1s	(JMP)	
2s	0f		



Screenshot

Previously, three "steps" or "stages" were mentioned. These are represented by keyframes. (Just in case you're familiar with video encoding: No, it's not the same!) A keyframe is an image in time where something important happens with your objects.

Default keyframe at 0f when creating a new project- a default "keyframe" is already

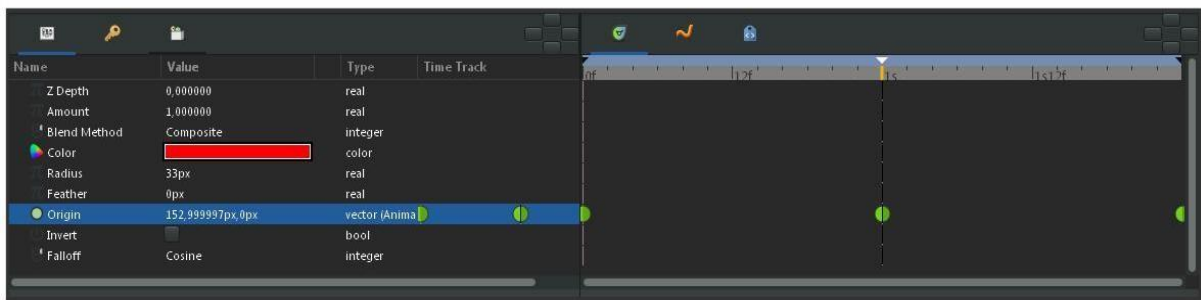
set at 0f. If for any reason you do not have this default keyframe, go to the Keyframes Panel — click on the little tab with the small key icon in the bottom window to edit keyframes. Now press the small button with the "plus" sign and you should get a new entry in the list displaying "0f, 0f, (JMP)". Now, go to the "1s" mark in the time slider. The small orange indicator should move there. Then add another keyframe by clicking the small plus sign. Repeat the process with the time slider indicator set to "2s" (it's at the end of your animation). You should now have three keyframes in the list.

Understanding the Timeline

By now, you may have figured out what those mysterious "1s 10f"- type marks represent. They indicate a specific point on the timeline, expressing a location in terms of seconds (s) and frames (f). By default each second is divided into 24 frames, much like a meter on a measuring tape is divided into 100 centimeters. The frame markings begin at zero (0) and go up to 24, whereupon a new second frame is entered and the frame-count returns to zero.

For example, when five whole seconds and three frames have passed using this, the timeline notation would be "5s 3f".

The Keyframes Panel



Screenshot

The Keyframes Panel is rather easy to understand. It displays "Time" which is basically the start time, "Length" which is self-explanatory, "Jump" which we'll cover next, and "Description" which is, again, self-explanatory.

You might be wondering about the entries called "(JMP)". In fact, these are links just like web links: click them and the indicator in your time slider will jump to the correct time.

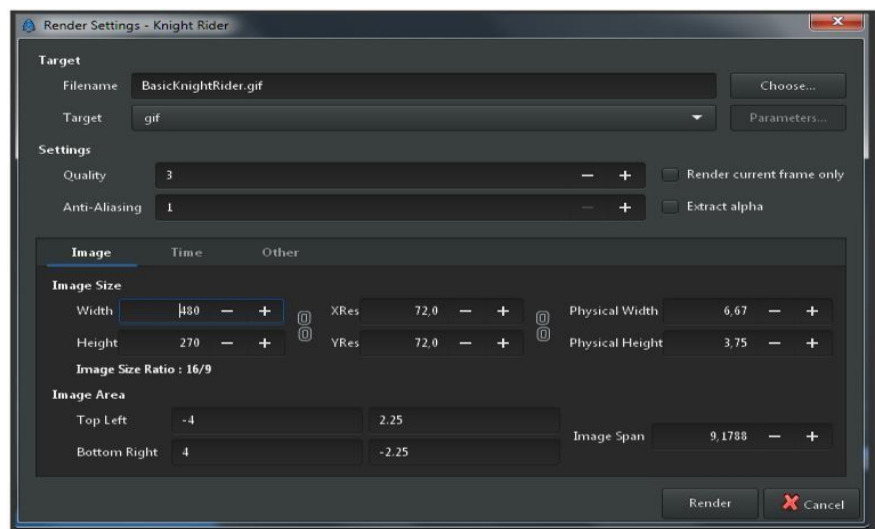
You can use this to edit your image for a given moment in time. For instance, you can now jump to the first second and move the red circle to the right.

To see your animation click at an arbitrary position on the time slider: You will note that the red circle is in a new position, one that you didn't specify! So what happened? Synfig figured out what you would like to do, namely move the circle and drew all the images between these states. Each image will later make a frame in your animation and the circle

will appear to be moving.

Note that you don't need to go to the last keyframe at "2s" and move your circle back to the left. Keyframes make Synfig remember the image states at particular times. That's why when we modified the circle's position at "1s", it stayed on the left at "2s" (as well as at "0s"). If you switch back to the Parameters Panel and look at the Time Track Panel, you will see that three orange diamonds (or green dots depending on the default interpolation) appeared on the right of the "Origin" parameter. Those are called Waypoints and they represent times at which object's parameters like location or colour are instructed to take on specified new values.

Rendering your animation



Screenshot

Before you can see your animation, you need to render your work. There are two ways to do so: using the Synfig Studio (what you have been using so far) or the command-line program called "Synfig".

Let's try the first way. Leave the Animate Editing Mode by clicking on the red man icon in the timeline editing widget and save your file, for instance under the name "BasicKnightRider.sifz". Then go to menu in the Canvas Window (Canvas Menu Caret button in the upper left corner) and select "File/Render" or click on the render icon. Change the filename to "BasicKnightRider.gif" in the same location where you saved "BasicKnightRider.sifz" and choose "gif" target format instead of "Auto", then click "Render". Depending on your processor speed it should take a few moments, but finally a message should be displayed in the image window status bar (located on the bottom of the window) which says "File rendered successfully".

Note

The "magick++" target (if it is available) produces much better gif files than the "gif"

target because it can optimize the palette for the image.

Open `BasicKnightRider.gif` in Firefox or another application that is able to show animated GIFs. However, Firefox will replay the GIF all the time which makes your short animation a rather long one. If there is a red circle moving from the left to the right and back. Now the animation is ready.

Note

You can also preview your animation. Press the "caret" menu button in the upper left corner of the Canvas Window and choose "File/Preview".

If you would rather use the command line instead of the menu to render your animation, then open a terminal (on Windows, go to "Start/Run", type "cmd" and press `↵` Enter), change to the directory you saved the file in and type: `synfig -t gif BasicKnightRider.sifz`

A few messages appear that don't matter right now. Depending on your processor speed it should take a few moments, but finally a line like this will appear:

```
BasicKnightRider.sifz ==> BasicKnightRider.gif: DONE
```

You can view your animated gif using Firefox or another program as mentioned above.

Adding Layers

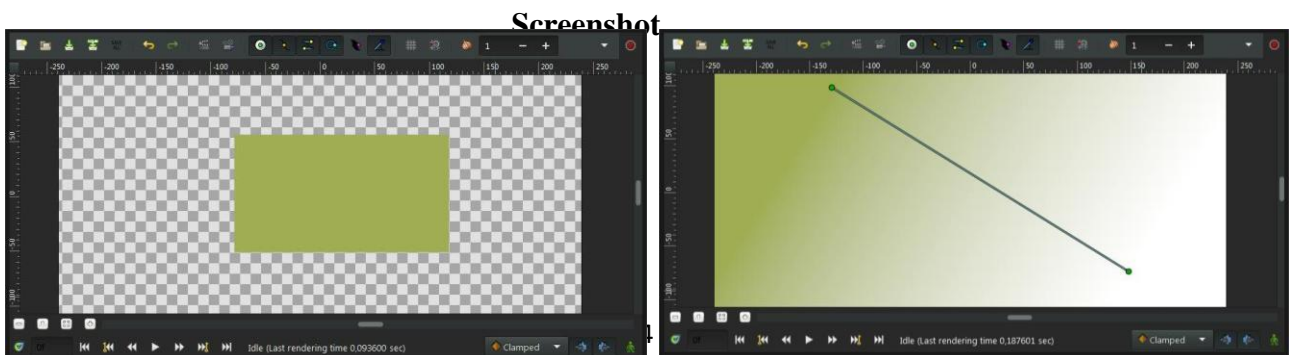
In the previous tutorial, you made your first simple animation by changing the attributes of primitive objects, such as: position, colour and size. These simple types however, are self sufficient to create advanced characters and objects. To do so, Synfig uses layers. They are similar to layers used in other drawing applications in that they are used to separate different elements of an image.

However, Synfig's layers have the following important features:

1. Every object or element gets its own layer.
2. You can organize layers into hierarchical groups.
3. You can use upper layers to change the behavior (or look) of underlying layers.

Those are called filter layers or effect layers.

Combining layers



Let's look at a simple example of how we can combine two layers to create a gradient effect on a rectangle.

Create a new file with 0 duration. There's no need to bother with a timeline at this point. Next, create a simple rectangle with the Rectangle Tool.

Pick the Gradient Tool from the Toolbox, press the left mouse button on the canvas while dragging it to change the gradient direction and then release the button when you are done. You should note that another layer was added in the Layers Panel called Gradient.

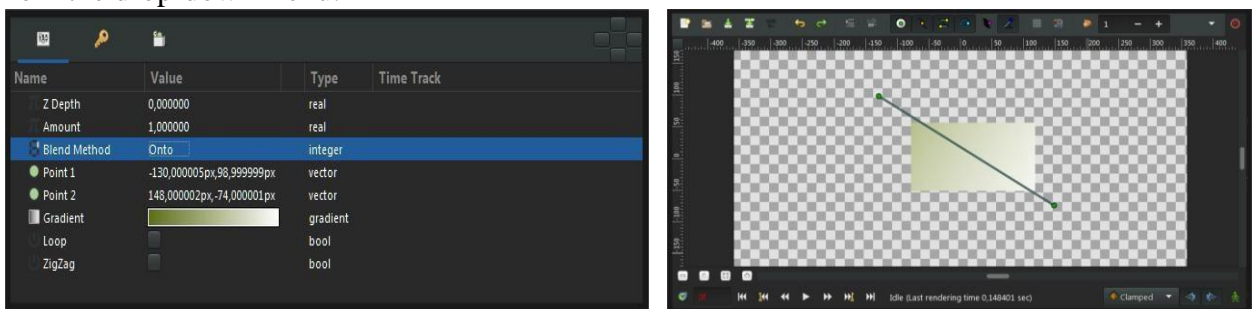
Note

If you see no gradient but just a plain colour, it means that you probably clicked on the canvas without dragging your mouse. To fix that, pick the Transform Tool, click into the canvas, to activate the gradient's handles. You need to grab the one you see and move a bit until a gradient appears.

You now have a gradient, but it is not what you wanted as it spreads across the whole canvas. The goal was to have a gradient in the rectangle. So, let's fix this now. In the Layers Panel, select both the gradient and the rectangle layer. Then, right-click and select "Group Layer" from the menu. The view of your Layers Panel should change now, showing a small box called "Group" with a "+" in front. By clicking on the "+" you can expand the group layer to see its contents, your previous two layers: the gradient and the rectangle.

Using locality

However, there is still a problem: the gradient still covers the whole canvas although we wanted it to be restricted to the rectangle. To do so, activate the gradient layer in the Layers Panel. Now go to the Parameters Panel (by default it resides in the bottom window) and search for the attribute called "Blend Method". Double-click the entry and select "Onto" from the drop-down menu.



Screenshot

The gradient should now be restricted to the rectangle. The first effect is applied by interacting layers with Synfig.

Modify layers with other layers

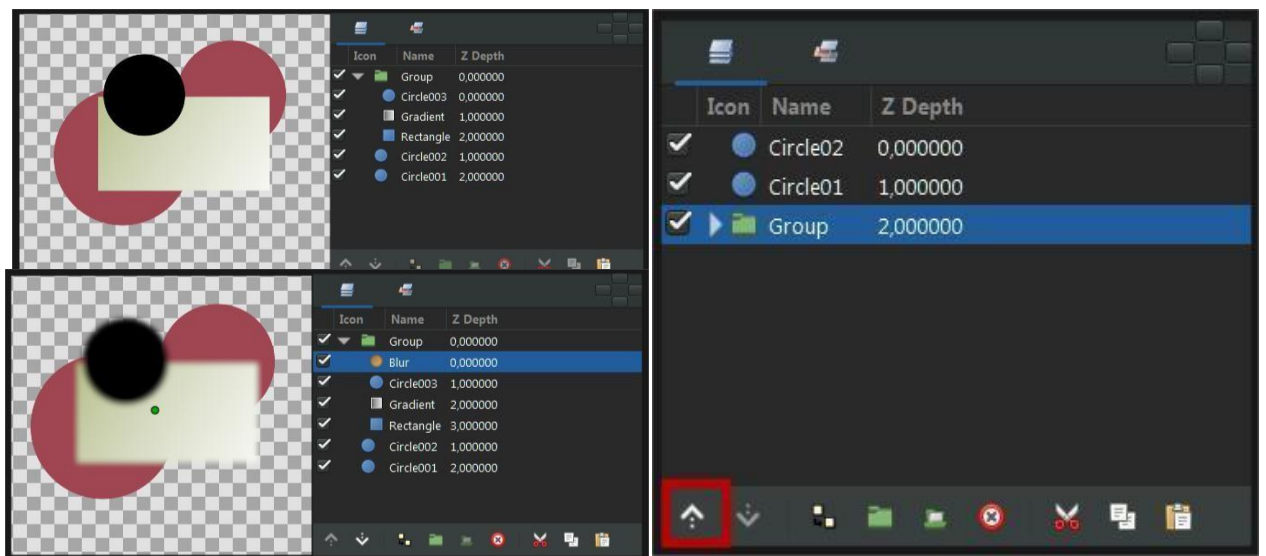
Make sure you have the group layer selected and create two red circles. They will

appear on top of the group layer. Select the group layer and use the "Raise Layer" button in the Layers Panel to place it on top of the circles.

Now our group layer (with rectangle and gradient) is in front of those two circles.

Expand the group layer to show its contents and select the top layer inside it (should be the gradient layer). This is where we require inserting a new layer. Create another circle filled with a black colour. The black circle layer will be created over the gradient layer inside the group layer.

Now, right click on the black circle layer in the layers panel and a popup menu will appear. The first item in that popup is "New Layer". Inside the "New Layer" menu, you'll see several categories of layers you could create, but what we want is a blur, so go to the blurs category and select the "Blur" layer.



Screenshot

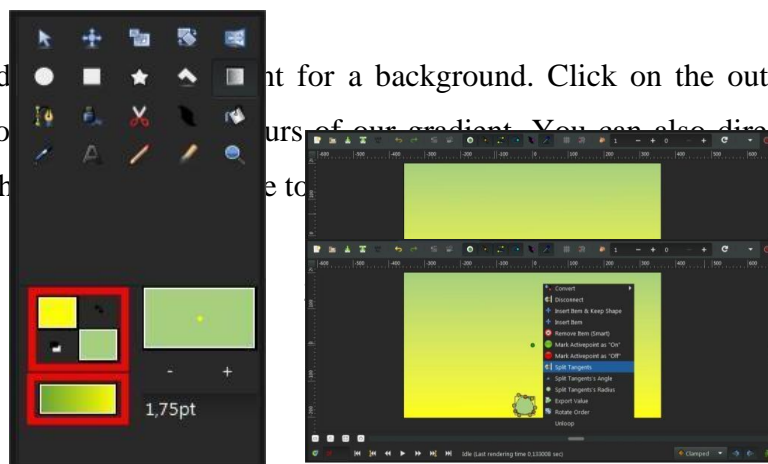
The blend method for newly created blur is "Straight" (if the default blend method in the Toolbox is set to "By Layer Default"). It blurs all around the outside edge of the contents of the group layer. You can change the default blend method for new layers from the New Layer Defaults section of the Toolbox.

Now we have all of the contents of the group layer blurred, but everything under it is sharp! This is because the effect of the Blur Layer over the underlying layers is limited to the scope of the group layer as the blur layer is inside it.

Animating Shapes

Basic settings

First, we need a background. Click on the outline and fill colours in the Toolbox. You can also directly edit the gradient by clicking the gradient icon in the Properties Panel.



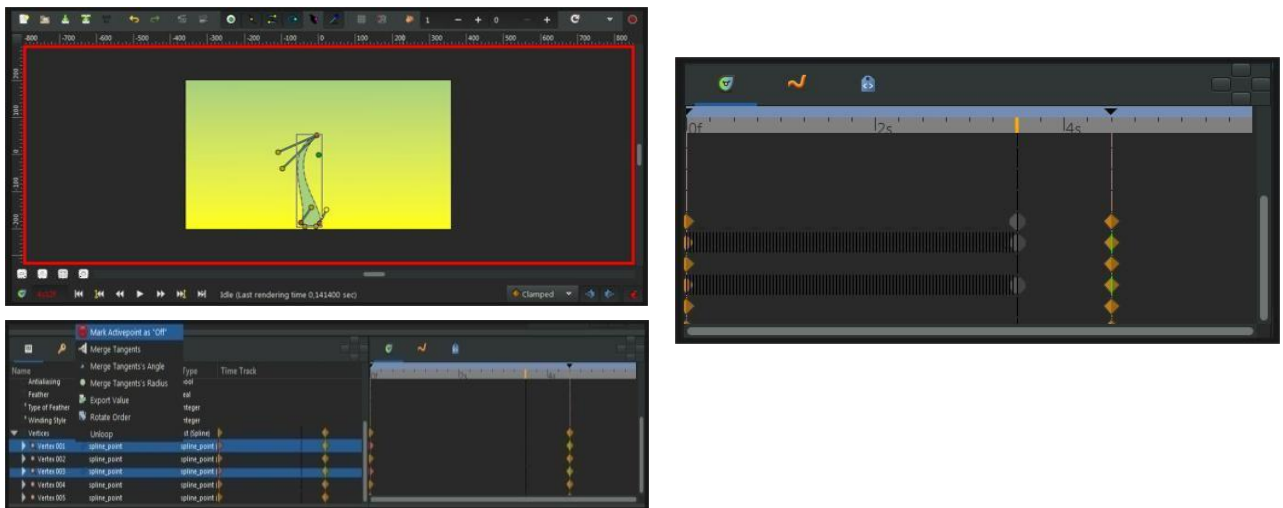
Screenshot

Now that the trace of the form is closed, select the transform tool (or any another tool) to generate the proper form. This will be the base of the stem. You can tweak the tangent handles (red dots) a bit to make a rounder triangle. With the Transform Tool, right-click on each vertex and select "Split Tangents", so that the tangent handles of each vertex can be moved separately.

Select the Gradient Tool and drag your cursor vertically across the canvas to fill it with the gradient. Next select the Spline Tool and in the Tool Options Panel, make sure that only "Create Region Spline" is checked. In the tool box, set the fill colour to green. Draw a triangle with the Spline tool. To close the shape after drawing the 3 vertices, right click on the first vertex and choose "Loop Spline".

Animate the stem

In the Canvas Menu, select the caret menu icon in the upper left hand corner, where the rulers intersect and select "Canvas/Properties". Go to the "Time" tab, set the "End time" to "6s" and click OK button. Click at the beginning of the timetrack ("0f") then, in the Keyframes Panel (the one with a key icon) click the button with a "+" icon (add a new keyframe). Keyframes allow us to settle down the scene i.e. on a keyframe every element of the scene will have all its properties remembered. Click again on the timetrack at "4s 12f" (ie 4.5s at 24 fps) and press the green circle at the bottom right of the canvas (or whatever icon you have there, depending on your icon theme) to switch to the Animate Editing Mode (the circle is now red).



Screenshot

With the Transform Tool, select the green sprout and move the upper vertex to make a stem. You can play with the vertex handles to bend the shape a bit if you want. While you are still at "4s 12f", right-click on the stem border, close to the top and choose "Insert Item".

Do the same on the other side of the stem. Right click on those new points and choose "Split Tangents". Then try to make a shape that looks like the one on the image, to create the flower bud. Right-click on them in the parameters list and select "Mark Active point as off".

The greyed parts are those parts where the bud vertices have no effect on the stem. Now if you click on "2s" (for example), the shape of the bud is slightly visible, even if the sprout is rather small and even if the bud handles are invisible. Let's say we want the bud to appear only at 3s 12f and be of full size at 4s 12f.

Click on "3s 12f" on the time track. Now take a look at the "Parameters" and "Time track" panels at the bottom. You'll see that each parameter in the Parameters Panel matches a row in the Time Track Panel. The last parameter is the vertices list. Click on the small arrow on the left to unfold the list. Each brown diamond (or waypoint) stands for a recorded value (here the vertices positions were recorded at 0f with the key frame and at 4s when we moved some vertices or vertices handles). The two vertices we added to make the bud are marked with green and red vertical line on their 0s and 4s waypoints.

For example if you click on "2s" or even "3s" now, the bud shape is not visible. It starts to appear only a little after 3s 12f.

However, the shape of the stem may not look very nice during its growth between 0 and 4s. Make sure you're still in Animate Edit Mode, and tweak the shape at various moments in time, to get something you like. The animation of the stem is now finished, but it still lacks the petals. You can watch a preview of your animation: Go to "File/Preview", validate, wait for the preview to be generated, and watch.

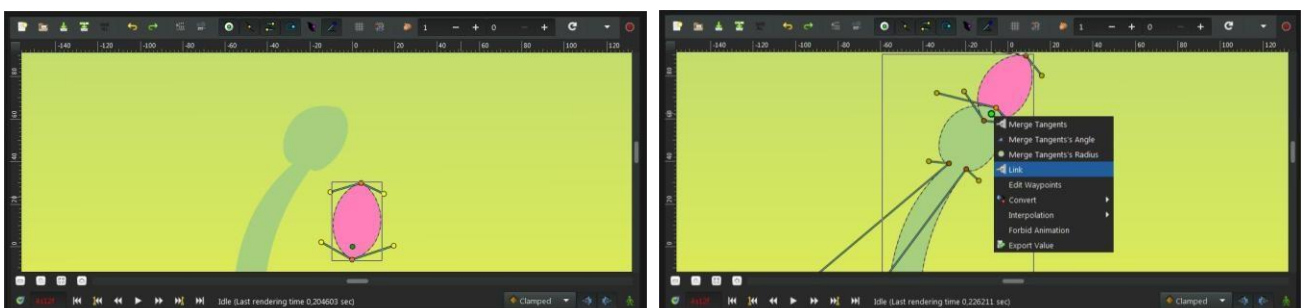
Note

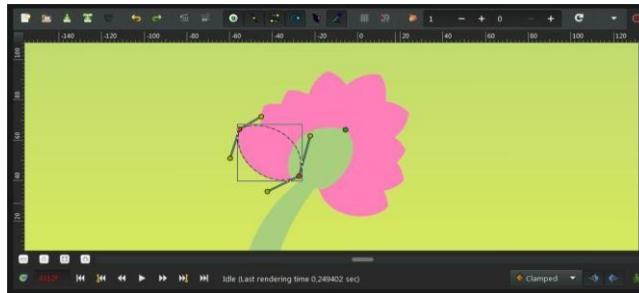
Previews are often pixelated and blurry, but the final render will be clean-cut. Higher quality previews are obtainable by using higher values for 'Quality' and 'Frames per second' in the preview dialog window.

Adding the petals

Now leave the "Animate Editing Mode" by clicking on the red circle at the right bottom of the canvas.

Change the fill colour to pink and create a petal with the Spline Tool. You'll notice that the green handle that allows easy movement of a shape is at the centre of the canvas. Select all the vertices of the petal with Ctrl + A and move them close to the green handle (with the Transform Tool), as shown.





Screenshot

Then drag the green handle very close to the top of the bud. Hit Ctrl+A again to select all vertices of the petal and tweak it a bit with Rotate Tool. Also, in the Layers Panel select the petal layer and put it under the stem layer. Click on the petal to select it, then ctrl+leftclick on the stem. Both objects should be selected. Now click on the vertex at the top of the stem and ctrl+leftclick on the green handle of the petal (both should appear in a lighter colour, as they are selected). Then right-click on the stem top vertex and select "Link". The petal will move a bit as the green handle is snapped on the stem vertex.

Now that there's a link between the petal and the top of the stem, when the top of the stem moves, the petal will follow it. (And if the green handle of the petal moves, the top of the stem will move, but we don't want to do that here.)

On the Layers Panel, select the newly created Petal layer and duplicate it (with the third button, on the bottom of the Layers Panel). On the canvas, press Ctrl+A to select all the vertices of the duplicated petal, and move them a little, so the petals are no longer overlaid. (Don't move the green handle, just the orange ones). Repeat the process several time, to get something looking like this image.

Note that the duplicated petals are also linked to the stem. If you go back to the first keyframe, you'll see that the petals are visible. We don't want that. We want the petals to appear and bloom almost at the end of the growth.

Hiding the petals

Let's say we want the petals to appear a little after 4 seconds in the animation and be full size at 5 seconds, instead of being visible and full size all the time.

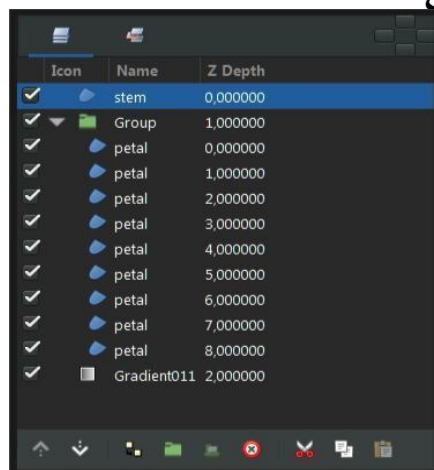
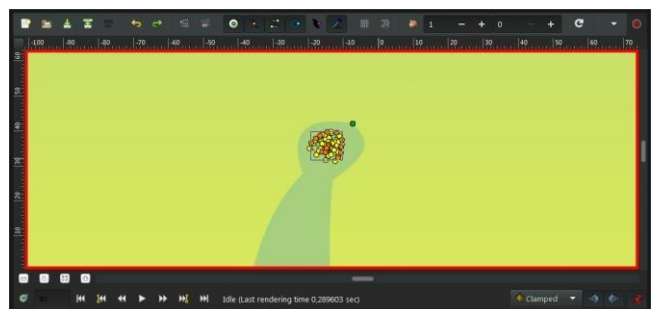
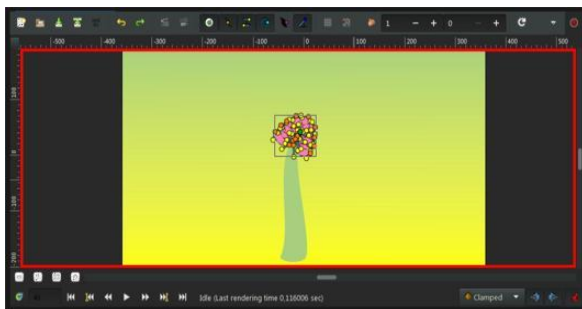
Switch to "Animate Editing Mode" again by clicking on the green circle at the bottom right of the canvas. But if we will go to "4s" and modify them, then they also change at "5s". This is because the shape/ position of the petals is not fixated at this moment of time by any waypoints or keyframes. That means we need a keyframe at "5s". Click to place the cursor at 5 seconds on the timetrack. Next, on the Keyframes Panel, click on "+" to add a new keyframe.

Now click on "4s" and on the Layers Panel, select all the petals layers (with ctrl+leftclick), then press Ctrl+A to select all the petals vertices. Scale them down with the Scale Tool and move them, so they are hidden by the stem, as shown.

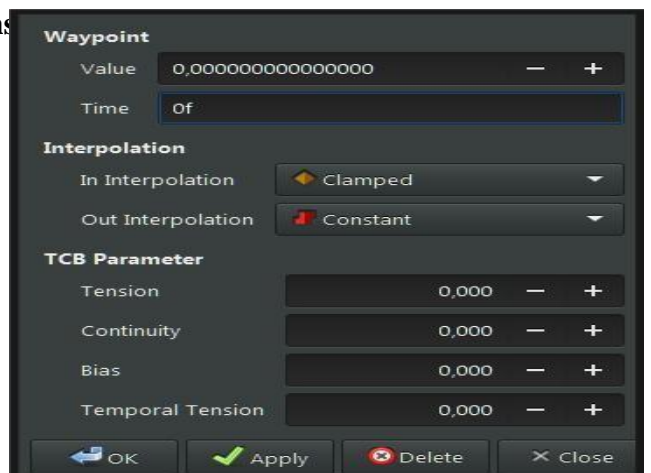
From 4s to 5s, the petals will now appear and bloom. But notice that we have a keyframe at 0s which also remembers petals shape. That makes the problem — the petals are still visible from the first keyframe to the 4s keyframe. We could either make the petals tiny and hidden tweaking their size on every frame from 0s to 4s, or we could make them invisible on this interval.

Let's choose the second solution. To make things easier, we are going to group the petal layers into a Group Layer. With the entire petal layers selected, right-click on them on the Layers Panel and select "Group". You can rename the layers to make things easier to understand. Select the Petals Group Layer and jump to the first keyframe. In the Parameters Panel, set the "Amount" value to "0". The petals are now invisible on that keyframe. Note that two waypoints were added in front of the "Amount" parameter, one at 0s and the other at 5s. Drag the 5s waypoint to 4s, so that the opacity of the petals will be 1 at 4s.

There is still one problem left: from 0s to 4s, the opacity of the petals slowly increases, making the petals visible when they shouldn't. To solve this, we will change the Amount interpolation method. Right click on the Amount waypoint at 0f and select "Edit". A new dialog will appear, in which you can choose the In and Out interpolation. Set the Out Interpolation to "Constant".



Screens



Tip

You can also change waypoint out interpolation by right-clicking on it and selecting "Out/Constant".

This means that after that waypoint, the Amount value will remain constant until another waypoint is encountered. So from 0f to 4s the Amount value will be equal to 0 and at 4s it will suddenly change to 1 and make the petals visible, as expected.

Alternatively, we could have achieved the same effect by setting the In Interpolation of the waypoint at 4s to "Constant". Notice how (half of) the waypoint changes from a green circle (meaning smooth animation of the amount parameter) to a red step (meaning that the amount parameter is suddenly stepped).

Now you're done. The stem grows for 4.5 seconds and staystill the last 1.5 seconds. The petals are hidden until 4 seconds and then grow quickly between 4 and 5 seconds and stay till the last 1 second too. Click on "File/Render" to render your animation. Select any format you want and ensure that "Use current frame" option is unchecked (otherwise, only one frame will be rendered). In the next and last part, we will be covering the basic usage of the bone system in Synfig.

Unit summary

In this unit, you've learned:

- The use of Synfig vector 2D animation in open source software
- The various functions of Synfig like toolbox, canvas, panel
- The process of adding colours, linking, and animation basics
- The process of animating shapes and adding layers.

Assessment

1. What is Synfig software?
2. What are the three main interfaces of Synfig studio?
3. List important panels and their function?
4. Which tool helps in changing the colour of the object?
5. What are the two important parameters of circle tool?
6. Which operation controls the layer of visibility?

Resources

<https://wiki.synfig.org>

www.gimp.org docs.gimp.org

www.nisd.net

www.gimp2tutorials.info

www.dotputs.de

DMA-03
2D Animation
Block – IV: Broadcast Design (Practical)

Unit-1 Working with Visual Images

Introduction

The design elements and principles described here can be an analyzing frame for a design. They can inform us where to begin, what to probe and how to analyze.

This information can also give an expressing tool to the designer. A novelist can express his or her thought using language. A page designer also expresses his thought or a certain intention with elements of design and does it effectively along with the design principles. If a designer wants to say something through the creativity of design, then he/she must use the elements (line, color, etc) as a communication tool. So it is very important to know the kinds and meanings of the design elements and principles.

Outcomes

Upon completion of this unit you will be able to:

- Understand the importance of design while working with image design
- Learn about various design elements
- Balance all the design principles
- Know the designs basics Understand the importance of visuals

Terminology

Movement: Movement is a visual image occurs when objects seem to be moving in a visual image.

Rhythm: Rhythm is the repetition of visual movement of the elements-colours, shapes, lines, values, forms, spaces and textures.

Variety: Variety consists of the differences in objects that add interest to a visual image.

Shape: A shape is formed when a line encloses an area.

Values: Value is the relative degree of lightness and darkness in a design element.

Design Elements

The elements are components or parts which can be isolated and defined in any visual design or work of art. They are the structure of the work and can carry a wide variety of messages. The details may be differentiated by researchers, but we will study 'point or mark', 'line', 'shape', 'forms', 'space', 'color', and 'texture' in this section.

Point or Mark

A point or mark is the smallest and most basic element. Often it is the personal 'handwriting' of the artist that can be natural or learned. It can vary in size, value, regularity

or irregularity and can be used alone or as a unit in a group which forms a line or shape in the image. Marks can be used to form a value or pattern (placed close together forms a darker value, further apart forms a lighter value) or to delineate space (larger means closer, etc.). A good example of the use of marks is the ink drawings of Van Gogh. The Impressionist painters used what could be called Patches and the Pointillists, such as Seurat used the dot.

Even though there is only one point or mark on a white blank page, it can catch our sight. If there are two points, we will make a connection and see a line. If there are three points, it is unavoidable to interpret them as a triangle as the mind explains the connections. These are called as Grouping or Gestalt. Gestalt is the fundamental tool, a designer or artist uses to build a coherent composition.

Line

A line is a form with width and length, but no depth. Artists use lines to create edges, the outlines of objects. A line is created by the movement of the artist's pen.

The direction of a line can convey mood. Horizontal lines are calm and quiet, vertical lines suggest more of a potential for movement, while diagonal lines strongly suggests movement and give more of a vitality feeling to a picture.

Shape

Shape is an area that is contained within implied line or is seen and identified because of change in colour or value. Shapes have two dimensions that are length and width. It can be geometric or free-form. Design in painting is basically the planned arrangement of shapes in a work of art. In a picture, the shapes that the artist has placed are considered to be the positive shapes. The spaces around the shapes are the negative spaces. It is just as important to consider the negative space in a picture as the positive shapes.

Forms

Form describes volume and mass or three dimensional aspect of objects that take up space. (Shape is two-dimensional). Forms can be viewed from any angles and we should observe it from different angles in order to analyse its actual structure.. When you hold a baseball, shoe or small sculpture, you are aware of their curves, angles, indentations, extensions and edges - their forms.

Space

Actual space is three-dimensional volume that can be empty or filled with objects. It has width, height and depth. Space that appears three-dimensional in a two-dimensional painting is an illusion that creates a feeling of actual depth. Various techniques can be used to show such visual depth or space

Colour

Colour has three properties. The first is hue, which is the name of the colours. The primary hues are yellow, red and blue. Secondary colours are made by mixing two primaries. Intermediate colours are mixtures of a primary and adjacent secondary colour.

The second property of colour is value, which refers to the lightness or darkness of hue. The third property of colour is intensity, which refers to the purity of the hue (also called "Chroma").

Texture

Texture refers to the surface quality, both simulated and actual artwork. Techniques used in painting serve to show texture, i.e. the dry brush technique produces a rough simulated quality and heavy application of pigment with brush or other implement produces a rough actual quality.

Design Principles

Balance

Balance is a psychological sense of equilibrium. As a design principle, balance places the parts of a visual in an aesthetically pleasing arrangement. In visual images, balance is formal when both sides are symmetrical in terms of arrangement. Balance is informal when sides are not exactly symmetrical, but the resulting image is still balanced. Informal balance is more dynamic than formal balance and normally keeps the learner's attention focused on the visual message.



Title- Balance

Source- pixabay.com

Link-<https://www.pexels.com/photo/balance-macro-ocean-pebbles-235990/>

There are three main types of balance,

- Horizontal balance,
- Vertical balance,
- Radial balance.

Proportion

Proportion refers to the relative size and scale of the various elements in a design. The

issue is the relationship between objects or parts of a whole. This means that, it is necessary to discuss proportion in terms of the context or standard used to determine proportions.

Perspective

Perspective is created through the arrangement of objects in two- dimensional space to look like they appear in real life. Perspective is a learned meaning of the relationship between different objects seen in space. Is the dark rectangle in front of a circle or beside a semi-circle?



Title- Perspective

Source- pixabay.com

Link-<https://www.pexels.com/photo/bridge-clouds-cloudy-dark-clouds-556416/>

Perspective adds realism to a visual image. The size of a rectangle will be considered small until another reference object's size is compared such as the size of a desk or the size of a building. Perspective can be used to draw the audience into a visual. Perception can be achieved through the use of relative sizes of objects, overlapping objects and blurring or sharpening objects.

Emphasis

Emphasis is used by artists to create dominance and focus in their work. Artists can emphasize colour, value, shapes or other art elements to achieve dominance. Various kinds of contrast can be used to emphasize a centre of interest. Emphasis can also be achieved by isolation and / or placement.

Movement

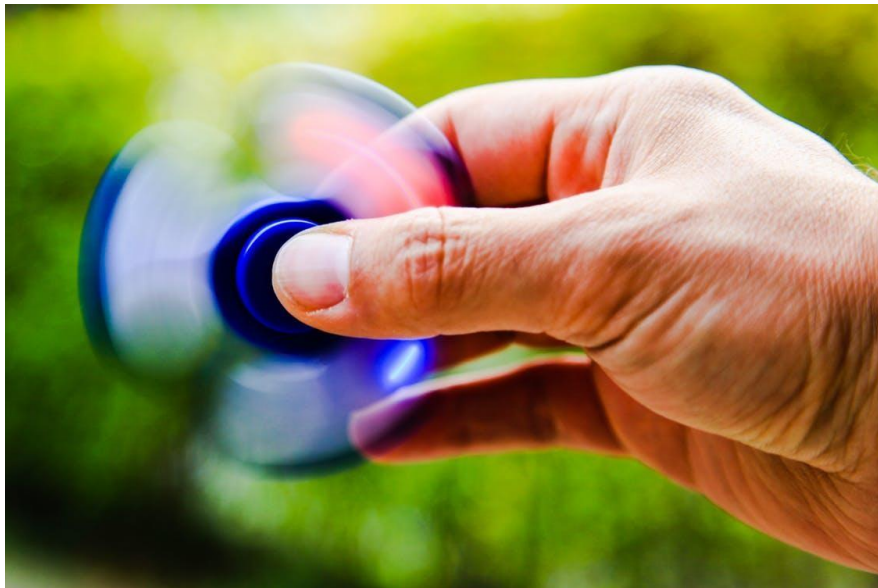
The way the artist leads the eye in, around and through a composition. The path the eye follows. Motion or movement in a visual image occurs when objects seem to be moving in a visual image. Movement in a visual image comes from the kinds of shapes, forms, lines and curves that are used. Diagonal lines tend to create the illusion of movement or motion.

Similar shapes connected with each other or overlapping each other can imply movement or restlessness.



Title- Movement **Attribution-** Scott Webb **Source-** pixabay.com

Link-<https://www.pexels.com/photo/bench-light-city-road-136739/>



Title- Movement

Attribution- Tanino

Link-<https://www.pexels.com/photo/blur-color-exercise-fidget-spinner-448539/>

Pattern

Pattern uses the art elements in planned or random repetition to enhance surfaces, paintings or sculptures. Patterns often occur in nature, and artists use similar repeated motifs to create pattern in their work. Pattern increases visual excitement by enriching surface interest.

Repetition

Repetition works with pattern to make the artwork seem active. The repetition of elements of design creates unity within the artwork.

Rhythm

Rhythm is the repetition of visual movement of the elements- colours, shapes, lines, values, forms, spaces and textures. Variety is essential to keep rhythms exciting, active and to avoid monotony. Movement and rhythm work together to create the visual equivalent of a musical beat.

Variety

Variety provides contrast to harmony and unity. Variety consists of the differences in objects that add interest to a visual image. Variety can be achieved by using opposites or strong contrasts. Changing the size, point of view and angle of a single object, it can add variety and interest to a visual image. Breaking a repeating pattern can enliven a visual image.

Harmony

Harmony in visual design means all parts of the visual image relate to and complement each other. Harmony pulls the pieces of a visual image together. Harmony can be achieved through repetition and rhythm. Repetition reemphasizes visual units, connecting parts and creating an area of attention. Rhythm is the flow depicted in a visual. Rhythm helps direct eye movement. Patterns or shapes can help achieve harmony. By repeating patterns in an interesting arrangement, the overall visual image comes together.

Unity

Unity means the harmony of the whole composition. The parts of a composition made to work together as a total visual theme. Unity is the relationship among the elements of a visual, which helps all the elements function together. Unity helps in organizing a visual image, facilitating interpretation and understanding. Unity gives a sense of oneness to a visual image. We can also explain that, the words and the images work together to create a meaning.

Unity can be achieved through

- Use of similar shapes.
- Use of a common pattern.
- Use of space.

Summary

Elements of design described here are point, line, shape, form, space, colour and texture. Design principles include the balance, proportion, perspective, emphasis, movement,

pattern, repetition, rhythm, variety, harmony and unity. These elements and principles can be the basic knowledge and analytical framework for a designer.

Examples of design

Design Elements



Line

Title-Line

Attribution- ben neale

Link-<https://www.pexels.com/photo/apartment-architecture-building-contemporary-380330/>

Horizontal lines are calm and quiet



Title-VerticalLine

Source-pixabay.com

Link-<https://www.pexels.com/photo/background-board-carpentry-construction-207253/>

Vertical lines suggest more of a potential for movement.

Diagonal lines strongly suggest movement and give more of a feeling of vitality to a



picture.

Title-DiagonalLine

Source-pixabay.com

Link-<https://www.pexels.com/photo/abstract-art-design-diagonal-416430/>

Shape



Title-Shape

Source-pixabay.com

Link-<https://www.pexels.com/photo/close-up-high-angle-view-of-blue-objects-256485/>

A shape is defined as an area that stands out from the space next to or around it due to a defined or implied boundary, or because of differences of value, colour, or texture.

A shape is formed when a line encloses an area. Shapes can vary endlessly and can suggest physical form and direct eye movement. Simple shapes are remembered and understood more easily than complex shapes.

Simple shape



Title-SimpleShape

Attribution- [User:Amada44](#)

Source-[Similar-geometric-shapes.png](#)

Link-<https://commons.wikimedia.org/wiki/File:Similar-geometric-shapes.svg>

Complex shapes



Title-ComplexShape

Attribution- [Tabitha](#) Mort

Source-

Link-<https://www.pexels.com/photo/photo-of-blue-pink-and-green-led-light-775907/>

Space

Size & vertical location

Detail (aerial or atmospheric perspectives)

Values

Value is the relative degree of lightness and darkness in a design element.

Line, colour, texture and shape all need value contrast in order to be seen. Value is used to describe objects, shapes, and space.

Dark areas tend to denote: gloom, mystery, drama, and menace



Title-Dark area

Attribution-

Source-[pixabay.com](#)

Link-<https://www.pexels.com/photo/background-board-carpentry-construction-301378/>

Texture



Title-Texture

Source-pixabay.com

Link-<https://www.pexels.com/photo/background-board-carpentry-construction-301378/>

Why use visuals?

PowerPoint slides and overhead transparencies (OHTs) are useful in visual aids for all sizes of classes, provided they are well designed and appropriately used. They are cost-effective and quick to produce, and most of the classrooms are generally equipped with the means to display them.

Visual aids can be used to:

- Organize your lesson or presentation
- Provide interest and motivation for your students
- Increase retention of information and learning
- Save instructional time and preparation time because they can be reused
- Aid communication
- Explain the relationships of parts to the whole
- Clarify something difficult, complicated or very large
- Stress important points

If you are using Powerpoint slides or other presentation software to design your visuals, you can automatically print the outline view and print 2, 3, or 6 frames per page. This makes an excellent note-taking guide.

Key principles - Apply the following six principles to the design of your visuals.

Chunk information — having similar materials together in manageable and sensible chunks. If information must be split over a number of slides or screens, consider reducing the size of the chunks you have.

Organize the content—use basic principles such as simple to complex, known to unknown and knowledge to application. Position any image as close to the relevant content as possible.

Relevance— be sure that the information or visual that you are using is relevant to the topic. Be able to give a rational reason for something to be in the visual. Over-use of bulleted slides is a common student complaint.

Importance— places the most important information early in your slides or visuals. Call attention to it in some way. Be sure it really is an important idea to include.

Appropriateness— considers the audience receiving the information and the material being presented.

Visual effectiveness— keeps your visuals simple so that they have the most impact.

- Use key phrases rather than long sentences.
- Use no more than 6 words per line
- Not more than 6 short lines per slide.
- Ensure that all type is visible from the back of the room (all lettering should be at least 1/4" high or 24 pts).
- Leave plenty of white space around images.
- Use a graphic rather than text
- If you have more than 36 words of content, break them up into a series of slides beginning with an overview slide.

The Influential Factors and Elements of Motion Graphics in Communication

Motion graphics' area of activity is an area in which audience attraction is the first priority, while this matter is the second priority for the field of brochures, posters, and other printed media. It is not easily possible to estimate the amount of likeness of the audience and the effects of the poster on the audience when they see a poster. Continuous presence and effect, getting used to it, and waiting for it, the element of time, are of the important characteristic of motion graphics. As a result, it seems that motion graphics has a notable characteristic.

Motion in Motion Graphics

Naturally, every substance is in motion and struggle in the nature. Motion in picture may be created by dot and line and presented in different shapes. The type of movement might be helical, circular, zigzag or direct. The direction of motion can also be upward, leftward, rightward, etc. Each visual element or each shape more or less might have the energy for movement. According to the influence of the energy, the dominance of which side to be selected is judged. It will move toward the side which has more

length. The concept of motion can be understood via other forms, for example, by the repetition of a visual element in motion which is possible through the repetition of many elements. For instance, the repetitive motion of a circle in the screen which forms a type of

rhythm as well can be named (Nave, 2005).

Sound in Motion Graphics

Although flawless, visual effects and graphic environments will not be effective, if they are not accompanied by appropriate sounds. Sounds and their masterful combination will not be successful unless they involve the audience and they are listened to, through the right technology. Actually, 70% of the influence of a motion graphic work which is usually shown in the format of a commercial advertisement or the same formats is made by the sound. Music and appropriate sound can help the transfer of influence. Music helps feelings be well expressed; it really enlivens a dead work. Image and sound are related to the main sensations of human which are vision and hearing. A graphic motion designer tries to make people move by presenting an attractive program and utilizing these two principal elements. How much they will be able to attract the audiences' vision and hearing senses will depend on their art and expertise. In other words, in a motion graphic work, in which image is more attractive, the audience will focus on the image; and, in a motion graphic work, in which sound is more attractive, the audience will focus on the sound (Woolman, 2004).

Alphabetical Characters in Motion Graphics

In the realm of motion graphics, alphabetical characters are considered as images. These characters are more watchable than readable. For instance, a Japanese graphic expert who does know about Persian can comment on a sample of Persian handwriting about its graphical psychology expression by looking at Persian alphabetical characters. For example, Nastaliq calligraphy has such characteristics as gentleness and passionate impressive tranquillity which are the characteristics of curves in graphics. Representation and readability aspects are considered to be the secondary priority, while aesthetic aspects are considered as the primary priority. Nastaliq calligraphy is magical and its curves are strong while flexible, that is why it cannot be used for describing a tragic event or an accident; it cannot be used for news, either. On the other hand, Naskh calligraphy is exciting and venturesome. It is like a vigorous voice which orders and has a predicative statement (Woolman, 2004).

Color in Motion Graphics

In the context of motion graphics, colour and paying attention to colour are important. When focusing on the nature of human mind, the importance of the matter becomes clear. In the procedures related to vision, the stimulators enter into sensing memory and are saved there for about one second. The capacity of this storage space is about 16 objects. In this condition, the objects and stuff enter the sensing memory and immediately disappear (Kaufman, et al., 2001).

Visual Elements of Motion Graphics

Graphics, pictures, and the collection of images, which are present in each motion graphic, can help improve the quality of the works and increase its popularity to the audience, or vice versa, decrease its worth. The more comfortably the audience deals with the work and the more quickly they find a relationship with the work, the sooner the designer will reach to their goal. These images and visual attractions must be designed in accordance with audiences' ideas, desires, and criteria so that they will be able to convey the visual messages in the best manner. Many designers are not aware of these important factors and their influence on the attraction of the audience, so they do not consider images, graphics, and their visual messages as they should while designing a motion graphic work.

The important points which can be called main points in visual language grammar and be used in motion graphics are listed below:

1. The primary visual elements (dot, line, shape, colour, direction, etc.)
2. Composition
3. The methods of creating visual language (simulation, code, abstraction, etc.)
4. Visual techniques and recognition of different styles (Dadgaran, 1384).

Dot in motion graphics

Wherever it is, the dot seriously attracts eye's attention. As a result, the dot can be used as a strong visual element in motion graphics for showing the concept of emphasis. By the repetition of dots in different and numerous combinations, it is possible to identify the concept of rhythm. By the concentration and disunion of dots in a new combination, the concepts of expansion and contraction can be presented. This phenomenon, that is the combination of dots, simulates the vision system in human (Dadgaran, 1382).

Line in motion graphics

Line has active and mobile energy. Lines in a motion image can appear as broken, arc, flat, ragged, wavy, wide, thick, etc.; each of them has their own visual inspirations and meanings. The vision sensation in human being is sensitive to the psychological impacts and artistic values of lines in a frame. That is why gaining knowledge over the characteristics of lines is essential in order to appropriately use them. It might also be said that lines are the most influential and the mostly used elements in motion graphics which are used in different forms and with different meanings (Braha, 2011).

Surfaces in Motion Graphics

It is the third visual element which has length and width. Different geometric figures are surfaces; a 2D space which is created due to the movement of line on screen. Among flat geometric figures, triangle, circle, and square are mostly used in motion graphics. Other

geometric figures are somehow derived from these three figures or a combination of them. Each of these figures in different positions and circumstances find a new visual expression (Dadgaran, 1382).

Lighting in Motion Graphics

Light is certainly a determinative element in human life. Beside applied uses, light has always had symbolic values as well. Light is a part of the essence of life and in many cultures, light or sun is considered as a divine element and is eulogized. Using different lighting tricks for reinforcing imagination has also become usual (Fransis, 1391). In motion design, innovative and influential phenomena are created, using special forms and appropriate lighting.

Space in Motion Graphics

Space defines the position and circumstance of each objective or any other phenomenon. The space defines the existence of any object in relation with other objects and makes internal, external, and intermediate space understandable. There are different concepts defined for the space such as hollow space, free space, green space, live or dead space, etc. The space is not definable by itself; however, by positioning a 3D mass in the space, the location of the mass is specified and space defines its existence (Dadgaran, 1382).

Unit Summary

In this unit you have learned the importance of design while working with image design. You also learned about various design elements like point, mark, line, shape, colour, texture. Know all the design principles like Balance, Proportion, Perspective, Emphasis, and Movement. Know the various designs basics with the help of extensive examples.

Motion graphics as a method of expression and communication with the audience has unique themes and domains in utilizing innovation, imagination and graphic effects. In fact, motion graphics is a context for displaying where performance and image are considered as expression elements in the creation of the work. Visual communication plays an influential role in taking advantage of informative concepts for people.

Assessments

Briefly explain the design principles-

- Balance
- Proportion
- Perspective

- Emphasis
- Movement

Resources

- <https://link.springer.com/book/10.1007%2F978-81-322-2232-3>
- <https://www.intofilm.org/clubs>
- www.svnfilm.com
- www.videomaker.com
- www.junctiongoogle.co.uk

Unit 2 Story Boarding

Introduction

When you are set out to make a movie, the more planning you can do beforehand, and the chances of success becomes better. Figuring out exactly what you'll be doing during a shoot saves your crew time and labour and saves the producer and director, from cost overruns and production headaches. A storyboard is one method of planning ahead. By visualizing your shots ahead of time with a storyboard, you can see how your shots fit together before you've shot a single footage of film or frame of video. This will prevent you from wasting both time and footage. A good storyboard allows you to explain your crew about what are you planning to achieve. It saves you from trying to convey what you want with wordy explanations and frustrated hand gestures. When you show the boards to your director of photography and cameraperson, they will immediately understand what type of shot you need and how to frame the subjects.

During your learning process about filmmaking, paying your dues as a production assistant or other crew member or even just searching around the internet, you may have seen elaborately detailed storyboards by professional artists. Boards like this are nice, but you don't need to be a talented artist to storyboard effectively. Even simple stick figures can give people a good idea of what your shot sequence will look like.

In other words, rudimentary art skills are perfectly fine. What you need to know is how you are going to frame the subjects of your film. A basic knowledge of camera shots, paired with few simple perspective tricks, will enable you to map out your scene in easy-to-read visual shorthand.

Outcomes

Upon completion of this unit you will be able to:

- Explain the importance of storyboarding and storytelling in relation to your stop-motion animation project
- Use various media and technology to convey messages and meaning
- Work interactively, co-operatively and collaboratively to plan and create a storyboard
- Engage in critical reflective thinking as part of the decision-making and problem-solving process
- Invent and incorporate unique visual symbols and movement to create personal meaning in art

- Appreciate the diversity of individuals, as reflected in their artwork

Terminology

Long shot: A long will include the entire body of the subject or subjects.

Mid short : A mid shot or medium shot will usually depict your subject anywhere from above the knees and up to just above the waist and up.

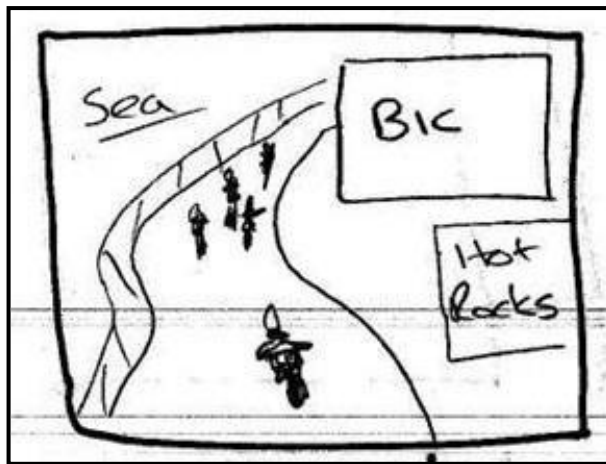
ECS: Extreme close shot. Extreme Close-Ups (ECU) add drama.

Master shot: This refers to a shot that runs for the length of a scene and shows all of the characters in view.

Different types of shots

Let's begin with a quick rundown of basic shots and what they look like.

Long Shot



Title-Long shot

Link-<https://mooc.employid.eu/storyboarding-tutorial/>

Generally speaking, a long shot will include the entire body of the subject or subjects.

Medium Shot

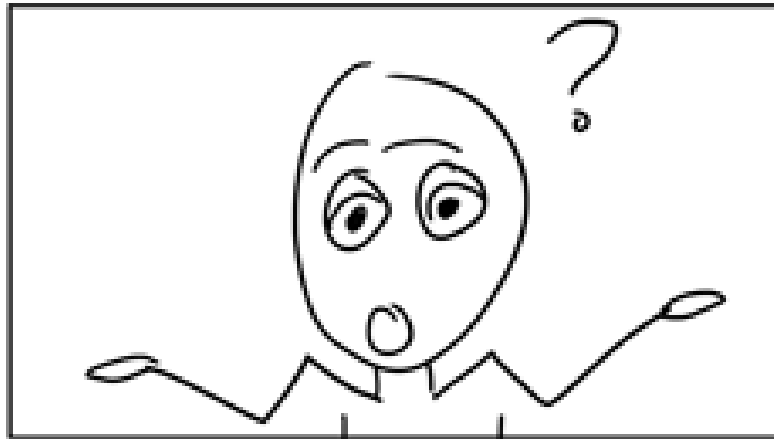


Title-Mid shot

Link-<https://mooc.employid.eu/storyboarding-tutorial/>

A medium shot will usually depict your subject anywhere from above the knees and up to just above the waist and up. Remember not to cut off your subjects' right at the knees, or any other juncture of the body. It looks awkward and poorly composed. Try to frame them just above or below the joint in question.

Close up



Title-Close-up shot

Link-<https://mooc.employid.eu/storyboarding-tutorial/>

Close-ups are where we most often see the emotional content of a scene. They allow us to see the character's faces up close and thus their state of mind. Close ups are usually framed from the chest up. Occasionally, however, they can be framed from forehead to chin or will even involve just the subject's eyes. We call this an Extreme Close-Up:

Extreme Close up



Title-Extreme closeup

Link-<https://mooc.employid.eu/storyboarding-tutorial/>

Extreme Close-Ups (ECU) add drama. For the most part, they're used sparingly, but a single ECU can add a real punch to a scene.

Master Shot

This refers to a shot that runs for the length of a scene and shows all of the characters

in view. It's the most conservative way of staging a scene. Think of a master shot which is like watching a play from somewhere out in the audience. You see the entire set and where the characters are in relation to each other on the stage. In older films and multiple-camera productions like sitcoms, scenes often begin with a master shot in order to orient the audience and all of the rest of the shots in the scene, relate back to this shot. Most single-camera productions don't rely so heavily on the master shot. However, keeping the master shot in mind can help you plan out the rest of your shot list. For example, in a scene depicting a conversation between two people, you may decide to cut to close ups of each person talking, plus an insert shot of an item that they're talking about and then cut back to the master shot after each one. This is a very basic way of editing a scene.

There are also some special shots you might want to use in your storyboard. Here are a couple of examples.

POV

POV or the point-of-view shot allows the audience to see what's going on through a character's eyes. The easiest way to indicate this is to show a character looking at something, and then move to, what they're looking at from an angle, that makes it look as if the camera is in that character's place.

POV shots tend to be used sparingly, although there have been some films with entire sequence shot from a character's point of view. In fact, the 1947 film 'Noir Lady in the Lake' was shot entirely from the POV of the main character.

Depicting Camera Movement

Now that we've talked about some basic shots, let's go over some important camera movements and the ways to depict them on the page.

PAN

Panning involves a sideways or up/down rotation of the camera on the tripod. It's one way to put the camera on another subject without cutting to a different shot. It can also be used to follow a character or characters when they're moving within the frame.

A panning shot can be depicted by first placing a couple of frames in order to show where the camera will start and where it will end up and then adding arrows to describe the camera's movement. In the illustration below, we see a panning shot for a simple dialogue scene.

TRACK

A tracking shot is another way to follow a subject or subjects. This type of shot involves moving the entire camera from one place to another, instead of merely rotating the camera body on a fixed point. Tracking can involve moving the camera with tracks, on a

dolly or it can be done hand-held.

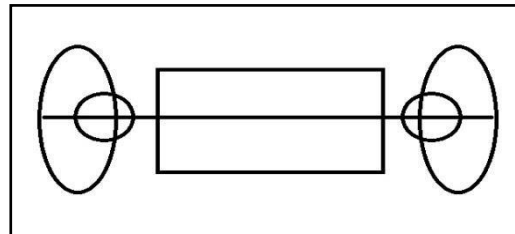
ZOOM

Zooming is a movement of the camera lens as opposed to a movement of the camera itself. Zooming In means adjusting the lens to the frame, closer on the subject. While Zooming Out, it means the opposite i.e. adjusting the lens to take in more of the scene.

What if you don't need the camera itself to move, but want to show characters moving into, out of, or through the frame during a shot? An easy way to do this is by drawing arrows. Arrows can also depict smaller movements within the frame, such as a head turning.

180 Degree Rule

Now that we've covered the basics, here are a couple of other things to keep in mind when setting up your shots. Firstly, you may have heard people talk about "not crossing the line" when they're setting up a scene. They're using a slang term for the 180 degree rule, which is a very important thumb rule for filmmaking.

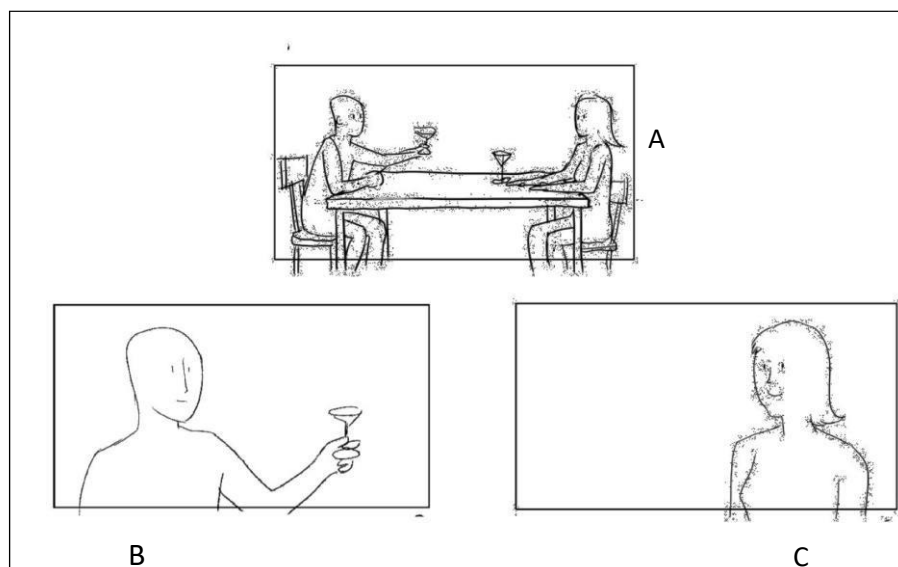


Drawn by Author

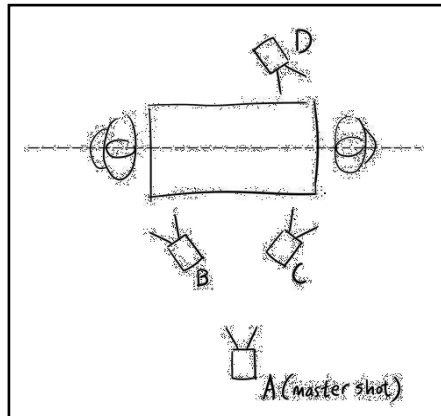
Keeping your camera on the same side of this line—aka the 180 degree line-- will assure visual continuity and prevent your viewers from becoming disoriented

Here is a similar diagram with a few possible camera placements. Notice that shots A, B and C are on the same side of the line.

Let's put shots A, B, and C into a storyboard. It will end up looking like this:



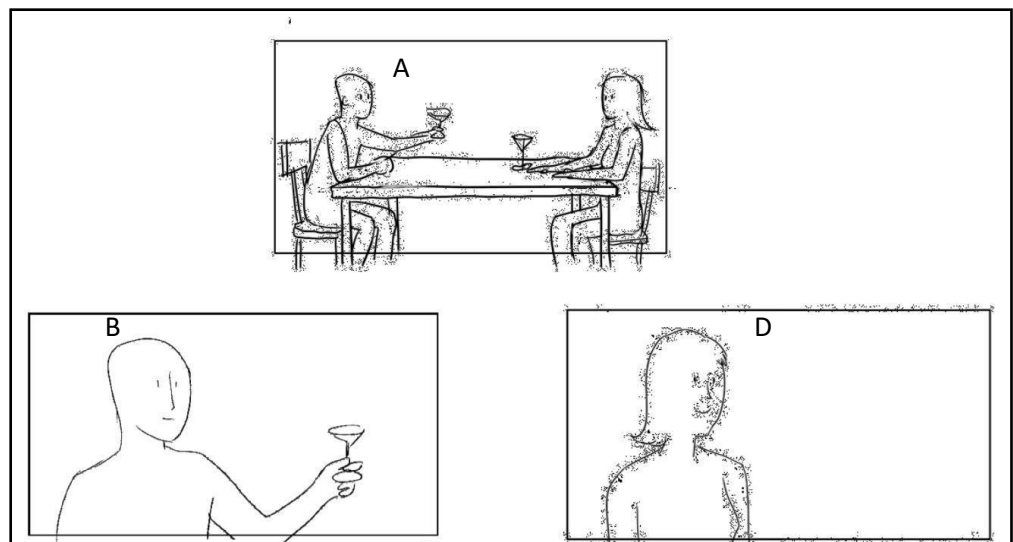
Drawn by Author



Drawn by Author

This shot sequence adheres to the 180 degree rule. Bill and Carol are having a conversation. First we have a master shot of the two of them, showing the audience where they are in the scene and where they are in relationship to each other (shot A). Next is a close up of Bill (shot B), and then one of Carol (shot C). When the individual shots are edited together, Bill and Carol appear to be facing each other, just as they are in the master shot.

Now let's try putting together shots A, B, and D from the diagram. The storyboard will look like this:



Drawn by Author

Creating Story Boarding

Creating well-drawn, motivated figures that kinetically move in an interesting way through the 3D space of the film is one of the primary jobs of the storyboard artist. A finished storyboard covering all the basic shots tells the story and is an invaluable aid to the entire preproduction team. Vivid images from a strong director and a storyboard illustrating

their robust style complements, the intensity of the action and the raw emotions of the characters. The shots from important films in this chapter demonstrate how dynamic are the placement of figures within the continuity of the storyboard frames; however it has to be rendered simply yet effectively. Indications of sets constructed or actual buildings and locations used must be illustrated in the storyboard artist's renderings, remembering that sets are background for the action. The use of special effects, computer graphics (CG) and the compositing of different images enhance the continuing action of the storyline and the VFX must be indicated and illustrated in the storyboard. Superman Returns (2006), directed by Bryan Singer, is a super send off of the previous versions and is considered to be the best so far. It has a strong back-story and an interesting new story line, with strong performances from all the leads, plus spectacular new VFX. Nominated for an Oscar for Best Achievement in Visual Effects, this film would make one agree with the ads for the film. Talk about action! Talk about adventure! Talk about superb visuals!

Superman Returns is a terrific contemporary showcase for the very latest digital/CGI/green screen technology. For showcasing, make sketches of some key scenes very quickly.

Unit Summary

In this unit you have learned the importance of storyboarding and storytelling in stop motion animation projects and how to work interactively, co-operatively to plan and create story board. Use various media and technology to convey messages and meaning. Also we have learned different types of shots and camera movements. We also discussed the art of storyboarding with real examples of movies.

Assessment

1. What are the different types of shots?
2. What is the uniqueness of POV shot?
3. What is 180 degree rule?
4. What are some important camera movements?
5. Why is storyboarding important?

Resources

- <https://link.springer.com/book/10.1007%2F978-81-322-2232-3>
- <https://www.intofilm.org/clubs>
- www.svnfilm.com
- www.videomaker.com

Unit 3 Titles & Credit Making

Introduction

Indian cinema, produced across India, has cinematic culture of different states. It shows a very diverse pattern of visual culture. This could be because of its multilingual and multicultural nature. Bollywood is one of the dominating Indian film industries based in Mumbai.

In the history of film production in India, different mediums have been implemented for film advertisement. During early period of the cinema, the mode of publicity has been dominated by print media in the form of newspaper advertisements, handbills, lobby cards, publicity booklets, posters and hoardings.

Throughout the timeline, film posters have been one of the important medium for film publicity. Like other advertising material, film poster too responds to its environment. From time to time it gets influenced by different art movements and socio-cultural changes. Bollywood film posters also perceived as a public urban icon which offers a visual experience of changing social and emotional standards to its audience.

Film posters being the most significant form of publicity is a symbolic visual representation of film in two dimensions where it condenses all the value and theme of a film in a single static plane. It features images and text to create first-hand visual experience to its audience. Keeping the mass audience in mind, the use of textual content is very strategic. Because of the regional language problem and low literacy levels in majority of the audiences, posters show minimum textual content to cater all. The textual content generally includes film title, tagline, credit block, and names of leading characters. Title design plays an important role in suggesting the theme of the film. Due to advancement in the technology and other influential factors, title design has seen gradual changes in terms of form, style, texture, colour, composition, perspective and typeface.

The Film posters in India also reflect the diversity of its audiences in terms of culture, religion, class and language. Though the films titles are mostly remains in Hindi across the timeline, one can observe the changes in film title from trilingual script i.e. Latin, Devanagari and Urdu to mainly Latin due to multiplex paradigm. Also the changes in literacy rate can be observed through the changes from decorative lettering to more sophisticated and modern typography.

Let's discuss the role and development of title design in Bollywood film posters by using semiotic framework. Through this analysis the relation of title with respect to layout of the poster, letterform, film genre, treatments and poster production techniques will be

discussed.

Outcomes

Upon completion of this unit you will be able to:

- Have understanding about title design of film posters in Indian film industry i.e Bollywood
- Analyse the adaptation and evolution of the title making
- Understand the use of fonts, image resolution, colour in titles making
- Understand credit making

Terminology

2K: 2048 pixels

Gestalt Theory: Gestalt theory is an attempt to state the laws of visual reconstruction.

Semantic Analysis: Semantics is a study of meaning. It deals with the generation of meaning from any sign. This section enquires the relationship of title to the theme or story of the film.

Pragmatic Analysis: This section enquires about the title design in relation with the context.

Basic Design Issues

Choice of font

The film title is meant to establish the context and set the tone of the movie, where typefaces could be a powerful assistant towards this goal due to their second-level communication abilities and special expressive qualities. Type contains impassioned rhetoric; the magic is hidden under the appearance of each typeface. Thus choosing a suitable font is the primary task, a designer needs to accomplish when assessing a project. However, typography has about a five hundred year history in the West, which has left a forest of typefaces. Computer techniques have created even more of them. How to get to know each typeface's individual identity? A typeface classification could be a shortcut. There have been various classification systems to use. Each of them could be an essential tool to help a designer in selecting appropriate typefaces that enhance the expressive message in typography. It is always recommended for designers to spend some time taking a look at certain kinds of classification before actually working on the design.

Image resolution

When film frames are stored digitally, the resolution of the image is measured in thousands of pixels across the frame or K. A horizontal resolution of 1K means 1024 pixels; 2K is 2048 and so forth. 1K resolution is the lowest, yielding a result that is similar to video. 2K resolution is the most common because of reduced file size and less taxing throughout

requirements (data flow). 3K and 4K are also common and they are the most aesthetically desirable because the threshold of human vision is about 2500 x 2500 pixels when viewing an average movie theatre screen (if the picture were square). Pixel height varies depending on the aspect ratio. In Table 1, we can see the rule of correspondence between image resolution and mass storage size request.

Understanding the image resolution is especially important when we are digitalizing images for eventual film output. We can calculate what the appropriate scanning resolution should be, by dividing the film resolution that will be used by the horizontal dimensions of our image in inches. For example, if the output resolution will be 2K and our image measures 10 inches horizontally, we would scan it at 200 dpi.

RESOLUTION	MASS STORAGE SIZE REQUEST				
	1 frame [MB]	1 sec. [MB]	1 meter [GB]	1 min. [GB]	1 hour [TB]
2K	9	216	0,5	13	0,8
4K	36	864	1,9	52	3,1
6K	122	3 000	6,4	176	10,5
16K	864	21 000	40,8	1 242	74,5

Table-1 Drawn by Author

Colour

The printing world operates on inks and full colour (CMYK) mode. Traditional typographers deal with Cyan, Magenta and Yellow inks, which are known as “Subtractive Colours.” If subtractive colours are printed overlapped in the same proportion on white paper, they absorb the light shining on the page and we perceive pure black. The world of on-screen publication is built upon lights rather than inks. Designers uses “additive colors” namely Red, Green and Blue light. If all the three coloured lights are put together on the screen, we get white light, not “black.” Black can only be reached if there is no light involved. RGB principles are those behind computer and TV monitors as well as the movie screen.

Designing Over Space

A designer needs to consider many fundamental elements in designing the title sequences. The following section will briefly introduce some of the most basic concepts and then explain how these principles will affect the title sequence design.

Visual perceptions

Designers always wish for desired responses from audiences through the visual

expressions. Before talking about how to position visual elements within a frame (the concept of frame will be explained later in the section on “frame and aspect ratio”), let us take a look at how human beings perceive visual objects and environments. Since seeing is not just an optical process but also a process of our thinking, the early researches on the laws of visual perceptions were pioneered by physiologists whose concerns were human mind and brain.

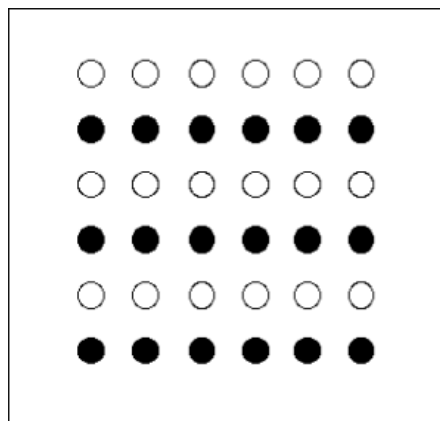
Gestalt Theory

Gestalt theory is an attempt to state the laws of visual reconstruction. Although computer-based design follows several new disciplines, it has not yet fully exploited the Gestalt theory results. This section briefly reviews the basics of Gestalt theory and explains how it can be used to render desired perceptions. As a theory of mind and brain, Gestalt theory proposes that the operational principle of the brain is holistic, parallel and analog with self-organizing tendencies or that the whole is different from the sum of its parts. Some of the key principles of Gestalt systems include

1) The law of figure and ground 2) The law of similarity or proximity 3) The law of closure

The law of figure and ground captures the idea that the visual field is normally divided into two parts, figure and ground. Some elements are contrasted with other elements to give the impression of a whole.

The law of similarity dictates that the mind, groups similar elements into collective entities or totalities. Such similarity might depend on relationships of form, colour, size or brightness. In the figure, the filled circles give the impression of three horizontal lines.



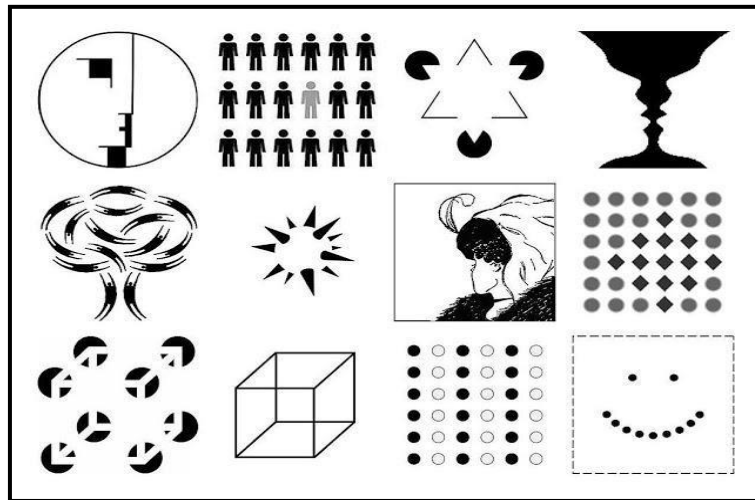
Title-Gestalt principle composition

Attribution- Impronta

https://commons.wikimedia.org/wiki/File:Gestalt_Principles_Composition.jpg

The law of closure applies when people see complete figures even when part of the information is not provided. In the following figure, a complete three-dimensional sphere is seen, where in fact no such thing is drawn





Title-Gestalt principle composition

Attribution- Impronta

Link- https://commons.wikimedia.org/wiki/File:Gestalt_Principles_Composition.jpg

Methodology

Human beings always try to interpret things as per their understanding and background knowledge. We can't take reality for granted and define it objectively. Semiotics teaches us that reality is a system of signs. Studying semiotics can help us to be more aware of reality as a construction and of the roles played by everyone in constructing it. Semiotics is a study of signs and according to Saussure's model; the sign is the whole that results from the association of signifier and the signified. This relationship is called as 'Signification' and the value conferred by a sign depends on its relationship with other signs within the system. The meaning making and persuasion of Bollywood film posters depends on relationships generated by different components of the film posters. Title designs in these posters are analysed separately by syntactic, semantic and pragmatic approaches.

Syntactic is a study of relationships among signs in formal structure. It is useful to understand structural relationships among the parts of a sign. This section utilizes the syntactic principle to see the relationship of title design with respect to poster layout, letterform structure and kind of treatment.

Semantics is a study of meaning created by signs in a system, where they interact with other signs. This approach helps in analysing title design to see how effective is the film title in overall meaning in relation to the film story and genre-wise type classification.

Pragmatics is a study of relationships between signs and sign-using agents. Here context contributes to the meaning and interpretation of particular design. This approach helps to see the effect of poster production technique, display positions and display technology on title design in film posters.

Syntactic analysis

Poster layout, letterform structure and decorative elements play a key role in the overall title design and its expressiveness. In this section title design is examined based on its structural parameters like layout and typography.

Poster layout

Title has occupied different positions in poster layout. Figure-3.3 shows three possible position of title in film posters. Out of 129 posters taken for an analysis, 61% shows title at bottom whereas 28% at top and 11% in the middle. Positioning of title was also influenced by the visual hierarchy principles. In maximum cases central characters has been considered as a primary element of the poster. This put title at secondary position in term of importance. So in most of the cases central space is occupied by the leading character's visuals whereas title comes next to it. When it comes in centre of the poster, in 73% cases it is horizontal whereas 17% shows diagonal orientation.

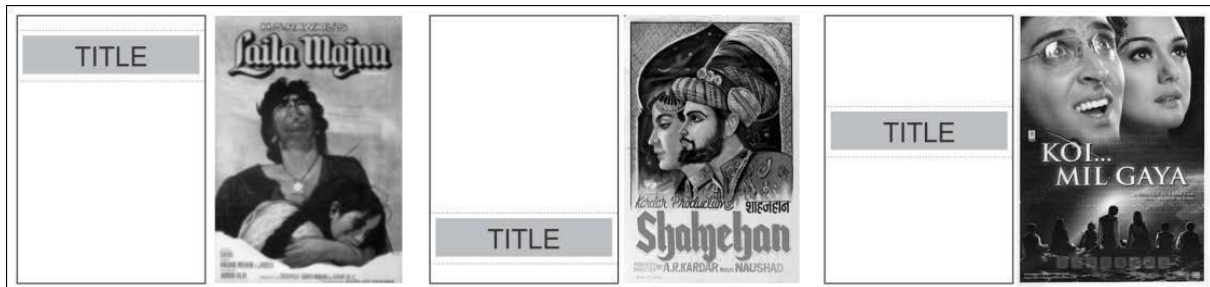


Figure 3.3 Title position with respect to poster layout

Designed by Author

Letterform

In a title design, individual letters act as a building block where its structure and style contribute a lot in suggesting the film's theme. The denotation of individual letters is a straight forward task. Anyone who knows the written language can read and understand the literal meaning of the title but the constructive meaning can only be generated through the understanding of message hidden somewhere in the style and structure of the individual fonts. When we analyse the individual letters across the title, it gives an interesting statistics. Approximately, 63% posters show title in uppercase, whereas 23% in title case, 3% in lowercase and 11% with mix lettering.

Use of decorative elements

Posters are made to attract the viewer at first sight. They are also competing with the other visuals across the city wall to draw attention. This competitive streetscape culture leads designer to give some ornamentation to title so that it can stand out as a poster. Titles in 96% posters show the use of decorative elements to make it more prominent and appealing. Out of

124 titles, 89 (72%) titles show decoration in terms of outline and shadow whereas 35 (28%) titles show decoration by manipulating text and image. Films like Anand (1970), Aradhana (1969), Upkar (1967), Ghulami (1985), DilwaleDulhania Le Jayenge (1995) are some example in second category. Contrast colours are prominent in title design throughout the timeline.

Semantic analysis

Semantics is a study of meaning. It deals with the generation of meaning from any sign. This section enquires the relationship of title to the theme or story of the film.

Title design based on meaning of title

Title design in posters in the early period of Bollywood cinema shows very minimal variations in letterforms irrespective of the meaning of the title. Letters have been designed randomly like in Bandhan (1940), Ram Rajya (1943) or Anmol Ghadi (1946) showing individual artistic skill and style. Some of the exceptions from this era were Barasaat (1949), Aan (1952), Jewel Thief (1967) and Aradhana (1969). Barasaat in which artist has used rain strokes to give the feeling of rain whereas in Aan poster letterform is in bold, 3D perspective placed in the background in such a way that it reflects the meaning of 'Aan' or pride. But this kind of exploration was rare till 1960s, where only 13% title designs show relationship with the meaning of the title.

Beginning of 1970s saw a dramatic increase in the use of expressive typography in the title design. As shown in Figure 3.4, poster of films like Mera Nam Joker (1970), Bobby (1973), Andhi (1975), Sholay (1975), and ShatranjKeKhiladi (1977) are some example of this trend. In title Gadar, the letter has been designed in such a way that it reflects the literal meaning of the title whereas in MeraNaam Joker the form of letters has been designed to give a sense of comical and jovial mood. It is interesting to see the letterform in the title ShatranjKeKhiladi where each letter is designed to look like 'Mohra' (64 square pieces in chess), exactly relating with the chess game. In similar way the fluffy form and colour of letters in Bobby, flowing strokes of letters in Aandhi and flame colour with cracks in Sholay reflect the meaning of the title in first sight



Figure 3.5 Film titles where letterforms directly relate with the meaning of the title.

This trend continued during 1980s and 1990s with some prominent example like Disco Dancer (1982), Coolie (1983), Razia Sultan (1983), Ghulami (1985), Tezaab(1988), Agneepath (1990), 1942 a Love Story (1994), Rangeela (1995) and Satya (1998). Like in Razia Sultan, the title and letterform are made in such a way that it looks like a fort in the background. This goes well with the heroic nature of Razia Sultan and reflects her power in the poster.

By the end of 1990s and beginning of 2000s design studios were taken hold of poster making in the Bollywood film industry. Advancement in technology and availability of different medium gave more opportunities in designing film's titles. Designers cleverly exploited text-image relationship to make title more attractive and meaningful. When it comes to the whole title composition and its meaning, in most of the cases it succeed in conveying the gist of the film. Looking at the poster of first full length Indian film Raja Harishchandra (1913), by DadasahebPhalke, the title itself is giving a sense that the film is all about the legend Raja Harishchandra, a story from Indian epic.

Title design based on film story

It is difficult to relate the letterform with the meaning of the story. Very few movies title has been designed according to the meaning of the story. To reflect the story, exploration was done mainly with letterform structure and colour. Khiladi (1992) is one example where letter 'A' is replaced by human figure holding gun in hand to reflect the action in the film irrespective of the literal meaning of the title which is player.

Most of the Indian films are melodramatic with full of emotions, drama, action and more. This makes difficult for an artist to design a film poster which can represent all parameters of the film. So in most of the cases the letterforms depict only a part of the total theme of the film. As shown in Figure-3.5, letterforms in the title of Disco Dancer (1982) reflect the theme of the film which is musical and romantic. The use of led bulb to create the type, which gives a sense that this is a film revolving around a disco dancer but this is one part of the film. The other part is action, revenge and family drama.



Created by Author

Figure-3.5 Letterform going with central theme of the film

Title design with external semantic elements

Film posters are meant to invite the viewer to watch the film. Thus it is important that posters should show the highlights of the film into prominence. Till 1960s Bollywood film poster were less explored in terms of use of external type elements. In most of the cases title designs were plain and variations were limited to orientation, texture and forms of the letters and in some cases with perspective style. From mid 1970s, designers started using some external type elements or "image as a type" for title design. A symbolic language was developed to communicate with illiterate people.

This style comes randomly in many posters throughout the timeline. Images were interestingly used as a type in many movies like *TeesariManzil*, *MeraNaam Joker*, *Khiladi*, *Zanjeer*, *Coolie*, *Ghulami*, *DilwaleDulhania Le Jayenge*, *Border*, *LOC*, *Iqbal*, *Raja Hindustani*, *Rab Ne Bana Di Jodi* and many more. This introduction of images as a type plays an important role in making posters more persuasive and powerful in terms of conveying message of the film.

Letterforms with respect to genre of the film

Having the melodramatic nature, it is hard to categorise most of the Bollywood films into a specific genre. The basic genres in which most of the films fall under are social, romantic, comedy, action and thriller. The industry started with film based on epic story like *Raja Harishchandra* (1913), *Alam Ara* (1931) and later dominated by romantic and action films. The "Golden period" of Hindi cinema (1940s to 1960s) gives some of the most critically acclaimed films of all time featuring the social themes mainly dealing with working class urban life in India. Films like *Awaara* (1951), *NayaDaur* (1957), *Shree 420* (1955), *Pyaasa* (1957) and *Mother India* (1957) are few of them. The print technology was limited and result of it. The main emphasis was given to keep titles plain and simple. Some exceptions like *Mugha-e-Azam*, where artist has used 3D perspective and shadow to create an illusion of fort suggesting a historical genre.

In the 1970s, India was going through social and economic changes and this influenced the Bollywood film making significantly. Industry came up with more of action and violent films in terms of commercial cinema. Films like *Sholay* (1975), *Deewar* (1975) and *MuquaddarKaSikandar* (1978) are prominent examples of this genre. In most of the cases letterforms have followed similar patterns, like use of outline, 3D perspective and shadow to create emphasis irrespective of genre of the film. Action films established the trend of using 3D style decorated with shadow and outline gel well with the film genre. This type of lettering dominated upto 1980s and became a trend throughout the decades independent of film genre.

Pragmatic analysis

This section enquires about the title design in relation with the context. It enquires how designing of the title in film poster has been influenced by the techniques of poster productions, display positions or platform and technology.

Poster making techniques

In the beginning of Bollywood film industry, only hand painting was in use for making posters and lithography was the only technology for mass production. These limitations in a way restricted the possibilities in terms of font exploration, whereas in other way gave freedom to use style and imagination of the artists. Because different hands were involved, no specific pattern has been followed till 1970s. Cut-paste technique was introduced in early 1970s, which has been overcome by computer in 1990s.

Display position

A display position is one of the deciding factors in terms of title design. What would be the distance of viewer from the poster, whether it will be used for day light display or night, kinds of viewer (rural or urban), whether it is alone or competing with surrounding environment full of other forms of advertisement, all these parameters are deciding factors in title design. These constrain makes designer to think about the size of fonts, visibility and contrast in the poster. Extensive use of bold, sans-serif and 63% uppercase letterform reflects the designers' concern. Letterforms in most of the cases are shadowed and decorated with outline in contrast colour so that it can stand out of the poster.

Till late 1960s, when there was no regulatory rule about the poster display platform, there were plenty of spaces in the society to use for the poster display. So posters are used everywhere, above eye level, bellow eye level, far from the viewer as hoardings or just side of the viewer on the sidewall of the street. This might be the reason behind random positioning of title in the film poster. Since late 1970s, when guidelines on outdoor advertisement were made by the Indian government, poster designs became more standardized and in majority of the cases titles started appearing in the bottom of the film posters.

Findings reveal that variation in the structural elements in title design has lot of syntactic, semantic and pragmatic influences. Syntactic influences in structural variations include stroke thickness, weight, texture, colour and letter-spacing. In most of the cases (96%), titles are decorated with outline and shadow to create more emphasis. Semantic influence has been adapted by the use of decoration and external semantic elements. A symbolic meaning has been created by manipulating letters and use of colour. It evolved gradually and usage of external typo elements became evident in the later period as out of 35

titles showing image-text manipulation, 31 (89%) are from 1960s onwards. External typographic elements like use of Coolie badges in the place of letter 'O' in film *Coolie* (1983,) enhances this ability by making it simpler for common viewer to read and understand the hidden meaning behind the title. Expressive typography maximizes persuading ability of film poster. There are also pragmatics aspects involved in the title design variation like positioning of title in the film poster and context of usage. Advancement of technology has its effect on the title characteristics across the timeline. The sample size used for this study is not statistically significant to generalize any arguments. But it definitely provides enough qualitative insights to predict few trends and various causes responsible for those trends. For future study it will be interesting to regenerate these patterns by considering more number of posters from each decade. Future study can also explore the relationship of film title with other elements in the film poster.

Frame and aspect ratio

A frame is a single still image, the smallest component of a sequence. In a movie, all actions take place within the borders of the screen or frame – much as if it is a room. Thus designers of kinetic type in a movie, need to make decisions about the compositional proximity of the text and objects to the edges of the screen/frame. The issue regarding the dimension of the screen/frame is termed “aspect ratio.” The aspect ratio of an image is its width divided by its height.

There are a number of aspect ratio standards used in movies and videos. Three of them, namely Academy Standard, Academy Flat and Cinemascope are the most influential or common ones in movies.

Academy Standard

The Academy Standard refers to the aspect ratio of 1.37:1, which was used almost universally in 35 mm full-screen sound film images or 16 mm standard professional formats between 1932 and 1953. This ratio means that the picture is 1.37 times as wide as it is tall. (Note that 1.37:1 standard is referred to as 1.33: 1 by Krasner, 2004, p. 316.)

Recognized officially by the Academy of Motion Picture Arts and Sciences (AMPAS) in 1932, the 1.37: 1 aspect ratio eventually became known as “Academy Standard” or “Academy Ratio” for movies. Classic films such as *Gone With the Wind* (1939), *The Wizard of Oz* (1939) and *Singing in the Rain* (1952) appeared in this ratio according to the IMDb database. This standard is still occasionally used.

Academy Flat

The so-called “Academy Flat” aspect ratio was developed in the circumstances that film had to compete against the threat from television. One of the film industry’s weapons

was “wide-screen pictures.” The development of wide-screen formats aimed to create a more visually breath-taking experience that would give viewers an incentive to attend the theatre rather than stay at home. An aspect ratio of 1.85:1 served this purpose. It was usually used for 35 mm US and UK widescreen theatrical films and was known as “Academy Flat.” In the US, 35 mm was usually projected at this wide-screen ratio by cutting off the top and bottom of the frame. Films shot in this ratio can also save on the cost of film stock.

Cinemascope

A less widely used wide-screen format is Cinemascope (also known as “letter-box” or “anamorphic”) with an aspect ratio of 2.35:1. The anamorphic standard has subtly changed since the 1970s. The anamorphic productions today are actually 2.39:1, which is commonly labelled 2.40:1, e.g., in the American Society of Cinematographers' American Cinematographer Manual, but often referred to as 2.35 anyway, due to old convention.

Design structure

Pictorial composition

Pictorial composition refers to how design elements are arranged in space within one single frame. It is important to recognize the distinction between pictorial composition and sequential composition. The latter is characterized by the continuity and recurrence of elements between frames. Since the sequential composition is basically a time-related issue, it will be discussed in the later chapter of “designing over the time.”

Grid system

Designers of all types (print, web, animation, etc.) are constantly facing issues involving the structure of their designs or the pictorial order in a moving composition. All those designers can get assistance from the “grid system,” which is a structure made up of a series of intersecting vertical and horizontal lines used to divide the page into grid units or modules. The lines of the grid themselves are not necessarily visible (although in some designs they are).

Grids allow for the distribution of typographic elements in a clear, intelligible order. They work such that certain design elements occupy one unit or module, while others can deviate and intrude into other units or modules. Design elements can also align according to the grid. Once a general grid has been set up, the designer can always deviate from it.

It is said that grids can help refine the approach to spatial organization, establish consistency within the design, achieve balance, help organize complex information within a rectangular space and allow the information to be communicated clearly and effectively.

Should a designer decide to use a grid, it is best to sketch it out on paper first and then implement it in the application. Most animation programs provide guidelines that can be

adjusted and locked to position elements into vertical or horizontal alignment.

Designing Over Time

Frames, shots, scenes and sequences

Any film is composed of frames, shots, scenes, and sequences. A frame is a single still image, the smallest component of a sequence. A shot is a combination of frames that contains a continuous action. Juxtaposition of groups of related shots composes a scene. Finally, scenes can be assembled in a specific order to create a sequence that expresses a narrative or a theme.

Computer animation

Animation with the aid of computer technique is called “computer animation.” The most basic computer animation tools assist the process of traditional animation by automatically generating some of the frames of animation. Traditionally, animators needed to hand-draw illustrations and photocopied frame-by-frame onto “cels” (transparent acetate sheets). The final art was photographed one-by-one onto motion picture film by a camera. Computer animation works in a totally different way. For 3D animations, objects are modelled and rendered with 3D and lighting software. Models are rigged with a virtual skeleton, which contains many “joints.” The animator can make the model “move” by dragging and controlling the skeleton and joints. For 2D figure animations, separate objects (illustrations, graphics) and separate transparent layers are used, with or without a virtual skeleton. To make the objects move, animators create the important frames of a sequence called “key frames,” then let the software calculate and generate the in-between frames (animations). Such technique is known as “tweening” or “morphing.”

Credit Making

Rolling credits is a technique used to give acknowledgement to those who have worked on your project. The main benefit to creating rolling credits (as opposed to having multiple names on a still frame) is that the movement helps keep the viewers interested. You can roll your credits on any background. Depending on your video you might choose to use a solid background, or use different pictures.

Rolling Credit Basics

To create your rolling credits, you'll need two clips and two layers in Timeline mode. One clip (bottom layer) will be the background where your credits will roll. The other clip (top layer) will be your text clip and will be where you'll write your credits

Unit Summary

Titles are important in creating first impression of a film. Titles along with opening credits play an important role in introducing the film and setting the mood. Making good title and credit line is also a serious art form. Titles can be made with syntactic, semantic and pragmatic approach. Fonts, use of semantic elements, display position etc pay an important role in making effective titles and credit lines.

Assessment

1. What are the three components of design over time?
2. What are the components of design structure?
3. What is the difference between academy standard and academy flat?
4. What is Gestalt theory?
5. What are the components of design over space?

Resources

- <https://link.springer.com/book/10.1007%2F978-81-322-2232-3>
- <https://www.intofilm.org/clubs>
- www.svnfilm.com
- www.videomaker.com
- www.junctiongoogle.co.uk

Unit 4 Stop Motion Animation

Introduction

Stop Motion Animation is a technique used in animation to look at static object as a moving animation on a screen. This is done by moving the object in increments while filming a frame per increment. When all the frames are played in sequence it shows movement. Clay figures, puppets and miniatures are often used in stop motion animation as they can be handled and repositioned easily.

The basic process of animation involves taking photograph of your objects or characters, moving them slightly and taking another photograph. When you play back the images consecutively, the objects or characters appear to move on their own.

Animation creates the impression of movement through an optical illusion referred to as the “Persistence of Vision.” The eye retains an image for a split second after it has actually been shown. Animation works by presenting slightly different images in quick succession, with the persistence of vision filling in the gap between each image and allowing for the illusion of motion.

In the 19th century, this phenomenon was made use of in many children’s toys that some students may still be familiar with.

Outcomes

Upon completion of this unit you will be able to:

- Learn about the basics of Stop motion animation
- Understand the importance of story and subsequent character, sets and props
- Know the use of various equipments
- Learn how to use Powtoon open source free software to create stop motion animation

Terminology

Flick book : A collection of slightly altered images bound at one end to allow the user to flick through the images by hand.

Zoetrope: It is a cylindrical drum with slits cut into the sides

Powtoon: This is Web-based animation software that allows users to create animated presentations by manipulating pre-created objects, imported images, provided music and user created voice-overs.

Storyboard : An outline of visual idea.

History

Thaumatrope

Made popular by John A. Paris in 1824, thaumatropes work by presenting two separate images on the front and back of a piece of card with string attached to each side. When the card is spun quickly using the string the two images are shown in quick succession, giving the illusion of one image.

Mutoscopes

Mutoscopes were manufactured between 1895 and 1909. To achieve the illusion of movement, a series of slightly altered images were mounted onto a circular core (a bit like a Filofax) and then turned quickly using a handle or crank. Mutoscopes were coin operated; the viewer would put in their money and then turn a crank to see the animation

Flick books

Flick books were invented in the latter half of the 19th century and it is thought that the first flick book was created by John Barnes Linnett in 1868. Flick books use the persistence of vision in a similar way to mutoscopes to fool the eye into perceiving motion. Flick books are essentially a collection of slightly altered images bound at one end to allow the user to flick through the images by hand, viewing the images in quick succession and creating the illusion of movement.

Zoetropes



Title-Zoetropes

Attribution-Andrew Dunn

Link-<https://commons.wikimedia.org/wiki/File:Zoetrope.jpg>

Zoetropes were also invented in the 19th century and use the persistence of vision to fool the eye into perceiving motion. A Zoetrope is a cylindrical drum with slits cut into the sides. On the inside of the drum are a series of slightly different images so when the drum is rotated the viewer looks through the slits to see the animated movement. The invention of the Zoetrope is credited to William George Horner in 1884, although a variety of Zoetropes that uses a similar principle are thought to have been created in China at around 100 BC.

Story

Before you start any animation, you will need to come up with a story that you want to bring to life. This could be as simple as a character or two, coming into the frame and doing something visual like jumping in the air or simply two characters having a conversation.

Keep it simple

The more characters you have, the more time it takes to create your animation and the more complicated the story becomes, so use not more than four characters to begin with. Remember, you also have to make sets and backgrounds for each scene in the film, so it is good to limit your story to four different scenes maximum if you only have a short amount of time. Get clear guidelines and set limits on what the film needs to include. By limiting them to four characters and four scenes, you are also asking them to think about how they can convey the story concisely and in a visual way.

Keep it familiar

Animations can take a long time to make (just like anything worth doing), so it is important that Animator do not spend all day deciding on the storyline. You could base the animation on something simple that you have been studying recently, or take your inspiration from a film you have recently seen. By having a starting point such as lyrics from a song, a topic, a prop to include or a suggested title you can focus the story, while still thinking creatively about the film and visual storytelling.

Pitch it

Share your ideas for the film. Select the best idea, based on consensus.

Split it into scenes

Once you have your basic narrative in place, it is required to break it up into different scenes. This helps to start visualising their film and gives you an opportunity to start listing the set, props and background models to be made for each scene. If you are working in team, you can split them among members, with each one being responsible for a different element of model making. For example, one member could design the main characters, while another team could make the buildings needed and the third team could craft the props, trees or outside spaces.

Character, Set and Props

The star of your animation could be anything from models made out of clay/dough, paper cut-outs, to toys, food and cutlery or real people. All you need to do is adjust their position between frames to create the illusion that they are moving. Have thorough understanding about how you are going to film the models, so that you can visualise the best way to make them. If you are going to be filming with the camera resting on the table, then

the characters are required to be able to stand up unaided or be stuck against a wall. If you film using a tripod with the camera pointed downwards, then the characters will need to be flat onto the surface. Also, it is a good idea to decide the scale for your animation early on. You can make your models as large or small as you like, but characters, props and backgrounds need to be to, of the same scale. It is a good idea to know the areas you will be animating first, and then you can decide the scale required for the models.

Modelling clay

A quick tip for creating modelling clay characters is to keep them strong and simple – you do not want pieces falling off, as you are adjusting their limbs. You may try to shape the characters flat onto the table - this is fine for light weight paper cut-outs but will make clay characters too flimsy. Start them off with blocks or round balls rather than thin strips and encourage them to build models with a flat round base. Thin legs can be a weak area that might see your characters topples over.

Example film: Binn Bunny Goes Green

Paper cut-outs

You could also create characters out of paper or card. Paper figures might be easily broken, so try to use thin card or reinforce coloured paper with card. Draw the characters with long arms and legs, then these can be cut out and reattached at the joints with adhesive putty or split pins ready to animate. Remember when using adhesive putty less is more. You don't want to be able to see the putty past joints as you move your character, so be quite strict with the amount you give out. Unlike Claymation, anything you make using paper cut-outs will be in 2D. If you have time, you could make profile and front-on versions of the main characters and models to add depth to your animation. A good cheat is to put detail on both sides of your model, so that one model can be used for the front and back of a character. To give the illusion that a character is turning to the side, simply swap your front-facing character for the side profile.

Silhouettes



Title-Silhouettes Source-Pixabay.com

Link-<https://www.pexels.com/photo/light-sky-sunset-people-40723/>

Using a lightbox can create a very dramatic and filmic aesthetic for your animation. Lightboxes can be bought cheaply. For a bold and eerie animation, use black card to create silhouetted characters, backgrounds and sets. Any details, character features and definition should be cut out so that the light can shine through the card. Cut out windows, cut around doors (leaving the hinge attached) and your characters can move through houses by moving them behind the card. Coloured acetate and thin tissue paper can also be used to add a little colour to your animation. Example film: Ominous Shadows

Mixed media

You can be creative and experiment with different mediums, colours and textures. Newspaper, corrugated cardboard, reflective paper, sandpaper and tissue paper can be used to create different textures and patterns. Crumpled, coloured tissue paper can be used for water and fire effects in particular. They could also experiment with different textures by adding sand to paint before painting the backgrounds.

Example film: High Above the Sky

Equipment

Cameras



Title-Camera

Attribution-Martin Foskett

Link-<https://www.pexels.com/photo/television-camera-broadcast-camera-67654/>

You can capture frames with a video camera, stills camera, tablet or mobile phone and then transfer the images onto a computer to edit. You could also try stop-motion software, capturing the frames directly into a timeline. The most important thing to remember is to keep the camera still and in the same position. A good idea is to sticky tack your camera down to the table so that it does not move, or alternatively you could mark its position with tape. When using sticky tack, be careful to ensure that the frame is straight, as this may affect the film when you put it all together.

Tripod



Title-Tripod **Attribution**-Photo mix

Link-<https://www.pexels.com/photo/black-dslr-camera-mounted-on-black-tripod-212372/>

If you are using a tripod, mark where the legs are placed with duct or masking tape, so that if the tripod is knocked you can line it up to the original position. This is where using animation software such as iStopmotion can be really helpful as it keeps your last image up on the screen whilst also showing you the live feed image from your camera, allowing you to match up the images. This process is called ‘Onion Skinning’. Tripods are particularly useful when using a light box to animate. Ensure your tripod can be tilted 180 degrees as this will allow you to shoot from above onto a flat surface.

The bare bones

A tripod and camera are not always necessary – for example, you could use the inbuilt camera on your laptop with free software like iMovie or Windows Movie Maker or you could simply take images with your phone or camera and feed them into the software with a USB lead. The most important thing is that you are able to get a clear, straight photograph of each movement of your set, work with what you already have. To begin with, the process of animating is more important than the equipment used.

Animating

Now that you have your set, props, characters and equipment in place it is time to

start animating. At this stage it may be a good idea to split the class up into small groups of four or five with each group taking a turn to animate. This will make things easier to manage, will ensure everyone has the opportunity to animate and will prevent you from becoming restless with the process. It could also be an idea to split the sessions into Pre-production and Production days if you have the time to do so. If you have the space, equipment and staff available you can also set up multiple animating stations and animate scenes simultaneously.

On your marks

Put all models and scenery in place for the first scene to begin. It is a good idea to take four or five establishing frames at the beginning of every new scene; this will slow down the action and allow the viewer to take in the new surroundings.

Get set

To give an impression of movement, carefully adjust your props and characters positions by a tiny amount. Once everyone in the group is happy then take a photograph. Take care that the group do not change anything that is meant to stay still. It is worth taking two photographs every time you move your character or object as this will help to ensure the movements are smooth.

Go

A thumb rule is 12 adjustments, each one captured twice on camera which will add up, to about one second of film. Remember to make only small adjustments each time, the bigger the movements between the frames, the faster the action and jerkier the animation.

In the frame

A good tip to keep their fingers out of shot when capturing each frame is to mark a line of the floor with gaffer tape and ask everyone to stand behind this line while one member captures the frame. Ask the team to give a signal to the person taking the photo each time, this can be “Action” or simply “Ready”.

The person capturing the frame can then respond, letting the team know they are ready to put the new frame in place.

Software and Editing

There is an easy to use animation software package in which you can make your films. iStopmotion can be downloaded onto macs and iPads and allows you to import images directly on to a timeline and export the footage as a QuickTime file to edit in iMovie. These both come with easy to follow instructions. You might need to play back your animation and check that the movements you have made are smooth and not jerky.

Slow down and repeat it

Once you have exported your footage to your editing software, it is now possible to

slow down the action, simply by adjusting the speed settings. It is likely that some parts of the animation will have to be slowed down but you may also think about looping and reusing some of the footage. For example, a short scene where two characters are talking to each other can be looped to fit a longer conversation or reused with different voiceovers. Similarly, you can also reverse some of your footage to create a bigger impact, if you have footage of your character looking away from the camera, this can be copied then reversed so that the character looks away from and then back to the camera.

The process verses the product

Most computers, tablets and phones will have some kind of editing software that you can use, however if you don't have the time to make edits to your final film don't worry. The beauty of animation is that a lot of the editing is achieved 'in-camera'. It means that the way you set up the shots and the amount of movement between frames can often determine how smooth the finished film is. Animation is about teamwork, creativity and visual storytelling in which students will gain a lot in the process of making an animation, even if the finished product is not polished or edited to industry standard.

Adding sound

Adding voiceovers, sound effects and music will have a dramatic effect on your animation. Voiceovers can help to move the action along and reiterate the storyline for the audience. Adding atmospheric music and sound effects can help to punctuate the action, infer an emotion or feeling to the audience and add humour. If you are using iMovie to edit your films, this program comes with a bank of royalty-free music and sound effects that you can add to your film. If not, then there are many royalty-free music websites that you can use to download music and sound effects.

Some Software Links

Stick man: drawn animation <http://www.stygz.net/>

Stop motion animation <http://www.culturestreet.org.uk/activities/stopframeanimator/>

Stop frame animator www.culturestreet.org.uk/activitiesstopframeanimator

Hand drawn cartoon animation <http://www.pencil-animation.org>

Sound effects www.freesound.org

Royalty free music <http://www.freesfx.co.uk>

PowToon Basics

PowToon is Web-based animation software that allows users to create animated presentations by manipulating pre-created objects, imported images, provided music and user created voice- overs. Powtoon uses an Apache Flex engine to generate an XML file that can

be played for Powtoon online viewer, exported to YouTube or downloaded as an MP4 file. PowToon is also available on the Google Chrome Store.

Through this tutorial you will learn to:

- Access PowToon and create a presentation
- Navigate the PowToon Interface
- Access and use the panels
- Apply the basic animation workflow
- Publish your project

Accessing PowToon

Step 1: Login

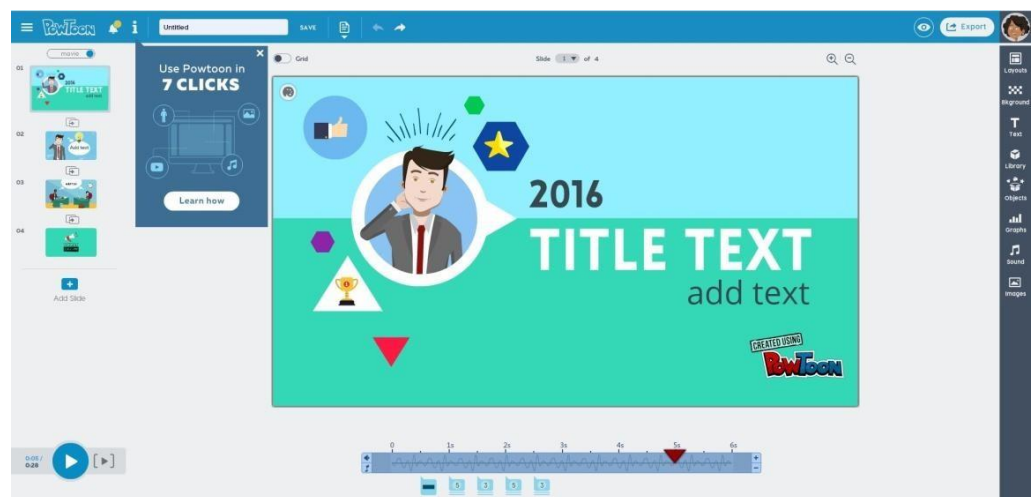
Login at <http://www.powtoon.com>

Step 2: Start a PowToon

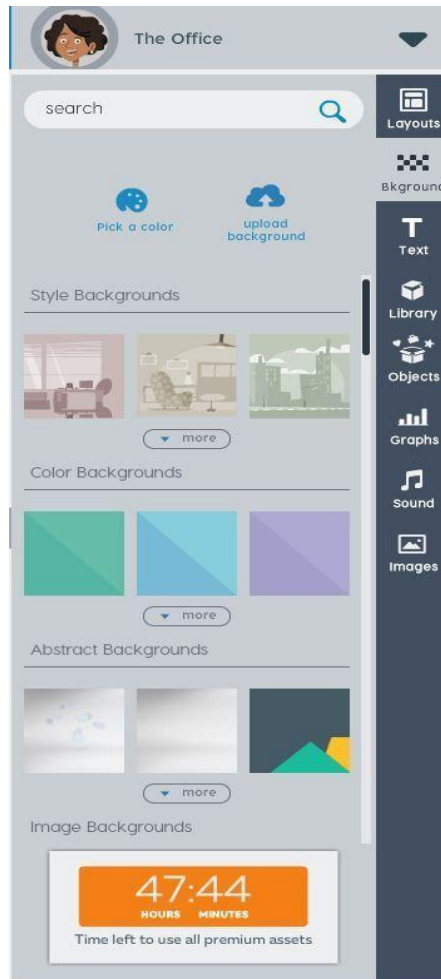
You can create a PowToon from a readymade presentation and start from Scratch with or without a template. Start from scratch categories includes pre-arranged slides for Promotional Videos, Slideshows, Educational Clips, Info-graphic Videos and Social Clips. Select Edit for readymade presentations or go after selecting a Blank Project or template.

Note: Some readymade presentations and templates are only available to Premium users.

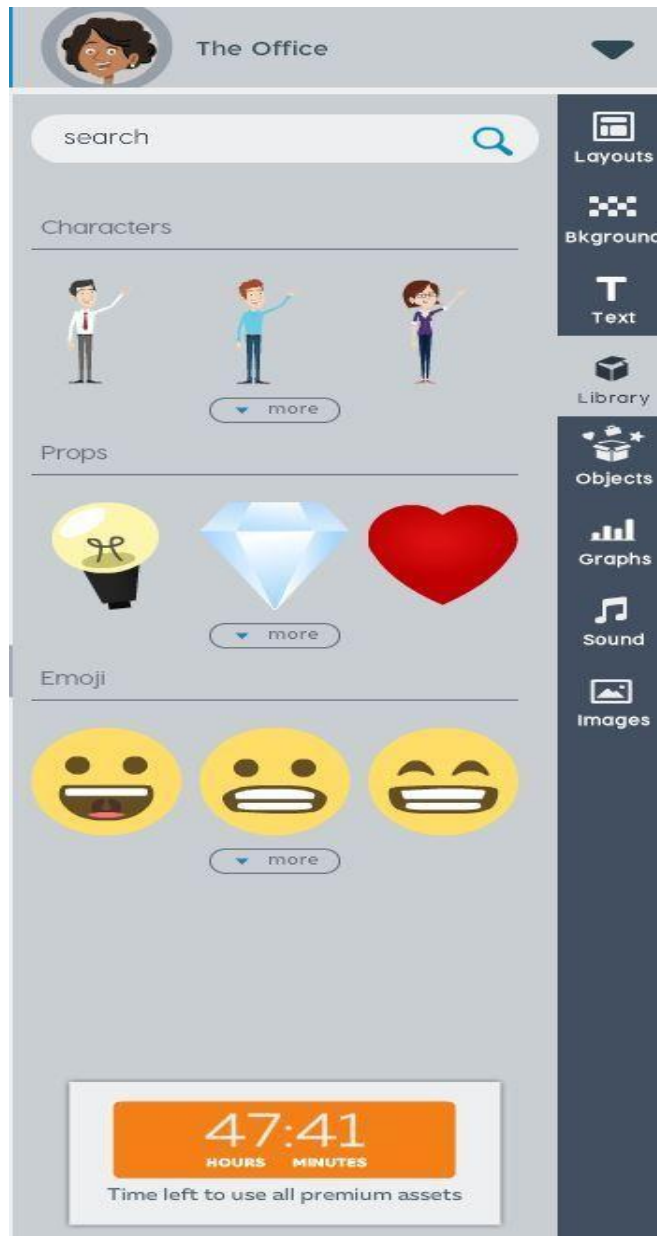
The Interface & Panels



The Library Panel



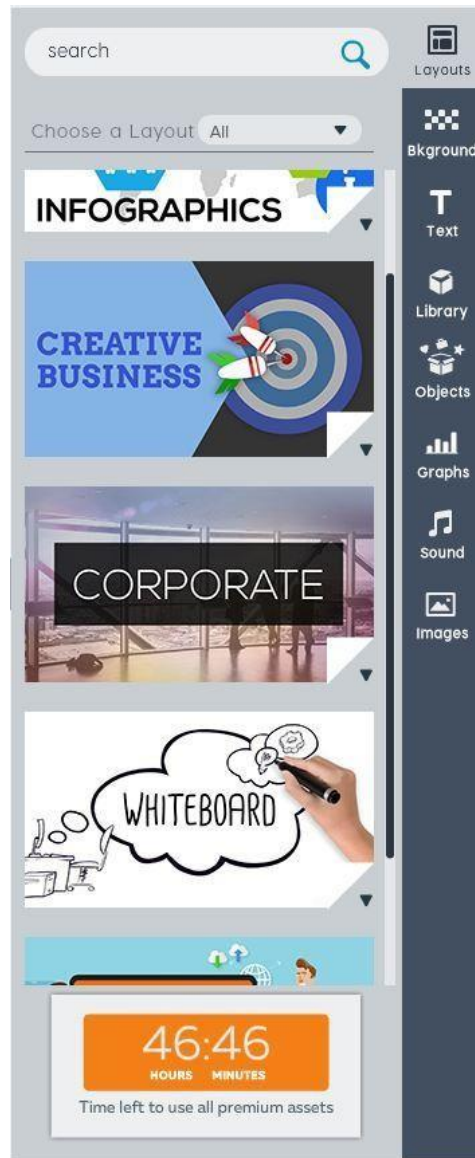
Screenshot



Screenshot

The PowToon Library is made up of different categories of text, objects (shapes, markers), props and characters that can be added to your presentation. You can even add your own images to the library by selecting an Image Holder (image frame) option

Using Items in the Library



Screenshot

To use the Library, select a Style from the top of the panel. To add objects, props and characters simply drag/drop to the slide.

Note: Some Items in the Library may be part of the premium PowToon package (marked as “More”).

The Timeline

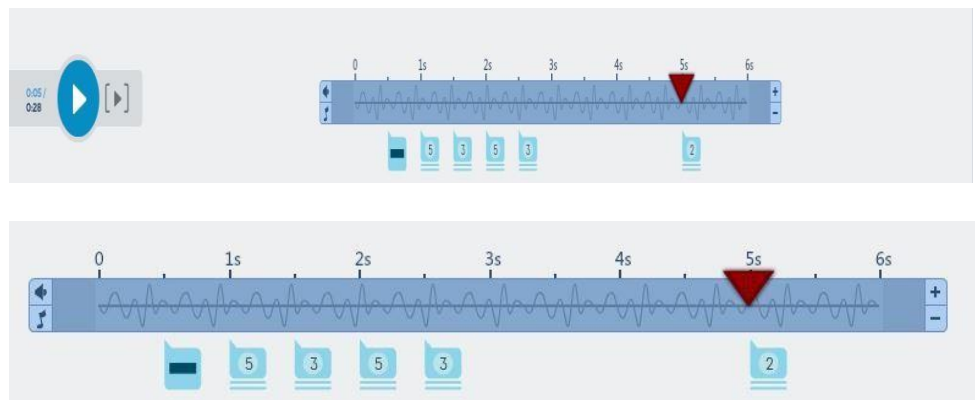
The PowToon timeline is used to add animation timing to objects in your presentation.

1. **Playhead:** The playhead indicates at what second you are currently in your slide. You can slide the playhead throughout the timeline to preview the animation for each slide.

2. **Total Slide Time:** Each slide by default is assigned 10 seconds. This can be decreased or increased to up to 20 seconds maximum.
3. **Object Duration Bar:** Each object has an animation timing duration bar. To access this bar select the object on the stage and adjust the timing as desired.
4. **Object Thumbnails:** All objects in the slide will appear below the timeline. Click on an object to adjust the effect and duration of the object.
5. **Object Effects (Animation):** Objects can be set to Enter or Exit the stage using a variety of options including fades, directionality and even a hand function (where a human hand slides the object onto the presentation). Each object can be animated using these effects. Note: You can also Flip an object's orientation from this area.
6. **Playback Controls:** Helps you to preview your presentation animation as you go.

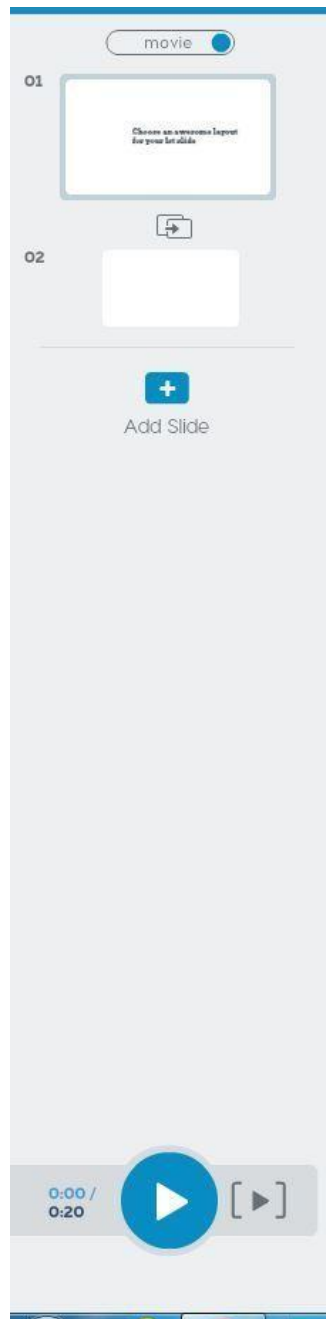
Note: There are four playback options • from left to right •

- (a) Play all slides from start
- (b) play current slide from start
- (c) play from play head then continue
- (d) Play current slide.



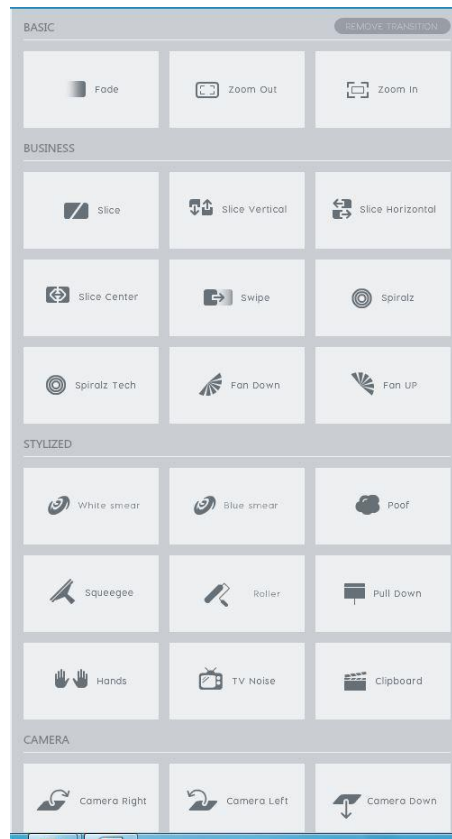
Screenshot

The Slide Panel



Screenshot

The Slide Panel contains your slides for your presentation.

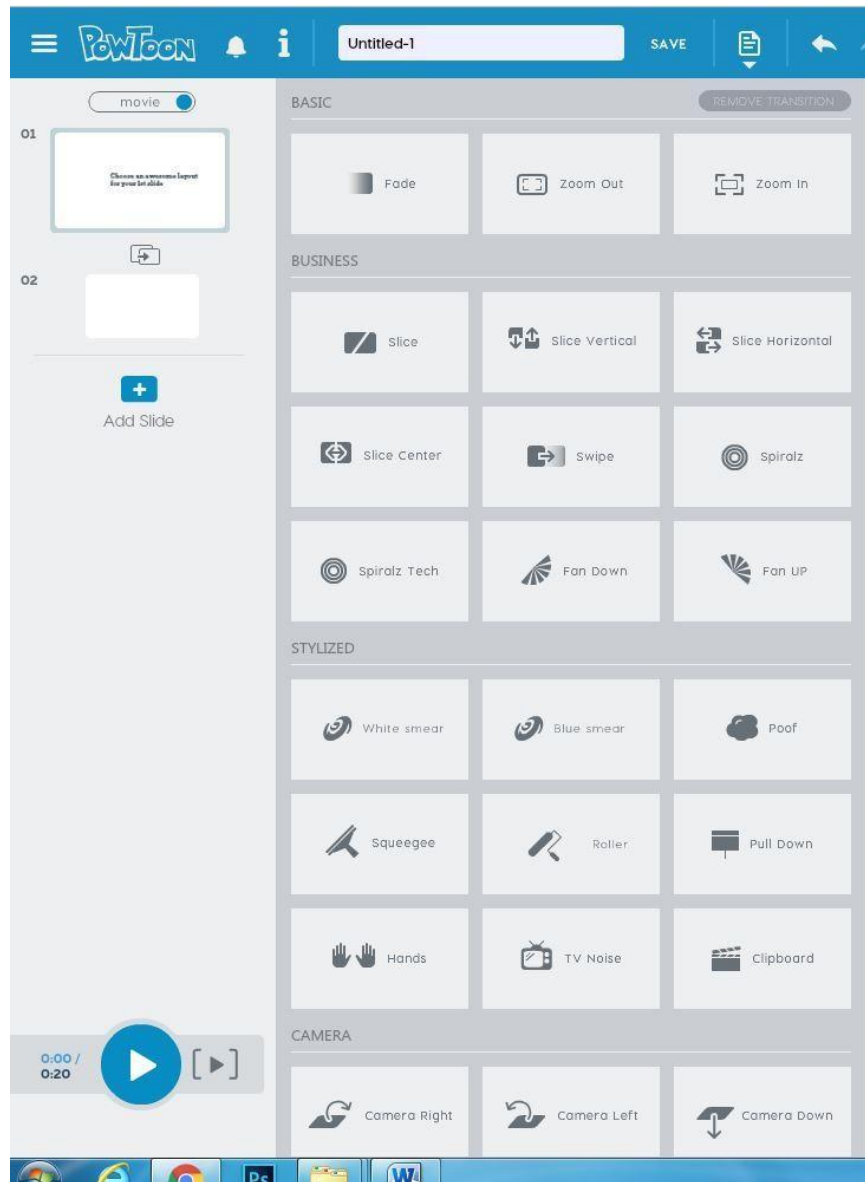


Screenshot

Slide Options: You can add/remove and duplicate slides (all objects and timing). Note: You can also clone slides, which duplicates the previous slide with the last frame (1 second) on it. This can help you make a smooth transition from slide to slide.

Presentation/Movie Mode: Toggle between the movie and presentation modes depending on how you want to show or explain your information. Note: Presentation mode allows you to create Hold Points for live presentation narration.

Transitions: Transitions between slides can be added by accessing the Transition Options from the Library Panel. To add a transition, select the slide and click on the desired transition effect. The transition will appear below the selected slide and the name of the transition effect will appear between the two slides. Note: Transitions are a standard length and cannot be edited. To remove a transition, select the slide and from Transition options from the Library Panel, select None.

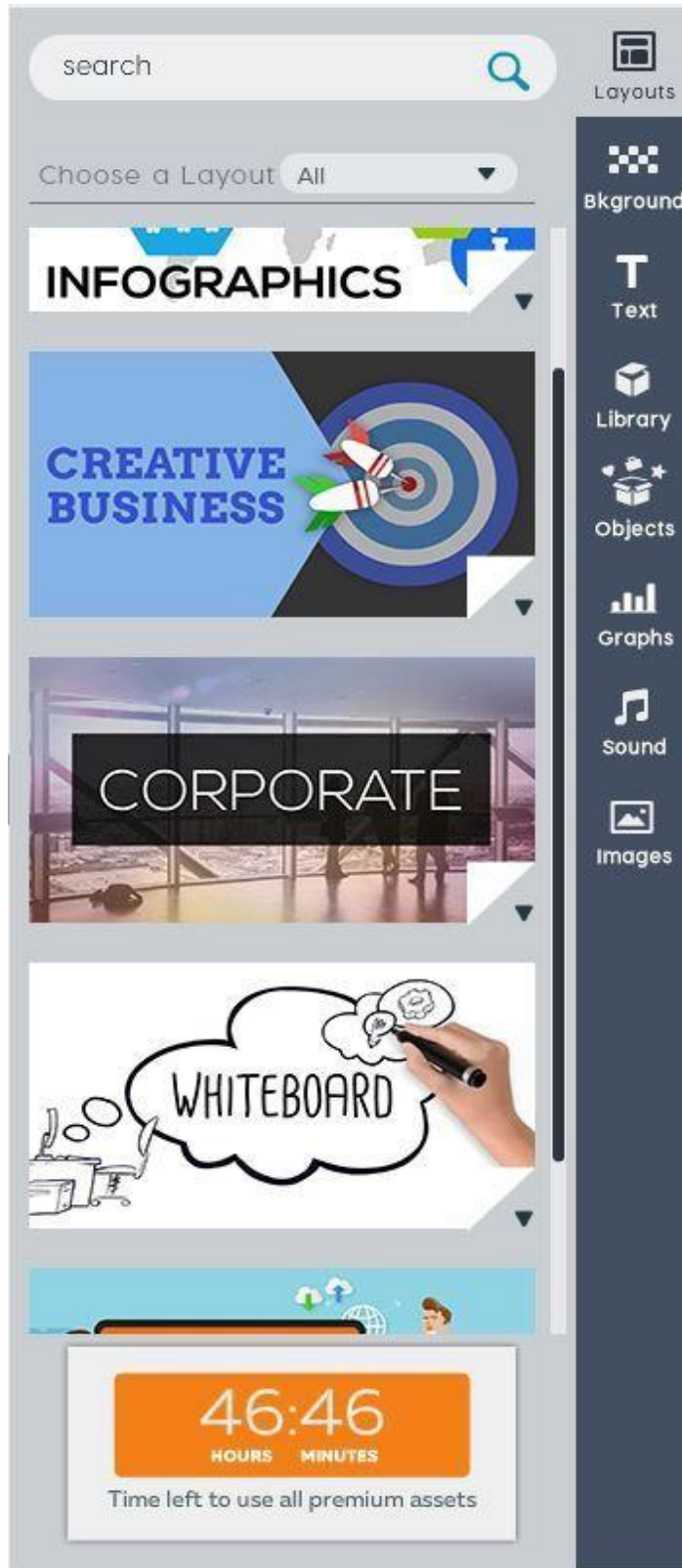


Screenshot

Layouts: Layouts for slides include animation placeholders and basic timings. Access the slide layout options by clicking on the slide and selecting the layout option's tab. A menu of layout will appear. Select a layout.

Edit the individual items on the slide and timings to adjust the effects.

Note: You can only apply a layout option to a slide once. To apply a new layout, simply add a new slide and select a new layout option.



Screenshot

The Menu Panel

The Menu Panel contains features common to many presentation tools.

1. **Save:** although PowToon will autosave every 5 minutes, it is important to save regularly.
2. **New:** to create a new PowToon.
3. **Cut, Copy, Paste:** cut, copy and paste slides and objects in your presentation.
4. **Sound:** add a sound file (import, record or use a track from the PowToon).
5. **Image:** Import image from computer or from the web.
6. **Text:** add text to a slide and format text options.
7. **Preview (Share/Link, Embed):** Select preview to review your PowToon and share via a URL link, social media site or embed into a web site.
8. **Exporting (YouTube):** directly share your PowToon to YouTube or export as a video file (paid option). Note: free accounts include PowToon branding.



Screenshot

Basic WorkFlow

Step 1: Storyboard

It is highly recommended that you plan your presentation using a storyboard that outlines your visual ideas and narration. It is the most effective approach for animation.

Step 2: Add the Voiceover/Music

It is much easier to add the voiceover first then add the animations. Why? It provides you with the timings, making it easier to add slides and animations.

STEP 3: Adding Sound

From the Menu Panel select Sound OR select the Audio Icon from the Timeline.

1. Import or Record Voiceover
2. Import or Add Music Track Note: Some music requires a paid account.
3. Adjust sound with controls
4. Preview / Play
5. Apply

STEP-4 Add Slides



Screenshot

Using the Slide Panel add slides to your presentation based on your storyboard.

STEP-5 Add Objects

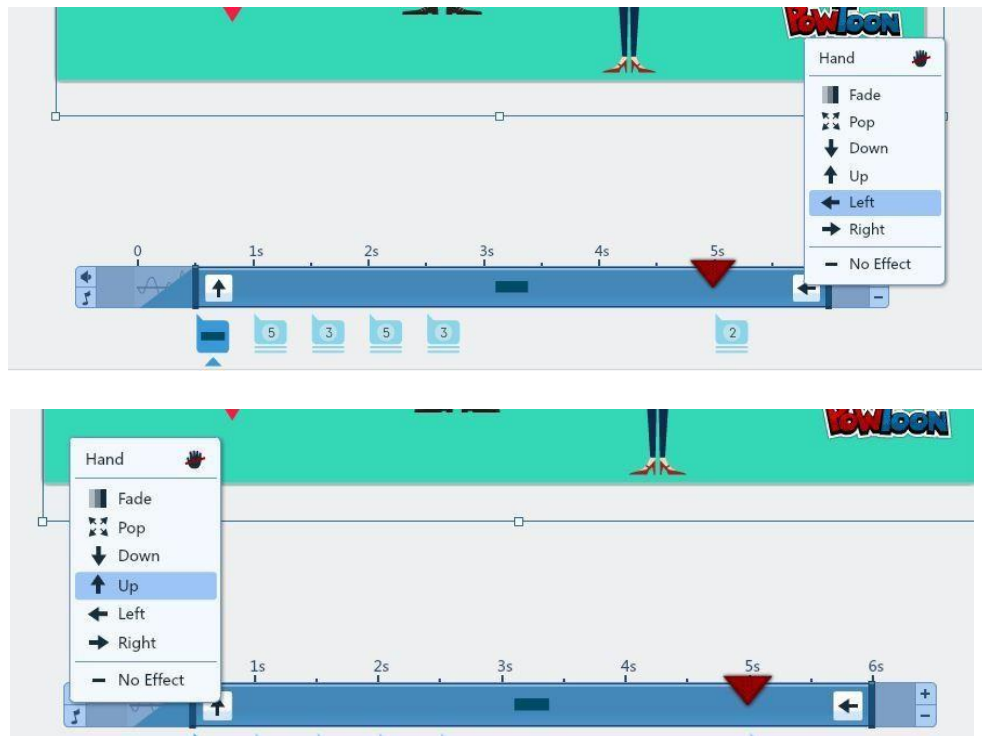
Drag and drop objects from the PowToon Library Panel onto your slides (including characters, text, objects and props).

Tip: You can layer objects on top of each other and use the animation timings to introduce objects strategically to create a sense of dynamic movement and cartoon interaction.

Managing Objects Managing objects in PowToon is similar to MS PowerPoint.

- Left-click on the item to select, either hold and move on the stage with the mouse or use the arrow keys.
- Use the object handles to resize the object.
- Right-click for more object management options such as arrangement (back, front), orientation (flip), etc.

Step 6: Animate



Screenshot

Objects

From the Timeline use the Duration Bar to animate each object on the slide.

1. Select the object to animate.
2. Choose an effect style for the object entry/exit.
3. Use the sliders to adjust the duration of the object animation in the slide.
4. Add/Remove overall slide timing as needed (slides can be up to 20 seconds in length).

Step 7: Preview

Use the Playback Controls or select Preview from the Menu Panel to review your video.

NOTE: Don't forget to save throughout the process of creating your presentation. The save feature is located in the Menu Panel.

Step 8: Publish

To publish your PowToon select from the following: Share via Link or Embed

1. Select Preview from the Menu Panel
2. Choose from one of the sharing options in the Preview dialog.

Export to YouTube/Other

1. Select Export from the Menu Panel

In the dialog select an output option and add a YouTube Account. NOTE: In the FREE PowToon account you can only export up to 30 videos at medium resolution with

branding. Video exports are also part of premium packages.

Unit summary

In this unit you have learned the basics of stop motion animation and how to make it. We have discussed about character, set and props for various different projects. Also we studied about various equipment used for stop motion animation and learned basics of open source software PowToon.

Assessment

1. What is stop motion animation?
2. What is PowToon?
3. True or False
 - a. "My styles" in Powtoon is in left side of the screen
 - b. PowToon is an open sourced software

Resources

- <https://link.springer.com/book/10.1007%2F978-81-322-2232-3>
- <https://www.intofilm.org/clubs>
- www.svnfilm.com
- www.videomaker.com
- www.junctiongoogle.co.uk

DMA-03
2D Animation
Block – V: Production / Post-Production (Practical)

Unit-1 Painting & Animating Practical

Introduction

Before beginning 2D animation, you require pictures or artistic creations. Your drawn edges should be converted into an advanced digital format. Keeping the end goal in mind, you need to check the drawn frames. So before you check them, you will need to set them up for the scanner. Consider the line quality that is on the paper. If it's too light, the scanner won't lift it up, and you will need to settle those lines in the PC or totally redraw them later.

In this practical unit, you will learn the basics of animation techniques, implementation of traditional 2D techniques in digital animation, understanding the techniques of scanning the drawings. You will be introduced to ink paint of drawings, the techniques of tracking and tracing the paths, various paint techniques involved in animation production and painting them in 2D painting tools. Thus, you can apply the principles to create the animated character.

Outcomes

Upon completion of this unit you will be able to:

- Understand the stages of 2D animation
- List the techniques of scanning inked drawings
- Use GIMP to scan and edit images
- Work with ink and paint in GIMP program

Terminology

Background: It is the area where the action takes place. There are usually very few backgrounds in a film compared to Cels.

Cel&Cel setup: A picture is drawn on a unique piece of plastic. This plastic is called as Cel. At least one Cel overlays on a base which is known as Cel setup.

Depth of Field: Depth of field deals with the range of depths over which objects in a frame are in focus. It forces the eye to focus on the next focal plane. Depth of field is very important in computer animation.

Maquette: It is a statue based on the model sheet.

Model Sheet: It is the drawing of a single character in a variety of attitudes and expressions, created as a reference guide for animators.

Motion Blur: Motion blur helps in bringing the frames together & eliminating the jittery images that can come from animation.

Rough Animation Drawings: They are the original first sketches of a character in action. In computer animation, it's done with wire frames.

Rough Sketch: It is the animator's drawings used in the process of creating the finished image to be transferred to Cel.

Xerography: It was tested in sleeping beauty and then used for the first time as a feature in 101 Dalmatians.

Computer Assisted Animation: Animation performed by hand, with the computer, creating the in between steps.

Background Layout: Accurate drawing that depicts everything in a scene that has to appear in the background, prior to the animation or background art being created.

Ink and Paint

A long time back, our only alternative for painting animation drawings was to trace the image with ink on top of Cels. At that point, the colours were painted onto the Cel. The Cels were then stacked on racks to consume scarce space. As clear as the Cels seem to be, they must be stacked to six or seven levels because of a somewhat loss of light and shading with each layer.

Then the ongoing procedure called "Digital Ink and Paint" came. It is the similar process as traditional ink and paint until, after the animation drawings are finished. Instead of being transferred to Cels, the drawings are scanned on to computer or drawn directly on the digital program (for example, a Pen tablet), where they are coloured using a software program. With all the ink-and-paint programs now advanced features, we can paint a whole area in a click or use an advanced paintbrush to colour a character. We can change the line colour, improve the drawings, scale and adjust the animation layer, build a customized palette and also can export the output in various formats. In addition, all programs have the dope sheet for tracking record of our animation.

With computers, exchange of artwork between different departments, states and even nations has become easier.

As the cost of both inking and painting, new Cels for animation programs and the reuse of older Cels for new programs goes up, the cost for doing the same thing digitally goes down. The digital ink and paint process became the standard for animations. The computerized ink and paint animation drawings are created and organized in computer through bitmap or vector graphics. This is advanced digital procedure of traditional methods like morphing, onion skinning and rotoscoping.

There are some differences between the latest ink and paint programs. The main difference is in the interfaces of each software, their user-friendliness, project management,

camera and compositing functions and capabilities to keep the images as bitmap pictures or to vector formats. Vector Images have lower file sizes and can be scaled to any size without quality loss.

The various procedures inside ink and paint programming are broken into different modules. In digital painting, camera or compositing modules may not be required, so some selected modules should be procured to keep the cost down. These modules we use on different computers.

To begin the ink and paint process, various parameters should be set for every scene. Each ink and paint program enables you to modify different parameters, some with limited options and others with a large number of options.

Digital ink-and-paint programs are the computerized adoption of complete 2D animation using:

- Scan
- Tracing
- Ink and Paint

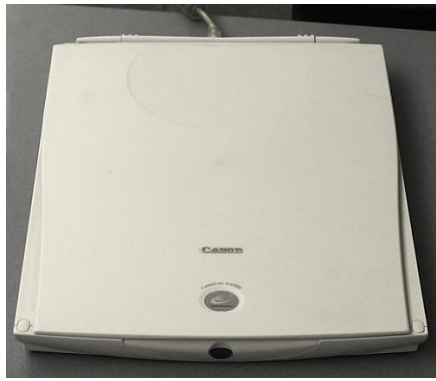
Choose the Right Software

Picking the right software is a lot like picking the right car, but it depends upon your feel and preferences, you may prefer one below the rest. The following is a quick list of the best professional 2D animation software. You can use it to animate and produce your video. Take a look at these to determine the best fit for your skill level and budget.

- Free software: Pencil, Ink & Paint, Tupi, Synfig Studio, Plastic animation Paper, Gimp, Krita etc.
- Professional grade software: Adobe Flash, Toon Boom

Let's select the Open Source free software GIMP as it is user friendly for beginners. Now we start the techniques of Paint and Animate (Scanning, Tracing, Ink and Paint).

Technique for Scanning Inked Drawings



Title-Image Scanner Attribution-User:Dhscommtech Source-

Link-https://commons.wikimedia.org/wiki/File:Image_Scanner.JPG

After all the hand drawings are finished, then it is scanned through the computer scanner. The large scanner with auto feeder is too expensive for a small production. These categories of scanners together with the right software can read the drawing sheet holes. So even if the drawing sheet was not properly aligned, the software automatically positions all the drawing sheets at the right location.

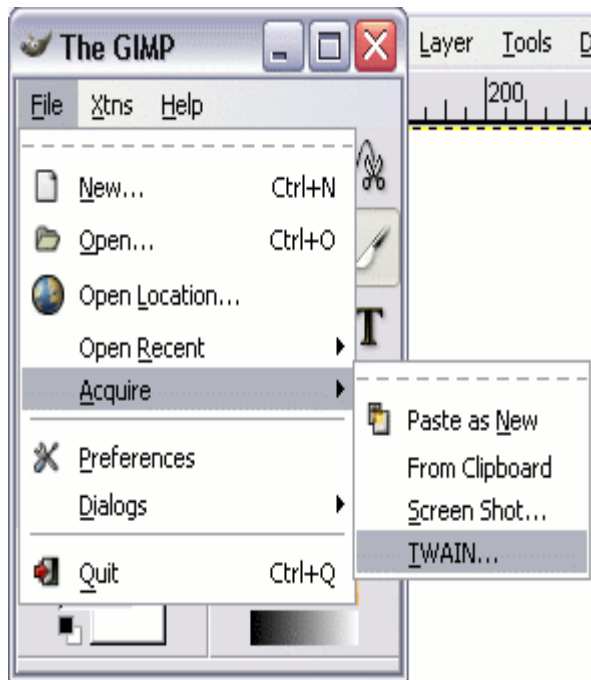
Before we scan a drawing sheet, we need the following tools:

- Good scanner
- Scanning software

Scanning Via GIMP

Considering your scanner has been set up and it's associated with your PC/network, the actual steps you use to scan a picture (or anything else) will rely upon your scanner. Ordinarily, it will be one of the following:

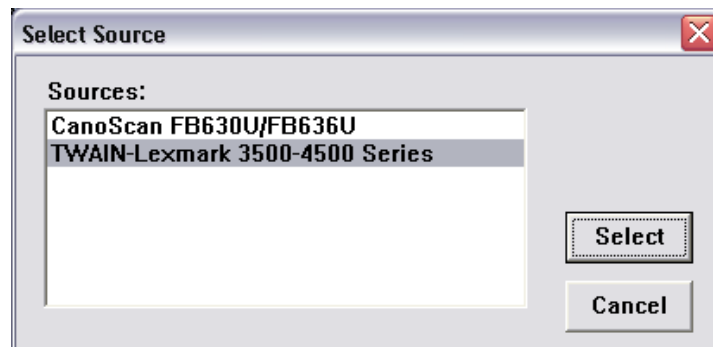
Begin "The GIMP" to start the scan



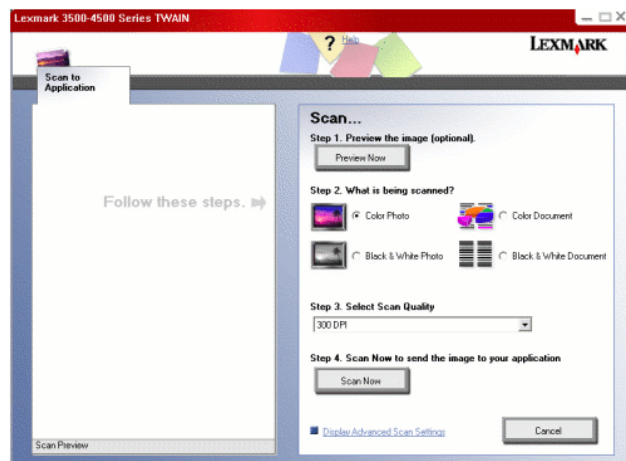
Select "File" menu, select "Acquire" and afterward "TWAIN". In the event that you don't see these choices, you may need to choose "File > Scanner > Import". Here "TWAIN" is the scanner.

Screen shot

- Select the scanner, you are using from the rundown. If you don't see your scanner here, it might be that the scanner driver is not installed.



Screen shot



- GIMP has accessed the scanner software via TWAIN standard. The scanner

software makes it quite simple from here on. You can click "preview" to check that your photograph is positioned effectively or not. You can also change the scan quality. Note that in case you're just going to utilize the picture on the HD Video, 300 dpi is fine. Having said this, by increasing the resolution, the more detail you capture (and the bigger the image becomes). Higher resolution will often result in a much larger file size, so check the file size once you've scanned it.

Screen shot



- After clicking the "Scan Now" button, the scanner starts making noises and after a few seconds, the image pops up on my screen. Note that this image has been transferred to my graphics software (The GIMP).

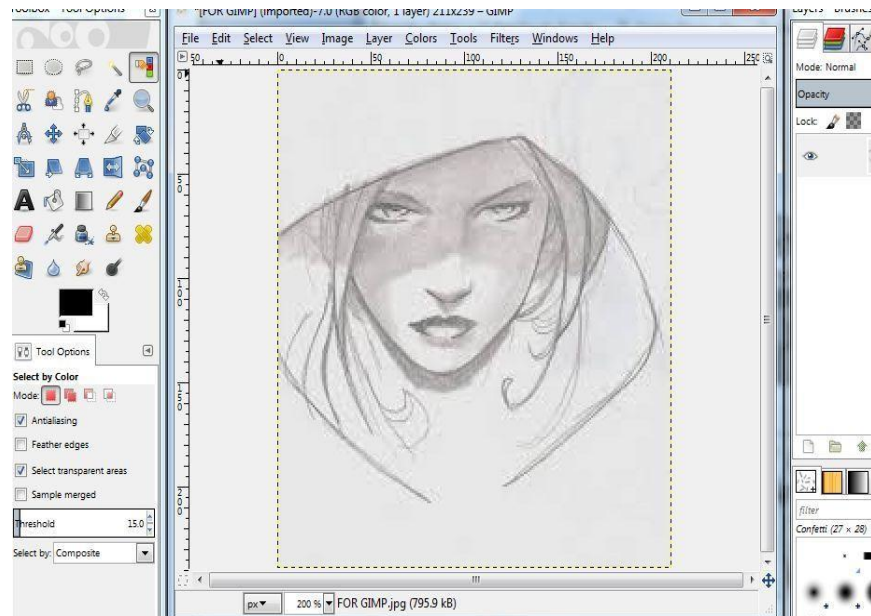
Screen shot

So, now that the photo has been scanned, you can save it just as you would any other file (i.e. via the "File > Save As..." menu). Once you've saved it you don't need to do anything more. Having said this, you can make changes to the image as you wish. For example, you might want to resize it, use a filter such as "sharpen", "despeckle" etc.

Presently the photograph has been scanned, you can save it similarly as you would some other file (i.e. By means of the "File > Save As..." menu). Once you've saved it you don't have to do much else. Having said this, you can roll out improvements to the picture as you wish. For instance, you might need to resize it, utilize a channel, for example, "sharpen" and so forth. When it's done, stop your scanning application.

If you are utilizing your photographs on the web, you'll have to ensure you save it in the right format.

Edit Scanned Image



Screen shot

If the scanning application hasn't opened up picture automatically, you have to open the scanned image manually. If you zoom in, you'll see it looks extremely crude and pixelated. It'll disappear in the subsequent steps. However, before we do that, we should remove the white paper background and any mistakes. Rotate image if necessary, select the Eraser Tool (press SHIFT + E on your keyboard) and remove any lines or those things you don't need. You don't have to go into the small details at this time, so just give it a quick correction; once over and you may save the image.

Now, since we scanned in Line Art/Bitmap, we need to switch the mode to Grayscale, to do that just select Mode->Grayscale in the Image menu. A dialog box will come up, but just leave the setting at 1 and click OK.

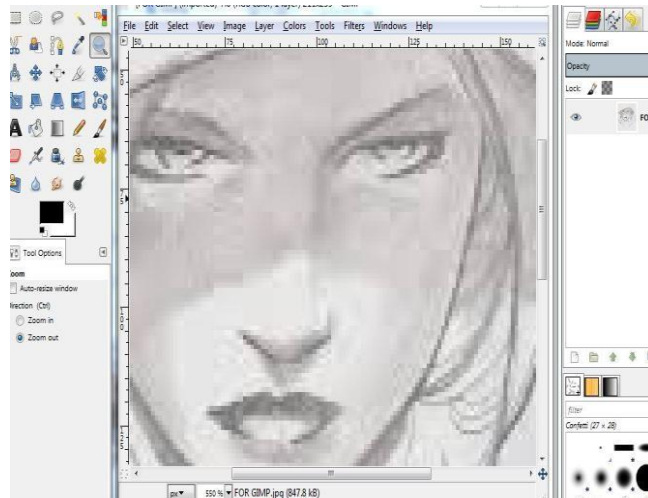
Next, open your Layerspalette; press Ctrl+L on your keyboard if it's not already visible. You'll see the layer's name has a little padlock next to it, so click twice on the layer's name and click OK, without disturbing the other settings.

Choose **ByColour** in the Select menu. Set the Fuzziness to 0, click once in the white "paper" part of the image and press OK.

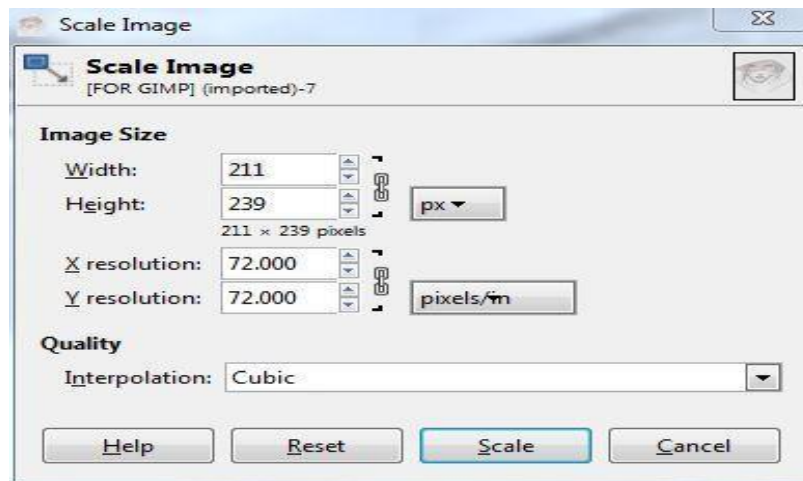
You'll see that all the white parts of your image have been selected. Now hit **Backspace** or **Delete** on your keyboard, it'll be removed and replaced by a checker grid, indicating that it's now transparent.

It is recommended to create a new white layer behind your drawing so you can see it better.

Scale Image



Screen shot



Screen shot

In the Image menu, choose Scale image, set the Resolution to half of what it is currently and press OK.



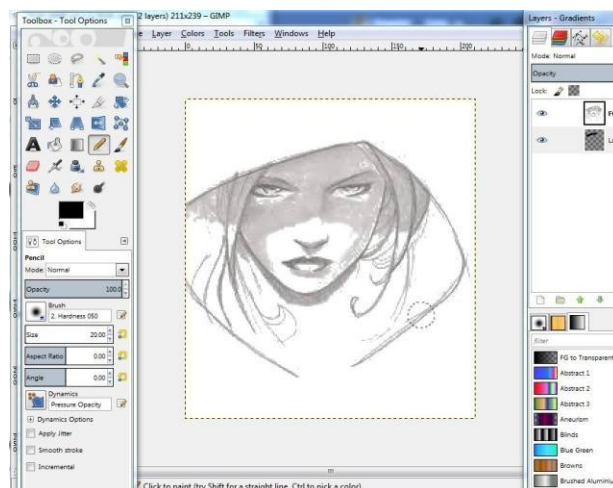
Screen shot

Here's the rundown for the GIMP user.

- Scan your artwork in Line Art at twice your planned determination
- Remove any evident mix-ups
- In Grayscale Mode, open your layer
- Use Select-> By Colour to choose the white foundation, at that point to evacuate it
- Go to Image Size and set the resolution to half of what it was before
- Complete

Note: If you often scan a lot of drawings in high resolutions it is recommended that you save them in the bitmap mode for later use and do the following steps when you need to. In the long run, it becomes a huge difference in file size. Even though you might be able to get the same results by scanning in grayscale, adjusting the levels and removing any irregularities, this method will save you a lot of time.

Preparing the Image

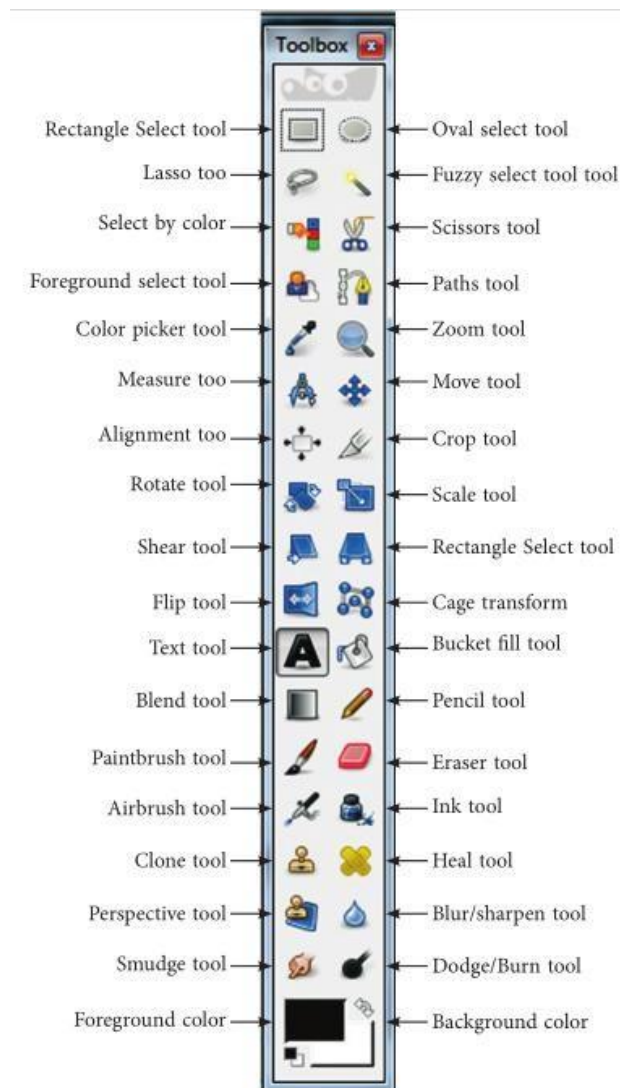


Screen shot

- File > Open > Select image to manipulate
- If necessary, Image > Transform > Rotate by necessary degrees
- Using Rectangle Select Tool, select area of image* to be traced
- Copy area to clipboard (Ctrl + C)
- File>New>Choose US Letter
- Paste an image (Ctrl + V) to New Untitled Image
- Layer>Scale layer

Path Tracing

Launch GIMP and open an image that contains an object you'd like to trace.

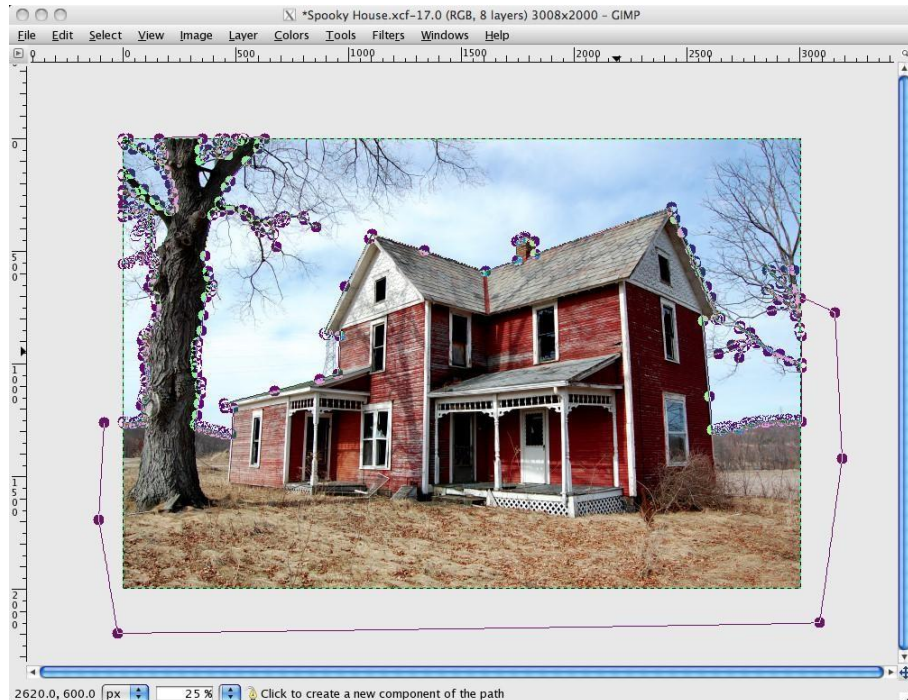


Screen shot

Press "Ctrl-B" to view the Toolbox window if it's not visible, and click the window's "Paths" tool to select it. The Paths tool looks like a blue pen with a yellow tip that sits to the right of a white bar. That bar contains three boxes stacked vertically. A white curve extends from the top of that bar to the brush's tip. GIMP displays the tool's name when you move

your mouse cursor over the correct icon.

Click a point along the edge of the object you wish to trace. For instance, in the event that you need to trace a building, click a point along the building's edge. When you do that, GIMP puts a little dot by then. Move your cursor a short distance along the edge and click a new point. GIMP puts a dot at that location and draws a short line segment between that dot and the



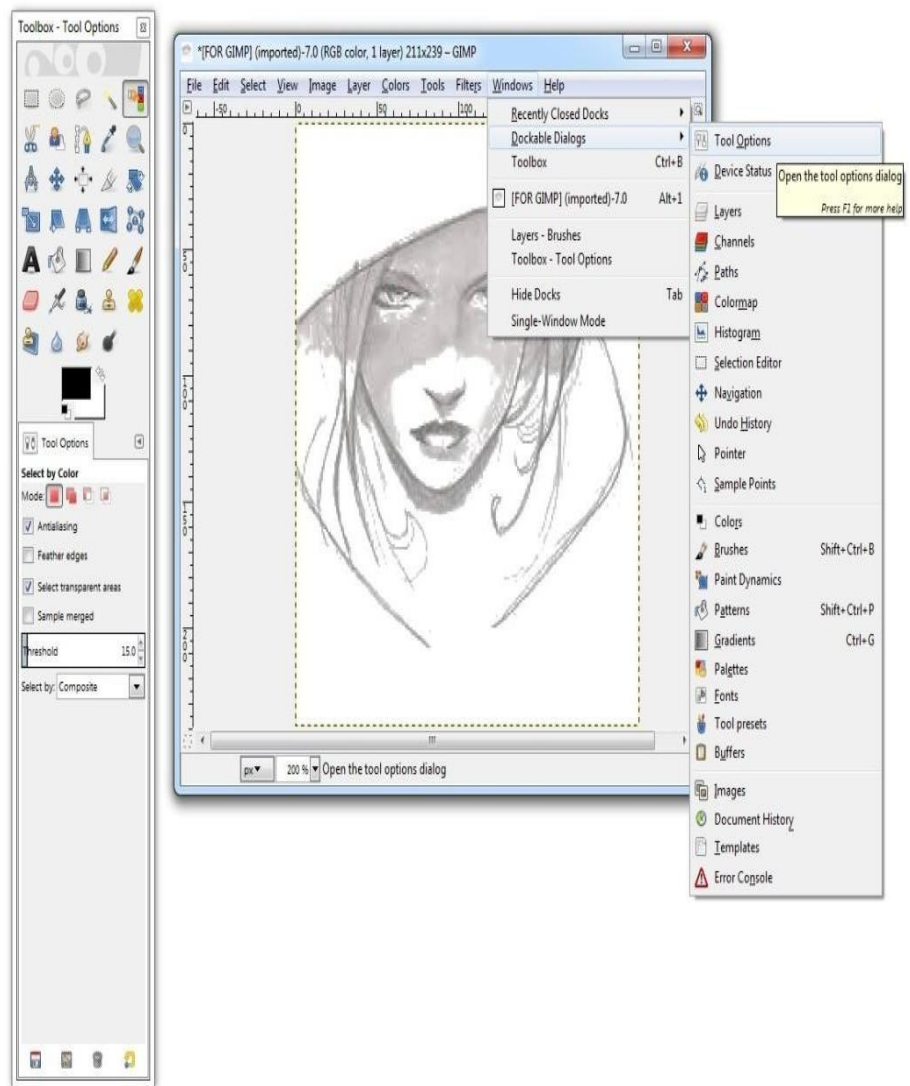
past one.

Screen shot

Keep moving your cursor short distances along the object's edge and clicking points to draw short line segment. Eventually, you will draw a path around whole object. When you reach the starting point (the location where you made the first dot), double click the dot to finish the path. This path will comprise all the small line segments you made by putting dots along the path.

Using Path

Click "Windows," select "Dockable Dialogs" and click "Paths" to open the Paths dialog window. This window has an icon that represents the path you traced. By default, its name is "Unnamed." If you had multiple paths, you would see them in this window.

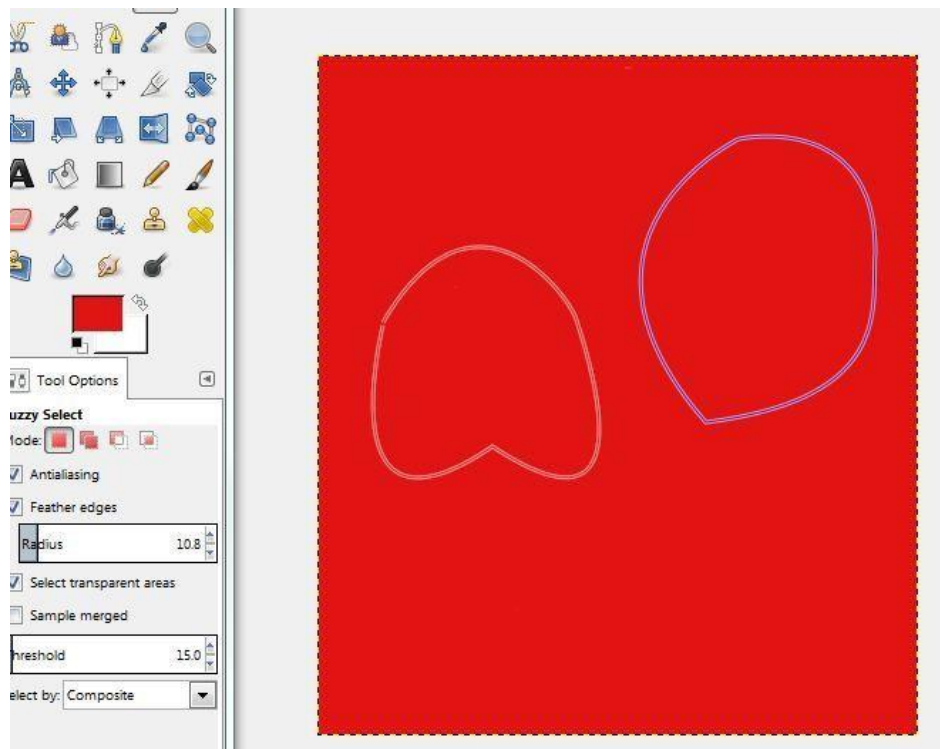


Screen shot

Review the buttons at the bottom of the window. Click the "Path to Selection" button if you'd like to convert the path into a selection.

Find the window's "Paint along the Path" button. This button enables you to generate a line around your object automatically using the path you traced.

Click the "Paint along the Path" button, and type a value in the "Line Width" text box. That value determines the line's width in pixels. To draw a line around the object, click "Stroke". The line's color matches the project's current foreground color. The line's shading matches the venture's present foreground shading.



Screen shot

After you make a selection from a path or draw a line around an object, you can delete the path by choosing it in the Paths dialogue window and clicking "Delete." You would then be able to upgrade the selection any way you like better.

When you trace a path around an object, you can click and drag any dot along that path to modify the line segment at that location. You'll most likely need to do this since it's hard to trace around an object perfectly. For example, in the event that you see that one line segment has a space between it and the object's edge, you can click and drag the two circles at either end of the segment and move them to bring the segment closer to the object's edge. Your goal when tracing is to make your outline fit flush against an object's edge.

If you want to trace a small object, do that more precisely by clicking the drop-down box at the bottom of the image window and selecting a zoom percentage. Select "400%," for instance, and GIMP makes the image four times larger.

Tracing the Image



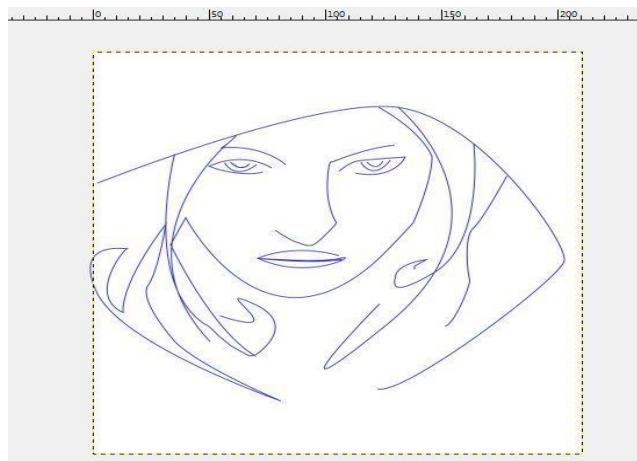
Screenshot

- Create New Layer
Layer fill type Transparency (default). Naming the Layer "trace" is helpful. Be sure the new layer "trace" is highlighted
- Select Pencil Tool
- Choose brush size based on thickness of lines you prefer
- Begin "tracing" the important lines of the image

TIPS: Be sure to save your work occasionally.

Use Zoom Tool for more accuracy

Numbering



Screen shot

- Once an entire image is traced to preference, Remove visibility from pasted layer.
- This is done by deselecting the "eye."

NOTE: Only the tracing should remain. This should resemble a line drawing.

- Select the Text Tool.
- Set font & size. Try Smaller, may be necessary depending on the detail of the trace.
- Click on an area of the trace to be numbered. Enter # for each area.

TIP: 1-5 colour regions works best. If using a colour photo, try Posterizing it before tracing as follows.

- Colours>Posterize. Try 3-10 levels.

Paint

Scan the pencil Drawing

First step is the scanner acquisition with Xsane of drawing (HB pencil on A4 paper). Scan it with Gray level at 300dpi. To get an excellent outcome, first clean the Background white.



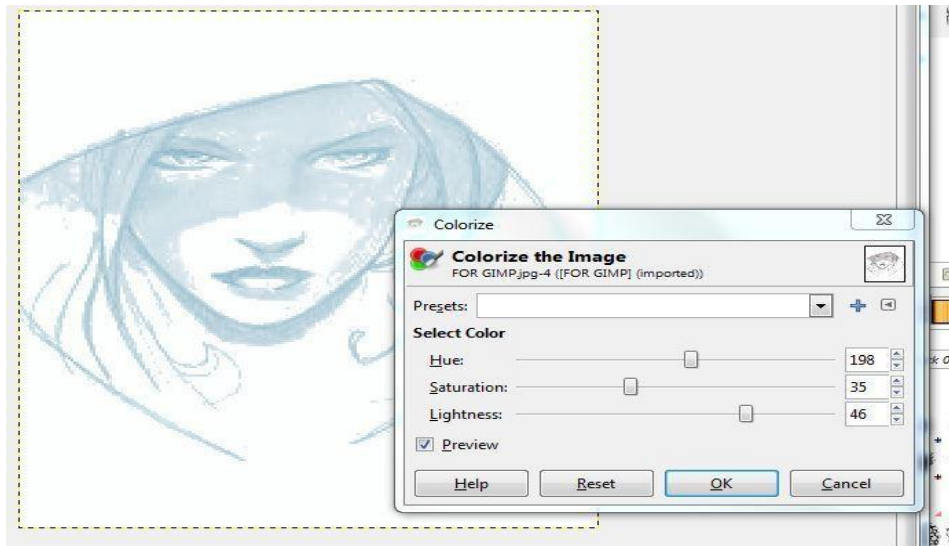
Real pencil Drawing drawn by Author

Paint Using GIMP

This project uses GIMP to make Paint by Number of a particular picture, be it low resolution GIF of some object or high resolution photograph.

Paint and Ink

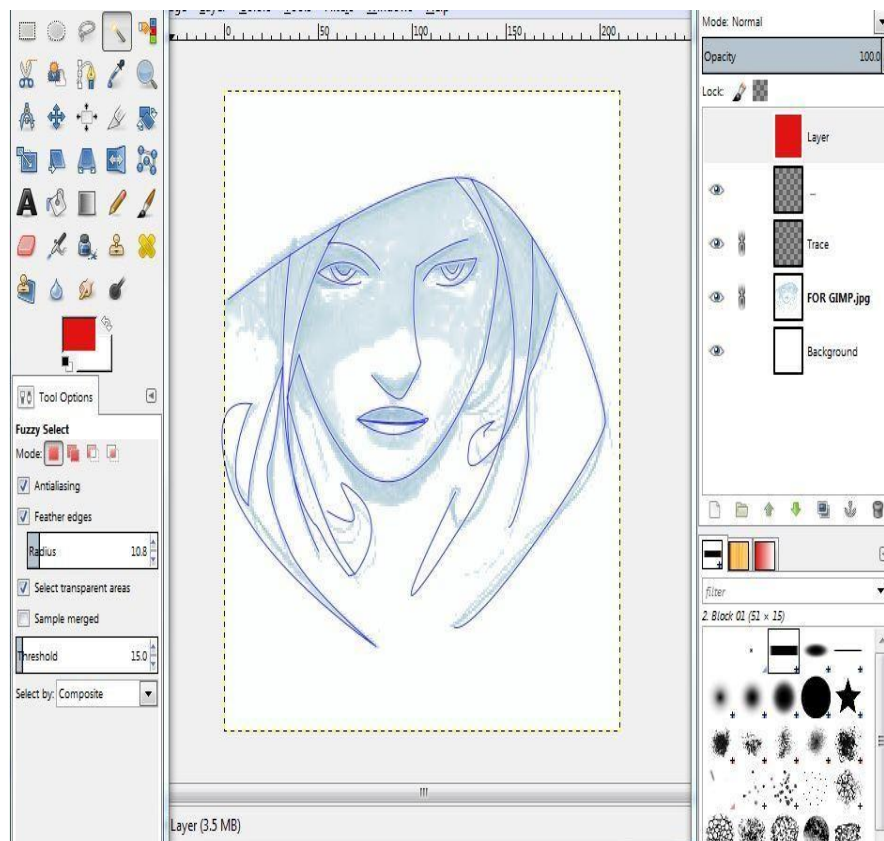
Start to change to convert the pencil artwork in a light blue range of colours; use the tool colorize (Color> Colorize).



Screenshot

The colorize tool in action

With the Pen tool of Gimp-painter, start to ink the drawing, on a different layer. The screenshot above demonstrates the setting with Pen tool.



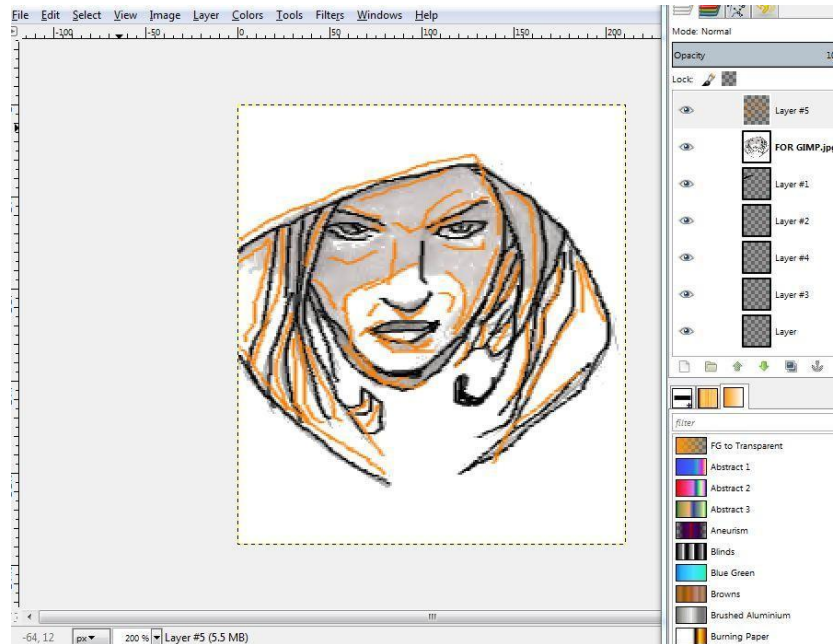
Screenshot

Starting the inking process

Toward the end, include a white layer under the line-art to complete the inking. When it's complete, save the work, and save in another file a duplicate of the last Line-art layer; it will be required later.

Multi-Fill

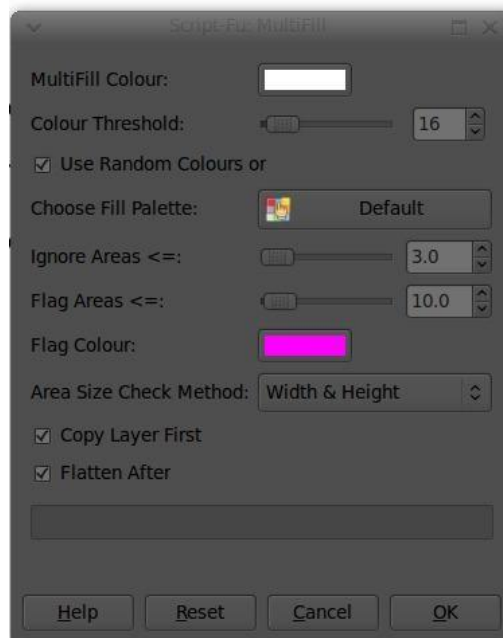
This is an important section of this instructional exercise. Include another layer under the line art, and start with a thinner pen in darker to draw the limit of each different color zone I want. I flatten the layer when it's finish.



Screenshot

Setting up the zone for the Cell-shading

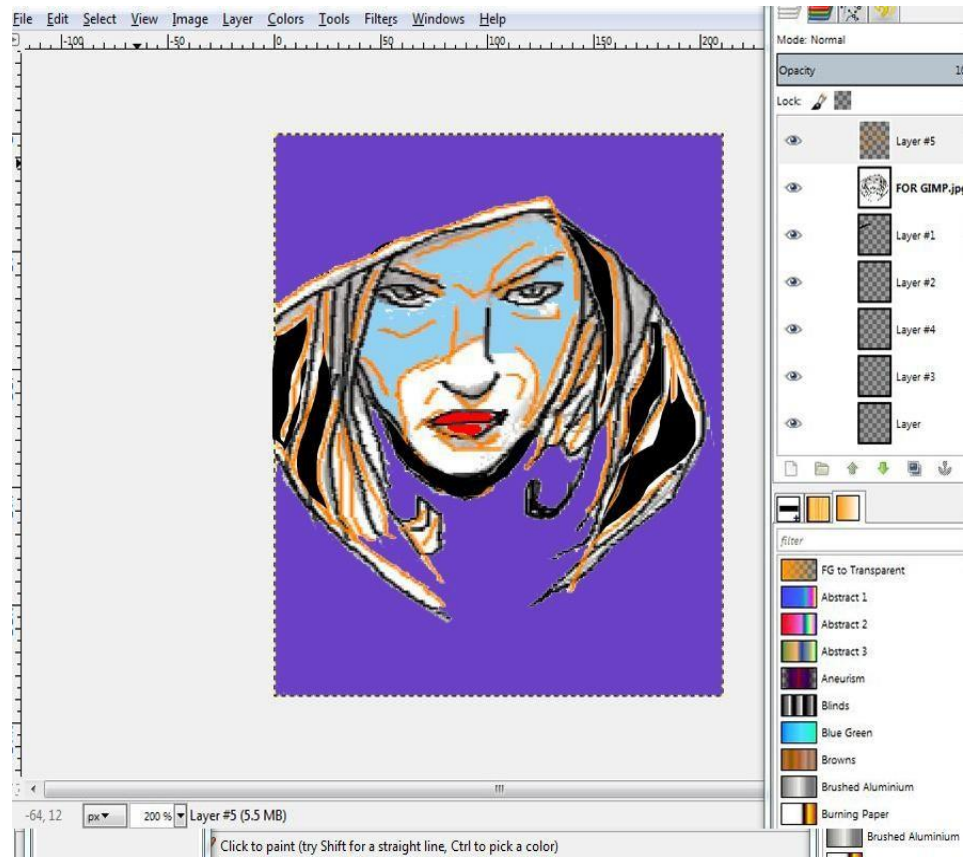
Launch the script 'Multi-Fill' with the same setting as in the screenshot above and let the script detect each closed zone, and fill with arbitrary shading.



Screenshot

The flattening-tools script in action

When it's done, delete the layer above with Line-art + red limits; and load (Load as new layer) old copy of final Line-art (the one without red lines).



Screenshot

The result of the flattening tools

As you see on the animation above; the benefit of this script is in the clean result of the colorization: each zone frontier is right in the middle of the thickness of your black lines.

Summary

This unit focuses on three central areas of 2D animation production – ‘Scanning’, ‘Tracing’ and ‘Ink &Paint’. You have learned the selection of proper software for scanning and painting. Besides, we also discussed the techniques of scanning inked drawings, editing of scanned images, tracing of image paths, painting your imagination using through GIMP.

Assessments

1. How you can resize the image in GIMP?
2. How do you select an exact colour to match?
3. Explain How to organize layers?
4. What is a lasso tool?
5. Explain the difference between Layer and group
6. Create a path in GIMP
7. Create a duplicate layer

8. Describe how to rename a layer
9. Explain pen tool's job
10. For a perfect straight line in any direction, which tool we used?
11. Explain digital ink and paint

Resources

- Traditional animation book
- GIMP: 6.2. Paths
- <http://www.quackit.com>
- GIMP: 6.2. Paths
- Maximum PC: 10 Sweet GIMP Photo Editing Tricks
- GIMP: Main Windows - The Toolbox
- <http://gimp-registry.fargonauten.de>
- <http://www.questionablecontent.net>
- <http://creativecommons.org>

Unit 2 Understanding Background

Composition

Introduction

In this unit you will know the practicalities of 2D animation background composition; explore the rationale behind various functions of layout and background composition principles with clear visual examples. This unit is designed chapter-by-chapter, to sequentially build fundamental on components of background composition with easy to follow step-by-step examples and diagrams. Beginners in the field will hopefully find the information contained here, a good starting point.

Outcomes

Upon completion of this unit you will be able to:

- Understand the basics of background composition in animation
- Plan the background
- Create a margin in GIMP
- Know how to create backgrounds in Pencil 2D
- Create and design a background with multiple layers

Terminology

Animation Layout : Exact drawing which designs the volume and situation of activity in a scene. There are normally two different kinds of layout in 2D animation such as BG Layout and the Animation Layout.

Atmospheric Sketches: Experimental color sketches describing the moods and setting for a scene

Background Layout : Accurate drawing describing everything in a scene that is to appear in the background, prior to the animation or background art being created.

Rough Outline : It is the artist's drawings used as a part of the way towards making the complete picture which is to be exchanged to cel.

Clean up: The act of standardizing the appearance of a drawing or image.

Exposure sheet: A printed diagram format which shows each frame, exact layers, actions and dialogue columns for different timing and breakdown. Also it is known as a Dope Sheet.

Flipbook: A simple process of movement made by drawing small figures at the edge of a book and watching them move as the pages are flipped.

Foreground: Finished artwork depicting all that does not move in an animation scene.

Usually seen in front of the animated action in the form of an overlay level. Opposite of Backgrounds.

Hand Tracking : The process where the animation is traced, by brush or pen, onto the Cel by an Inker.

Image Map: A term used in game animation to indicate the background image.

Master Background: The animated equivalent of a live-action master shot. Establishes the setting, lighting and scale of a sequence but may not be an actual production background.

Drawing Concept

Understanding Background Composition

Now, we are going to learn the basic background composition rules, software and techniques used for animation.

Hardware

One of the primary things needed to create a background is a Pen tablet. With Pen tablet we can draw straight into the computer using a pen. Use of Pen Tablet makes animation easier as we don't need to draw it in the traditional way. In the traditional way, we have to draw into a paper and then scan it into the computer or take pictures. But that's quite a long process and we can't preview what we've drawn, whereas in the software and computer we can draw something and straight away look through the footage and check if it works or not. So a Pen Tablet is very beneficial in creating a background.

Software

The next thing required is software such as: Flash, Blender, Illustrator, Adobe Photoshop, Gimp, Toon Boom etc. Let's use "pencil" and "Gimp", which are open source and have all the features of normal animation software. In 'pencil' you will be able to make films for free. If you find yourself liking 2D animation you can go ahead and buy some better software. But to start with, some free software is perfectly fine.

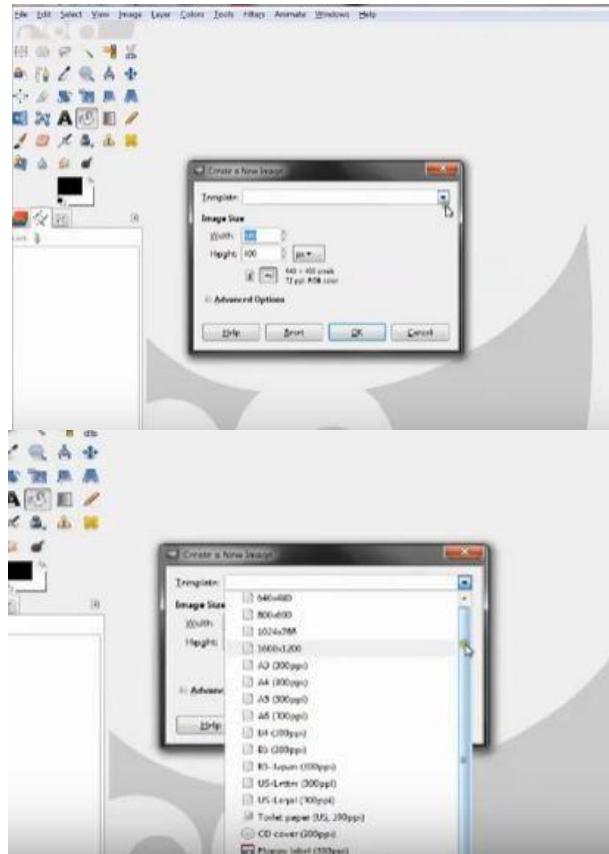
Creating the Margin



Screenshot

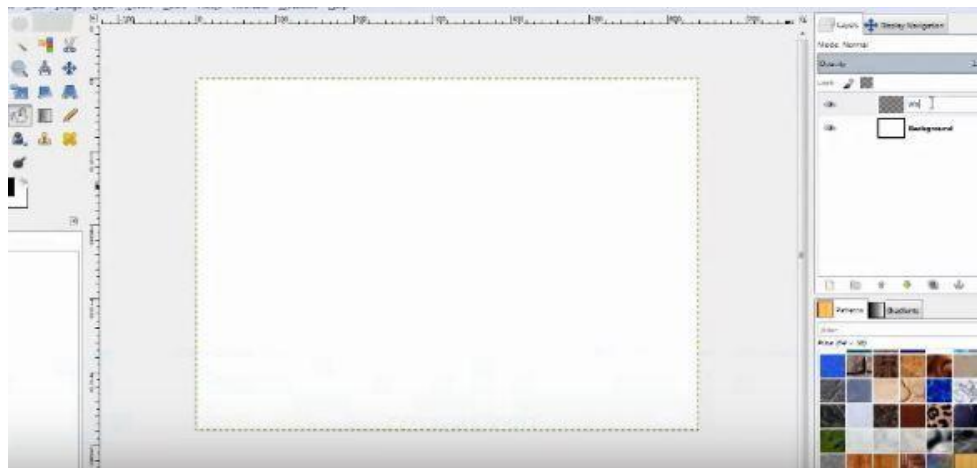
First start the GIMP or any supported software, open a new project and select the

image ratio of the canvas



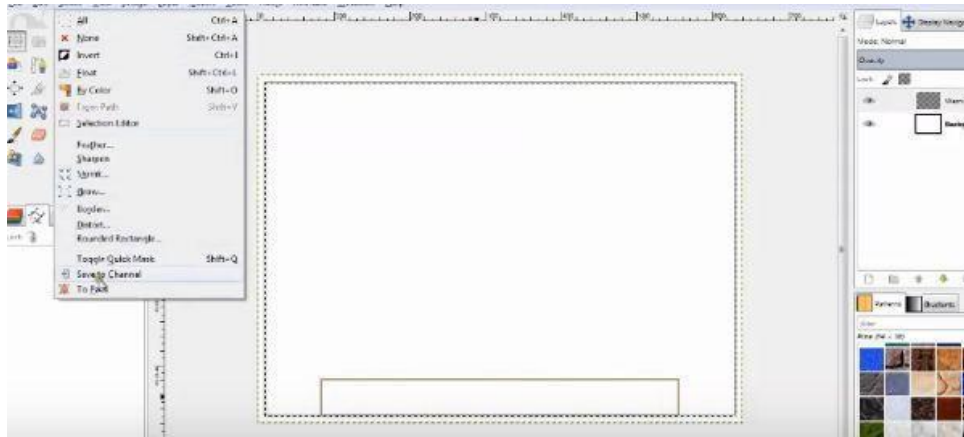
Screenshot

Then select the frame size as per requirement, and then click OK.



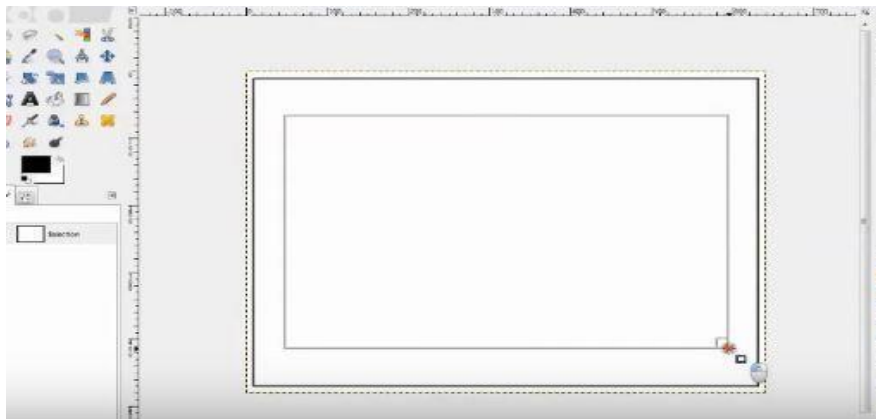
Screenshot

Start the creation of first margin, which is known as the outer margin. Now we got the new transparent layer and rename this layer as margin.

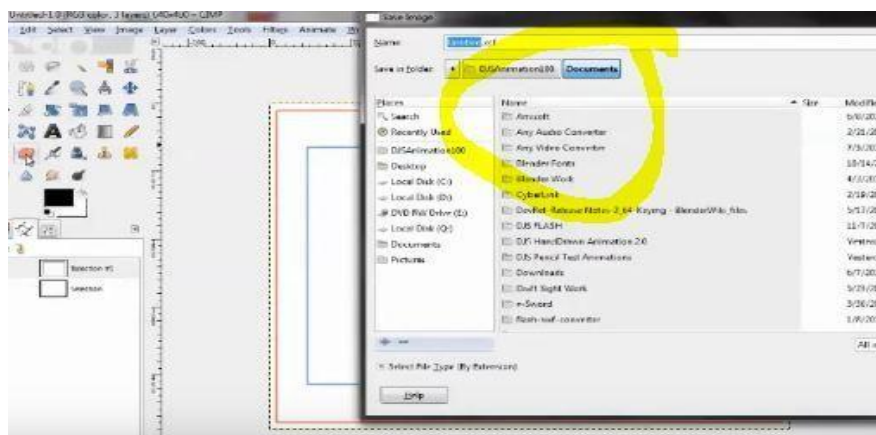


Screenshot

Then select the square selection and create the outer margin, and convert the square selection to path. After the path is selected, deselect the path and select the paint tool and choose the margin size. After resizing, go to create the margin through path tool, then repeat the above process for the inner margin.

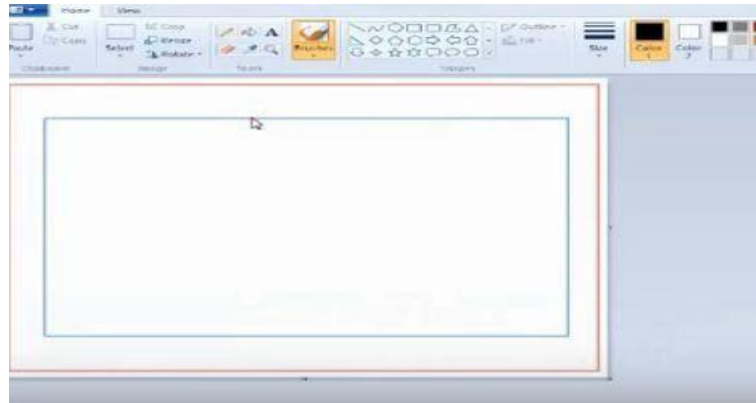


Screenshot



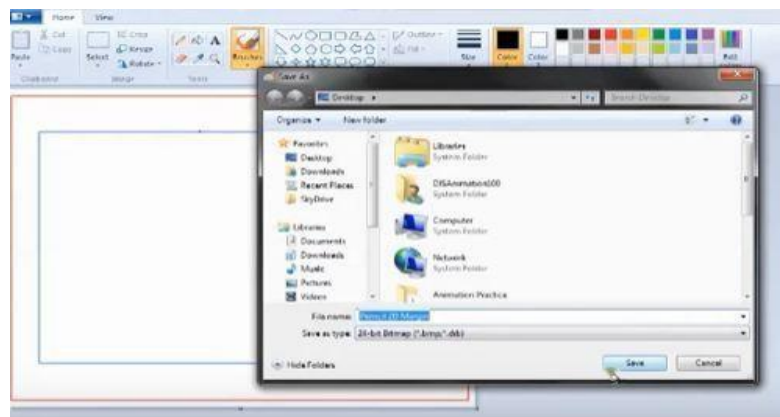
Screenshot

Save the file and export the margin as the bitmap format. Now it is completed in Gimp, but it is not supported in pencil 2D.



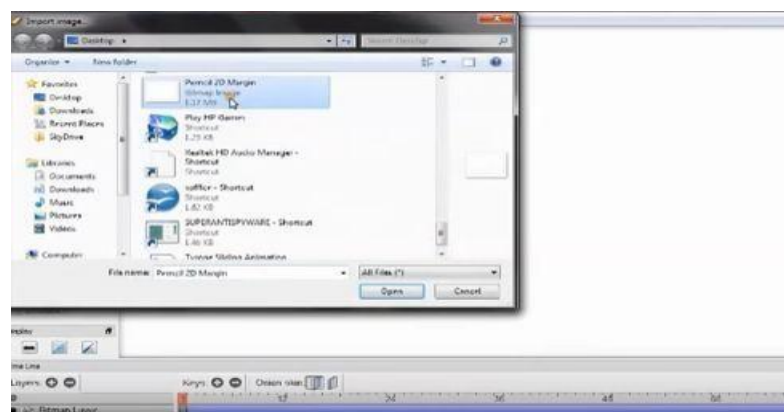
Screen shot

So now open MSPaint program and open the margin sheet or import in paint.



Screen shot

After importing, save the file in bitmap format again.

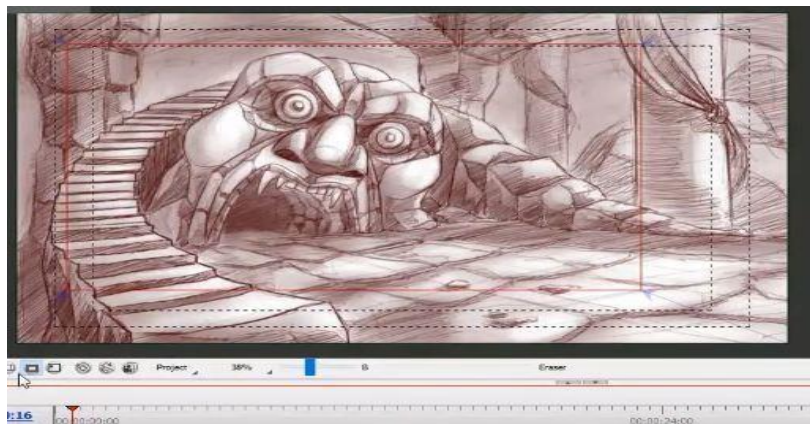


Screen shot

In this process pencil 2D supports this bitmap margin.

How to plan a background?

Now we know about the background, it tips where to position the characters in the background and how to move the camera and edit different points and how to manage other details.

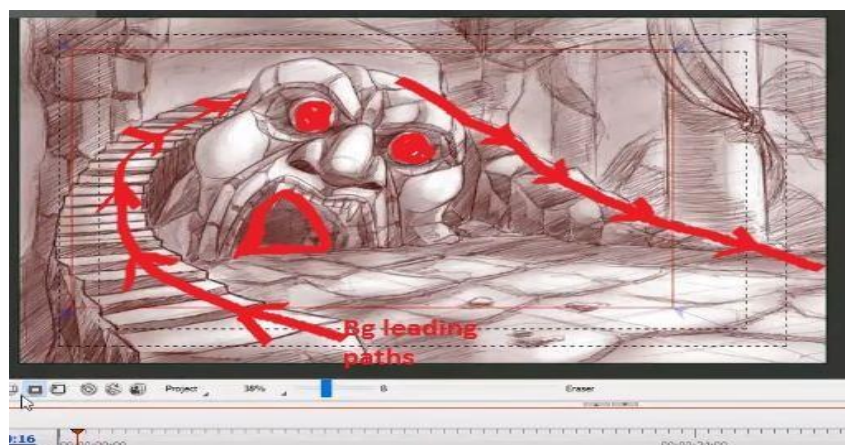


Screenshot



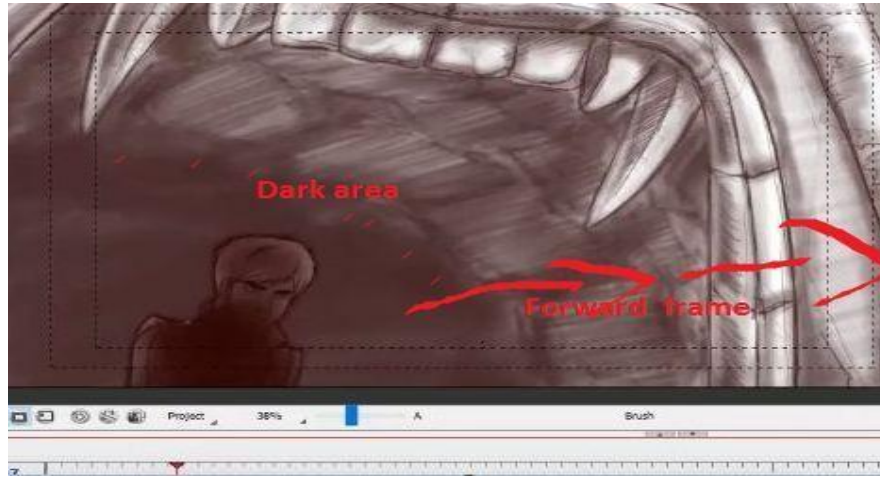
Screen shot

On the above figure, we have a simple sequence, a character that is coming towards camera from a background. Here it's an opening shot. Let's start setting the scene. First, we create a new vector layer and then draw on the drawing area. Select the fat brush tool and plan the background's eye leading area.



Screen shot

Let's use the brush tool to mark. It's a lead-in shot, zoom in the frame. After we get the character's position area, now the mouse is kept on the character and that is where we're going to have our hero. This was planned in pre-production process. Now slide up to the background where character is not animated and it is going out of the dark.



Screen shot

Now, we may think about our lighting condition and put the framer on the background. It is then planned according to what's going to happen in the scene. The character is coming forward in the scene, therefore here we need to think about all that background space characters that are going to be in dark as the character reveals on close observation. Now we have to plan the shots exactly like that, which must be adding the mood.



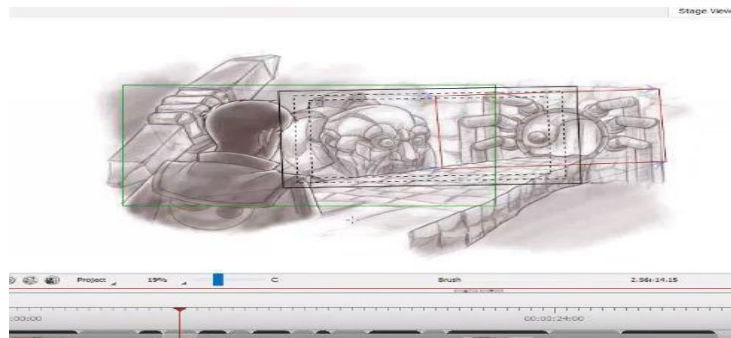
Screenshot

Note: In order to give a sense of revealing to the character into the scene where character blends with the environment, dynamic camera techniques like first camera angle is set according to character's point of view. Now the camera zooms out and the character walks into the scene.



Screenshot

When we have a look at the background we can see that it's a long drawing.



Screenshot

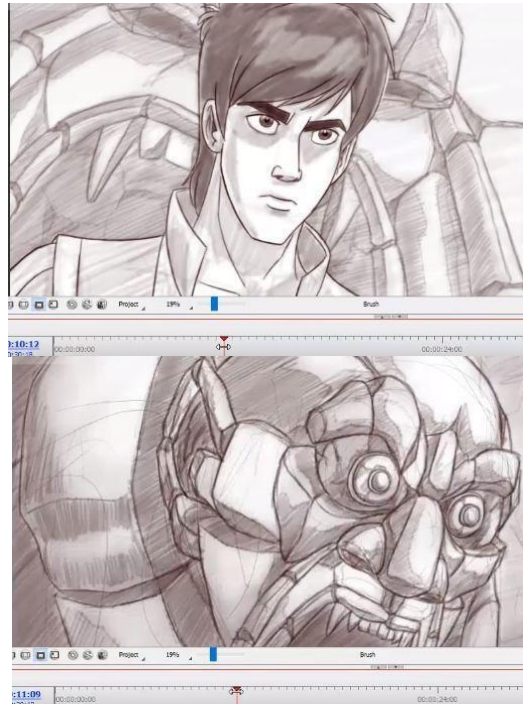
Now focus of the camera moves on the background as we predetermined. The green line is the beginning point and red line is the end point. You can see that we have created a background which is looking as if it is at a distance far away from the scene. But you don't really notice the bridge or anything else in the background because if we look at the background, although the whole background can be seen. But the focus is on the door, so when we see him walk in, we can see the scene in character's point of view.



Screenshot

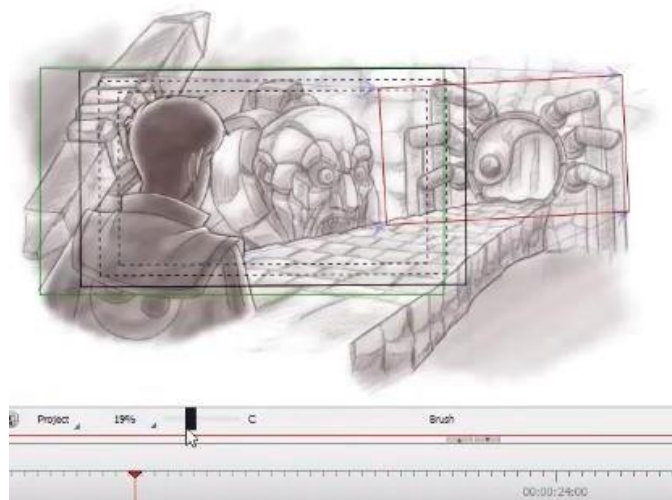
So here is a small directional style of shot where the shots have been divided. It is

displaying different angles of shot like profile, close-up, mid close etc.



Screenshot

Here in the scene, as we can see the character and the statue is taken in close shot. Then the character turns his head to change the direction of view point of the shot. By such techniques, directors give the audience a feel of suspense in order to understand the scenario before introducing the statue, through his actions, look and the geography of the background. When we turn off the geography and review the background

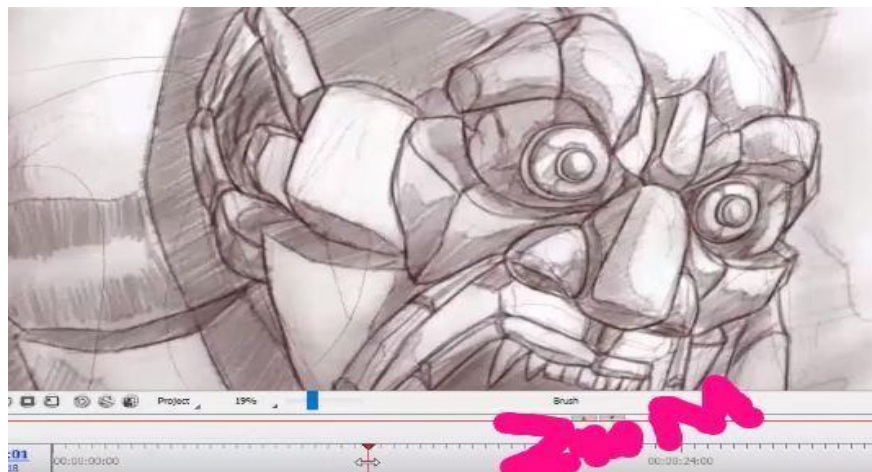


Screenshot

We could sense its absence in the background. The statue is facing towards the audience and the character is placed towards the left in the scene. Having the character in the shot, a little bit of editing is used to keep the background left of the character and the character to our left. If our face is towards the character from the background point of view his left would be to our right.



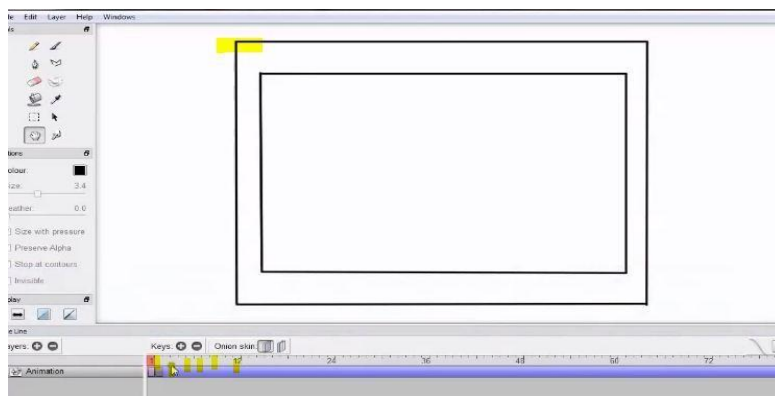
Screenshot



Screenshot

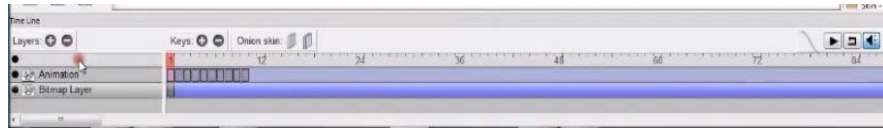
In the above figure by creating a small movement of the statue, it portrays as if it is threatening or frightening kind of disturbed feeling to the background atmosphere.

How to create and design a background with multiple layers



Screenshot

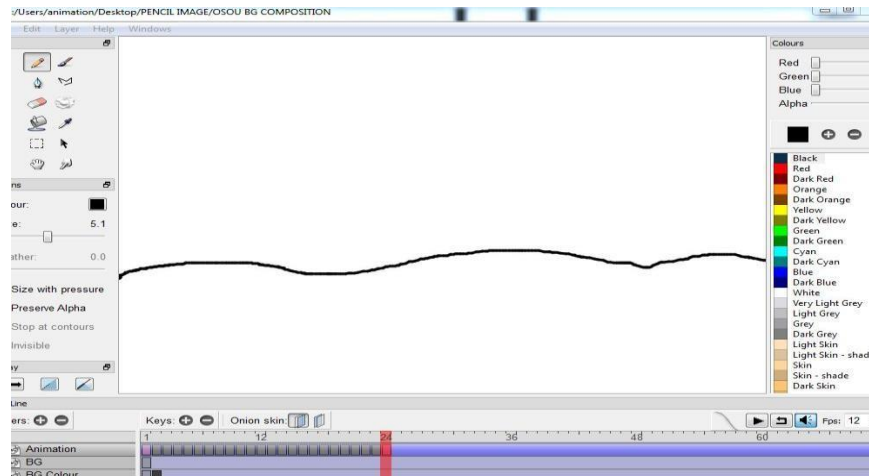
Now open the pencil program to start the background design. This is the pencil's margin template. First of all, copy (Ctrl+C) the margin and paste (Ctrl+V). Now, add some key frames on animation layers. Goto layers and add another layer and rename it as



Background Layer because now we are creating the background.

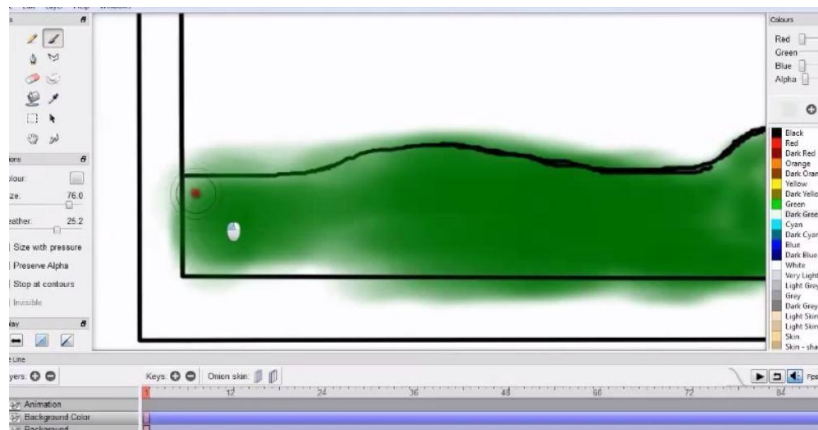
Screenshot

Now we have got the drawing area, we are now ready to draw and can paint the background. Let's start a simple background having grass. In the beginning, the work area is zoomed for ease to work. Then go to the tools, select the sketch tool and draw a simple ground grass field layer.



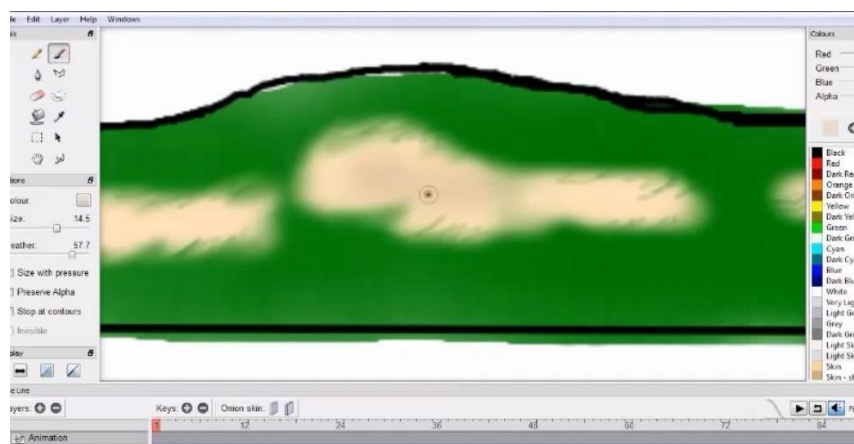
Screenshot

Then select the BG colour layer and select the coloring tool. Go to the alpha layer and check all the settings of brush and colour tools. Select the required colour for background and start colouring. If our colour exceeds a little bit from the margins inner outline, it's ok but don't cross the outer margin. Note: When we paint, we don't erase the margin outline. If we are erasing it, we will lose the frame alignment.



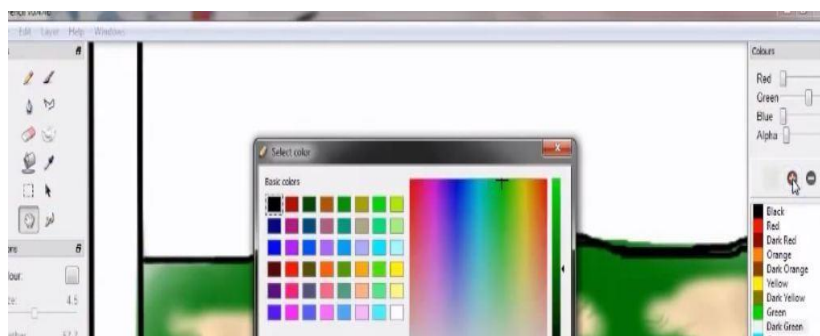
Screenshot

When we colour the background, we can use all the tools as per coloring requirement like coloring tool, zoom, sketch, fill and pick colour. Then erase the margins over colours and clean it through the erase tool.



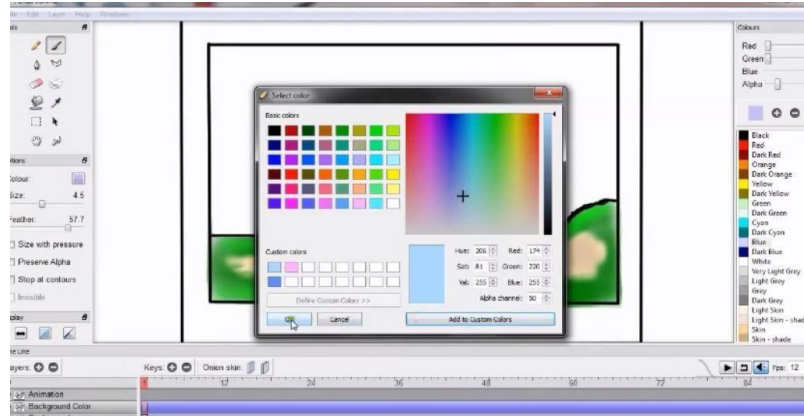
Screenshot

Now, we can do some detailing on the background through the smuggled, erase and colouring tool. In colouring period, select the proper brush size from the tools layer for detailing the background.



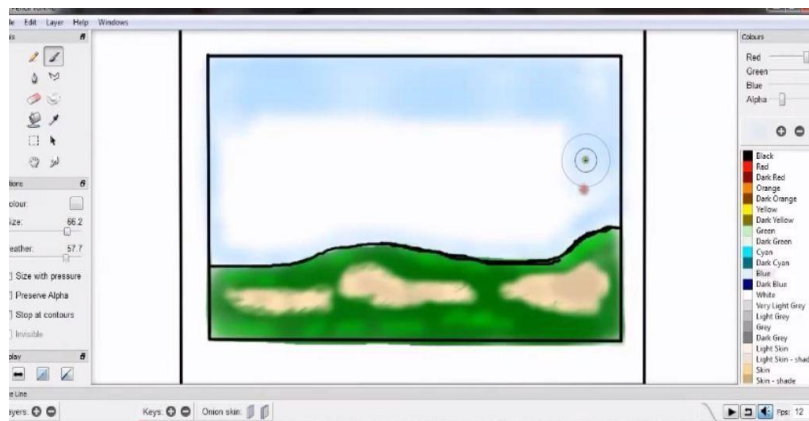
Screenshot

Now we add some light colours on the ground for detailing the grass background layer.



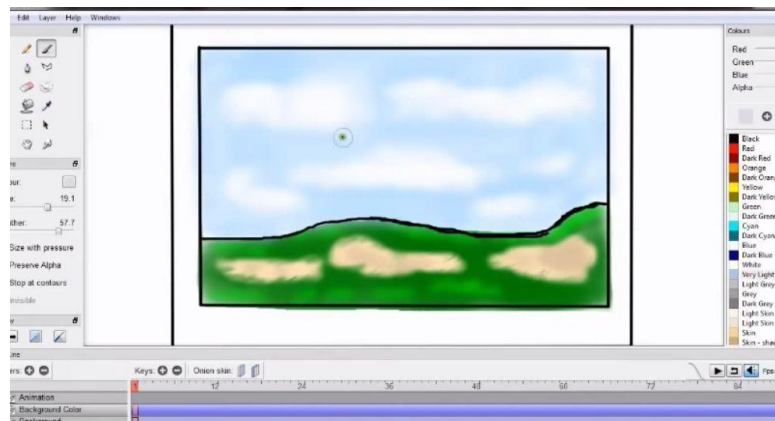
Screenshot

Then add some sky blue colours of the sky.



Screenshot

Select the white colour from colour layer and add some cloud on the sky layer through the colouring tool. Use the alpha tool, smoothly erase some sky colour, and draw the layer which would look like the cloud on the sky.



Screenshot

Now it is the final background output and you can save and export it.

Unit Summary

In this unit, you have learned about 2D animation background composition tricks. We discussed about understanding and skills about different type of background composition by exploring relevant techniques and processes as well as creating a practical background composition. We also learned about the Pencil 2D and Gimp animation software and the production process to create an animation background.

Assessment

1. Explain the process of creating margin
2. Describe creation of background
3. Elaborate the process to design a background with multiple layers
4. Explain what is layout design
5. List the types of colour use in inking and colouring

Resources

Books for Reference

- The Animator's Survival Kit: Richard Williams
- Timing for Animation: Harold Whitaker and John Halas
- The Animator's Guide to 2d Computer Animation: Hedley Griffin
- Character Animation-2d Skills for Better 3d: Steve Roberts
- How to Make Animated Films: Tony White
- Flash Cartoon Animation: Learn From the Pros
- The Art of Flash Animation: Creative Cartooning: Mark Stephen Smith

Web resources:

- <http://pencil-animation.org>
- <http://www.awn.com>

Unit 3 2D Animation Techniques

Introduction

2D animation figures are made and/or edited on the computer using 2D bitmap graphics or created and edited using 2D vector graphics. This includes automated computerized versions of traditional animation techniques such as interpolated morphing, onion skinning and interpolated rotoscoping.

2D animation has several applications, including computer animation, Flash animation and PowerPoint animation.

In this practical unit, you are going to learn how to create 2D animations. It will teach you how to get started, what equipment you're going to need and software required.

This unit will make you understand the pencil 2D animation tools and how to apply them to create a basic 2D animation.

Outcomes

Upon completion of this unit you will be able to:

- Apply the 2D Animation Techniques
- List various Techniques of 2D Animation
- Name the software's used for 2D Animation
- Apply pencil animation tool

Terminology

Bitmap image: Computer graphic consisting of “pixels” on a grid. Each “pixel” contains color information for the image.

Vector image: An alternate option for bitmap image is vector image. It depends on mathematical equations defining the lines, shapes and points that structure the image.

Key: A placeholder on the Pencil timeline contains information about what the layer should show or produce at the frame where it is located. A key characterizes vital purposes of movement in animation.

Onion skin views: A view alternative in order to show the past as well as subsequent key frame as semi-transparent.

Model Sheet: It is the drawing of a single character, in different poses created as reference for animators.

Character Models: First a model sheet of any character is made by the animator. The model sheet contains the character in a variety of facial expression & poses, which will serve as the model for each time they are drawn.

X-Sheet: It is also called an Introduction Sheet or a Dope Sheet. It is a worksheet that gives particular guidelines on how the animation should be captured. It is used to planning the timing and activity and incorporates details on field, camera and action.

Rough Sketch: It is the animator's drawings used in the process of creating the finished image to be transferred to Cel.

Layout: The black & white rendering done by a layout person that determines the basic composition of the scene.

Traditional animation: The black & white rendering done by a layout person that determines the basic composition of the scene.

Computer Animation : The animation is created digitally using computer techniques.

Hardware

One of the primary things is to create a 2D animation is a Pen tablet. With Pen tablet we can draw straight into the computer using a pen. Use of Pen Tablet makes animation easier as we don't need to draw it in the traditional way of animation. In the traditional way, drawing was initially drawn in paper and then it was scanned into the computer or pictures are taken. But that took quite a long time and was a lengthy process. Also it didn't have provision to check the preview of what has been drawn. Whereas in the software used in computer, we can draw something and straight away look through it to check if that the footage works or not. So a pen tablet is very beneficial in creating a background.

Software

The next thing required is software such as: Flash, Blender, Illustrator, Adobe Photoshop, Gimp, Toon Boom etc. Let's use "pencil" and "Gimp", which are open source and all the features of normal animation software. In 'pencil' you will be able to make films for free. If you like 2D animation you can start with free software and latter work on higher professional software.

Pencil 2D animation

Pencil is free and open-source 2D animation software available for various operating systems. One can use it free by just downloading it from internet.

Let us discuss some basics of pencil through some figures:



Screenshot

You can see above figure on red circle area, it shows the tools of pencil.

1. Sketch
2. Colouring
3. Draw
4. Polyline
5. Erase
6. Clear
7. Fill
8. Pick Colour
9. Marque Selection
10. Move Object
11. Zoom
12. Modify Curve

Colour

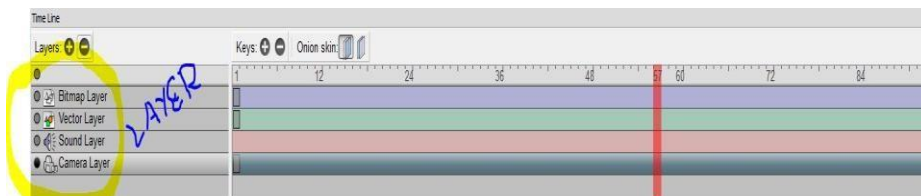


Screenshot

In the above figure, you can see there are basic colours, main colours and different variations like Blue, Gray dark and skin colours. These will go a long way as far as animation colours are concerned. Let's say you have an image or something you want to get that colour. Pick whichever colour you want and put it in colour pallet, so that you can use it on your pencil and save it anywhere.

When you save colors, it chooses any one of your color and keeps the label on it. Here you can add customized colors by using the drop in the 'pick colour tool' which is called a Dropper. After you select pick colour tool, you can see the selection tool through it where selection can be done from up or down. While using the "move tool" sometimes it stops at few selections where the colors are not visible. It is one type of color adjuster.

Layers



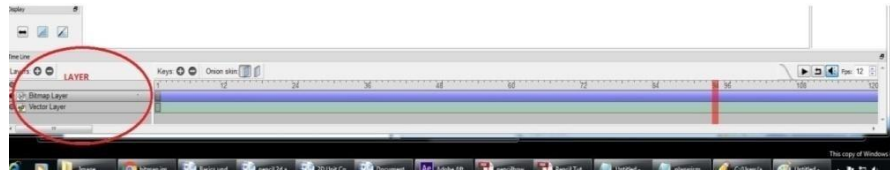
Screenshot

When working in pencil, it's possible to create several different layer types. If you look at the timeline, you notice that the layers have different symbols and colored bars at the side to indicate layered type. For example, vector layers have a violet bar and colorful symbol on the left hand side. You can change the color of these layers by going to the program menu bar and select Edit > Preferences then from the Preferences panel, choose the Colored tab and select the colour you want to change. Also add or remove layers on timeline – Layers, click + / - (+add / - remove). There are 4 types of Layers in the Time Line:

1. Bitmap Layer
2. Vector Layer

3. Sound Layer
4. Camera layer

Bitmap Layer



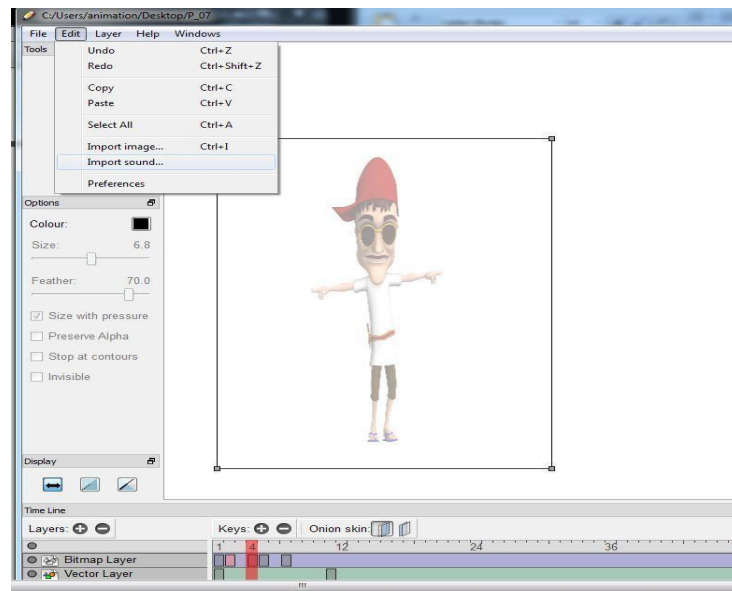
Screenshot

Bitmap Layer is used for raster graphics. On the Bitmap Layer, we can work with different type of format like BMP, DIB, GIF, JPEG etc. It is important to note that, if bitmap image is condensed, the image look like blur and pixels.

Vector Layer

Vector layer is always used for vector graphics, because when we want to increase or decrease the vector files size it work without any quality changes.

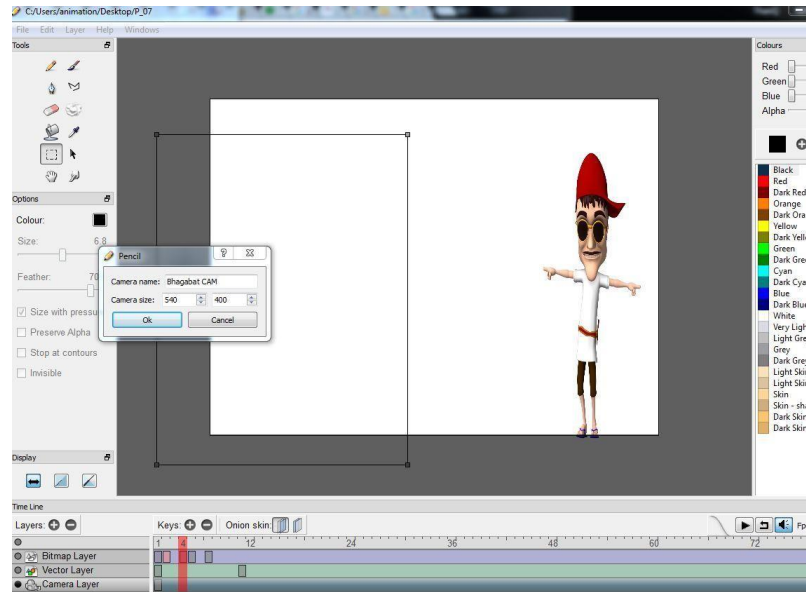
Sound Layer:



Screenshot

Adding Sound layer, first go to menu bar>Edit> Import sound file from your stock of sound files. When sound is added, a black triangle will appear on sound layer indicating where the sound will play during start. You can move this triangle as any other keys on the time line.

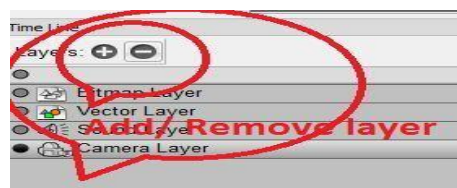
Camera Layer



Screenshot

Camera layer puts limits on the height and width of video. Double click on the camera layer then choose the size. You could do 540 x 400 or whatever size you want. Set the height and width of your camera and go to file, then export the movie of that dimensions. Camera scan move the whole movie in one key frame if that makes any sense. For instance, if a new key frame is added in camera layer, you can use the drag tool to drag it a little bit and add another key frame. Drag it a little bit more, then add another key frame and again drag it a little bit more and then you will have a moving thing.

Add and delete Layers

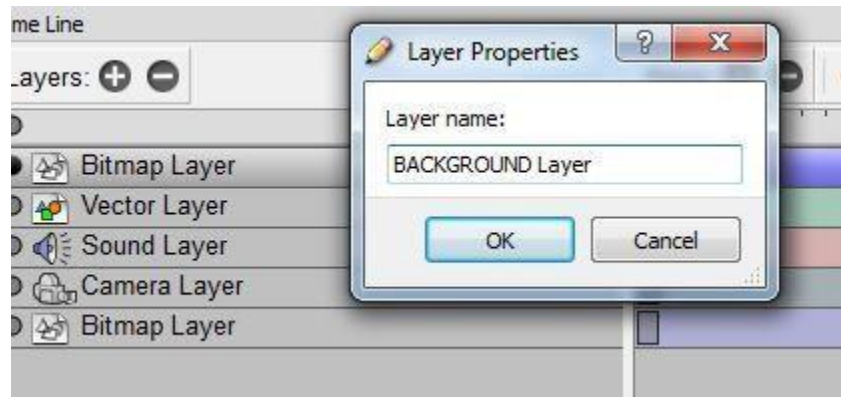


Screenshot

If you need extra layers in timeline we can add or delete from the timeline. For adding a new layer, click + (plus) button next to “Keys”, it will show four types of new layers from them select any one new layer which you require, then add it in your time line.

If you want to remove/delete any existing layer, select the particular layer from the timeline and click – (minus) buttons next to “Keys”. Then a warning dialogue box shows on screen. If you are sure to delete the selected layer, press OK. Then the layer is removed from the timeline.

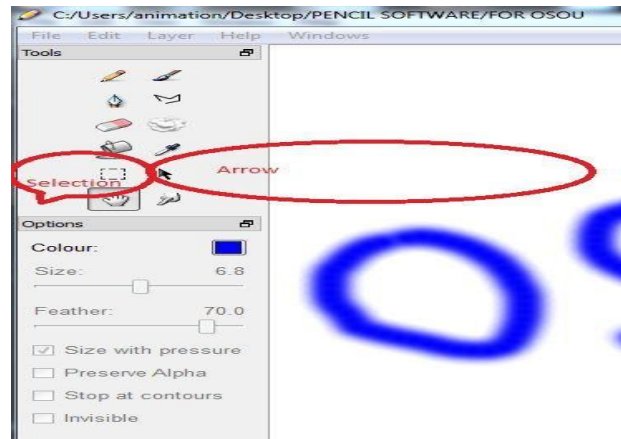
Rename Layer



Screenshot

If you want to rename the layer, doubleclick on the name of the layer in the timeline. A window will pop up, allowing you to edit the layer's name. Click OK when you have changed it to the name you want and the new name will appear in the timeline.

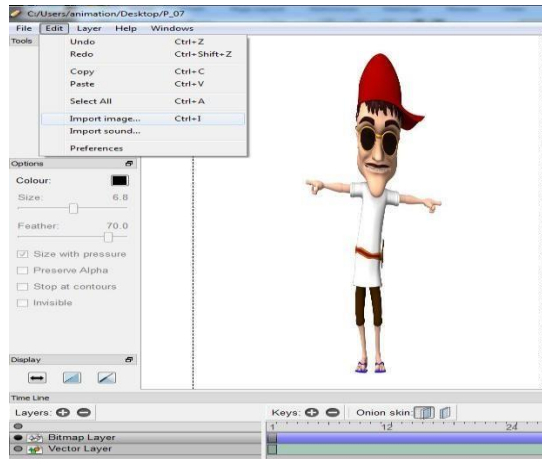
Resize Image



Screenshot

Through the Select Tool we can resize or move the image. Using the select tool, draw a rectangle in the region of the image. Use the arrow tool or move object tool for moving or resizing the image. To move an image select the image and click the mouse button on the image and drag, as per requirement. If you want to resize the photo, click on the select area corner point, press the mouse middle button and drag the select area.

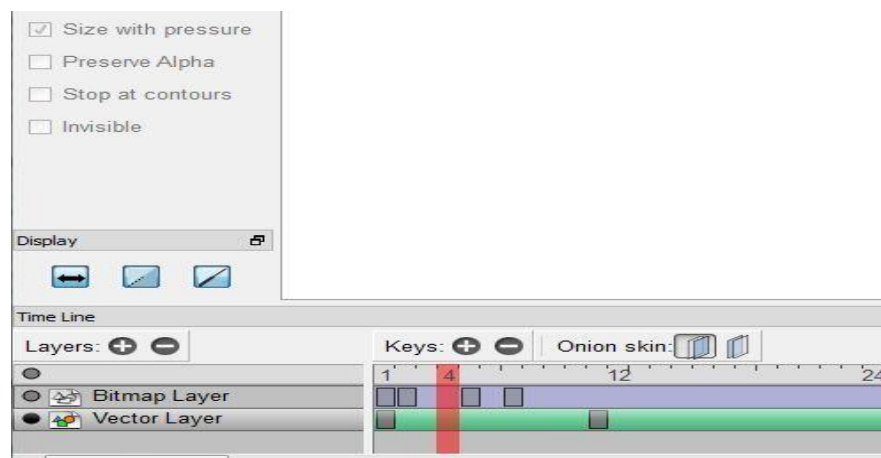
Import in Pencil



Screenshot

You can import a raster image at a particular frame in a bitmap layer by using the Import image command in the File Menu under Import. Alternatively, you can drag and drop bitmap images from an external window onto the canvas. A key is created for each imported image. This is particularly useful when you have a lot of images. By default, the center of each image is set to the center of the view. If you want to import your images at a particular location, use the select tool and drag a rectangle on the canvas. The images will be imported in the rectangle. If the images are larger than the rectangle, they will be rescaled.

Animating



Screenshot

Key Frame is displayed as a rectangle at the time line. Grey colour specifies that the key frame is empty. Coloured frame indicate that here is an image in frame. Black colour indicates that frame is selected – you can move selected frame: click on a frame and drag it to the needed place. To shift more than one frame, hold down the Shift key.

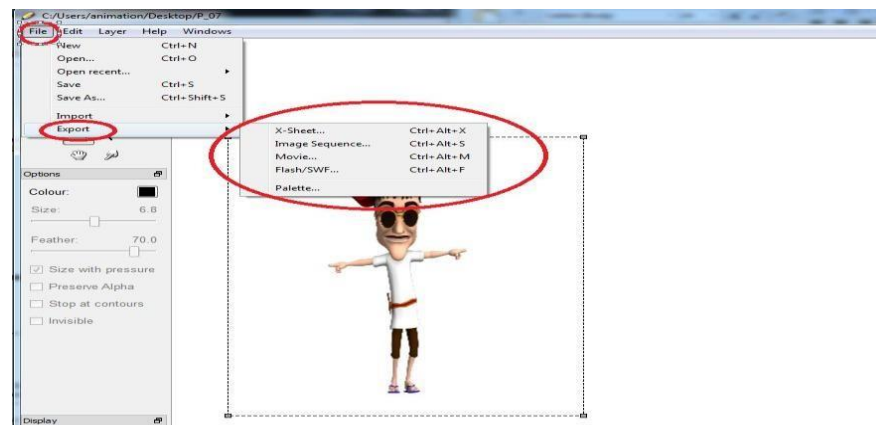


Screenshot

Onion Skin

The traditional way of planning images for each key frame is to use the previous (or next) key image to guide the drawing of the current key image (essentially flipping through images when done by the paper method) by displaying the previous (or next) key images in a semi-transparent state. This is called Onion Skinning. You can use the Onion skin buttons to activate or deactivate the previous and next onion skins.

Export



Screenshot

After the animation is made, the final output or film needs to be exported. For this go to the File Menu then select the export. As per the requirement, you can choose the formats such as X-Sheet, Image Sequence, QuickTime movie and Flash movie (swf). While exporting the final file, please remember to check the file size and the ratio. Adequate camera Layer must be created for exporting the final file

Unit Summary

In this unit, you have learned about the process and technique of 2D animation. We also discussed about various tools and features of Pencil 2D animation software.

Assessment

1. Write down the tools appeared in tools bar of Pencil 2D
2. In Pencil 2D, there are four types of Layers in the Time Line
3. Vector layer is always used for vector graphics
4. Explain the basic techniques used in 2D animations
5. Explain Animation process
6. List the selection tools of animation
7. What is free transform tool
8. Explain what time line is
9. List the different types of image format

Resources

- <http://pencil-animation.org>
- <http://google.com>
- <https://wikipedia.co>

Unit 4 2D Animation for portfolio

Introduction

A portfolio is a short video or film footage showcasing professionals or presenters previous work. For jobs in the fields like film, television, animation and games development. You will probably be asked to submit a portfolio as part of your application. Irrespective of whatever qualifications and academic degrees you have, the portfolio which is also known as Demo Reel, is an important factor in deciding whether a multimedia professional will get hired or not. It is a direct showcase for their work. Portfolios are of usually 2 to 3 minutes in length and showcase the artist's skill, talent, experience and past work.

In this practical unit, we will discuss about animation portfolio, hardware and software required for making a portfolio. We will also discuss techniques of 2D animation portfolio, various techniques involved in 2D animation and how to apply 2D animation tools to create a basic 2D animation portfolio for you.

Outcomes

Upon completion of this unit you will be able to:

- Understand Portfolio
- Know the steps and rules to make a portfolio
- Create an animated short movie
- Describe the rules for making Portfolio

Terminology

2D animation: The formation of moving images in a two- dimensional condition. Images can be manual “cel” animations or computer-aided drawings created with animation programs.

Bitmap Image: Computer graphic consisting of “pixels” on a grid. Each “pixel” contains colour information for the image.

Vector Image: An alternative to the bitmap image, vector images depend on mathematical equations defining the lines, forms and points that built an image.

Xsheet: Also known as exposure sheet or a dope sheet. It is a worksheet that gives particular instructions for how the animation should be captured. It is used to plan the timing and action and includes the details on the field, camera and action.

2D Animation Portfolio Making

Portfolio Making Rules

For animation and visual effects artists, it's the portfolio that helps in grabbing

everyone's attention. It's a vital marketing tool for the professional. One must prepare the portfolio or demo reel with utmost care, highlighting his/her skill, expertise and creative ability. Please remember your show-reel is the showcase of your work. Here are six important principles to keep in mind, while preparing your portfolio.

1. Length

Nobody has time to watch a 30-minute portfolio. It is recommended that the portfolio should be within 2 minute. Preferably, it can be shorter. In most cases, people get a good idea of what to expect within 30 seconds. Don't save the best until last. You need to grab people's attention instantly and keep it to watch it all.

2. Content

Only best works should be added to the portfolio. A 30-60 seconds portfolio with wonderful animation is better than a 3- minute portfolio with poor animations. If you are not satisfied with something, do not put it. Always use the original shots you have done, never recreate the same. If you don't have a good reason to, don't repeat content.

3. Order

Since the portfolio should showcase the best of you, strongest and engaging work should appear first. It takes people a few seconds to decide if they want to keep watching your reel. There is no need of waiting and building the suspense.

4. Audio/ Fx

It is a very important part of Portfolio as many emotion and engagement comes through the music and editing choices made. Include the original audio for dialogue pieces. A simple music is the best BGM. The music should not be distracting and should act as a connector between the shots.

5. Presentation

Every piece should be given the time it deserves. You should not edit the music or get too creative. In an animation reel you want to present each shot separately (sometimes with a title card before each shot) to let the viewer understand what they are watching without confusing them.

6. Numbering

Write the proper information for each shot in the portfolio.

Incomplete works should not be added in the portfolio. Include a head and tail slate with your name, phone number and email address on the reel. It should be like a complete package of your work and personal information. Never include examples of work that is not relevant to for the client or animation.

A portfolio needs to tell a story. Showcase your personal strength and passion through

the portfolio. Be clear on your style and what you do best. Also be honest about your work. When a piece of work doesn't match your experience or expertise, it might create doubts on your abilities.

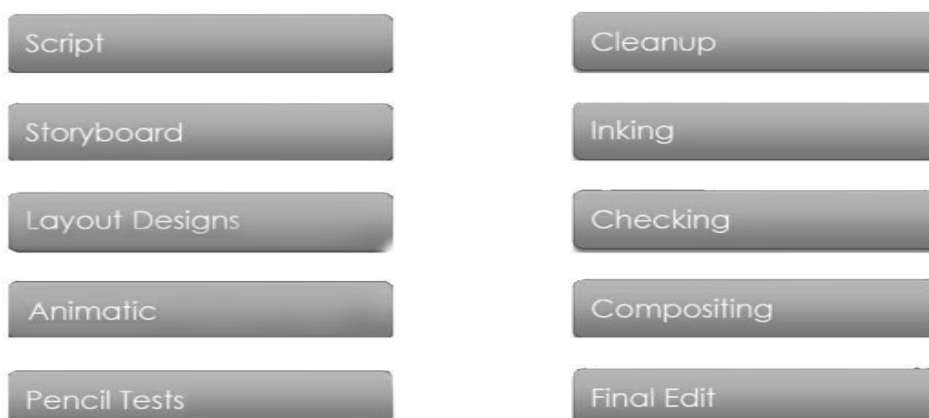
The person who reviews the portfolios has to view number of reels, one after another, so it is important to build an impact at the first impression. Think about the work with which you are confident, then include the same in the portfolio. Review again and again before finalising.

How to make Animated Short Film

Making animated movie from scratch involves many stages. The process of production for a typical animated short film can be divided into three stages: Pre-production, Production and Post- Production.

In this section, we will discuss about step by step methods of animation short film making. Now we need the animation software to start. Lets select GIMP for imaging, Openshot for editing the video and pencil 2D for animation.

2D PRODUCTION PIPELINE



2D Animation Pipeline (Created by Author)

Step 1: Select script

One of the most important stages of any film production is Script. One can choose the best story or can write the story; for example an animation of simple bird as given here. Then it is important to make an outline of what you want to show. In animated films, visual scripting of the action and performance is important.

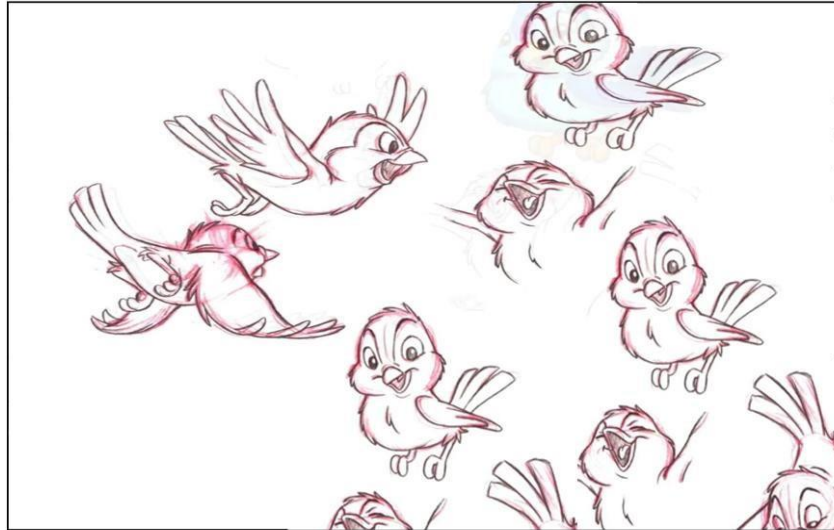
If you write a script, it's better to make a perfect plan. But, if the story is not complete, then start the rough drawing and in the production process give the best direction to the film.

Step 2: Create the Character

First develop the characters sketch in a perspective view. This rule implies that the

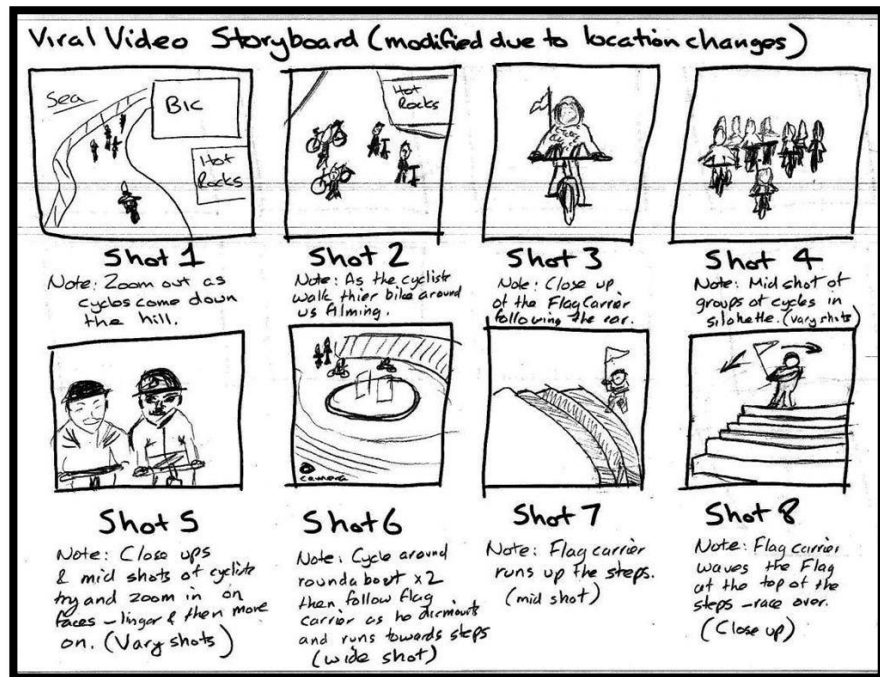
characters aren't directly facing the viewer; they're angled 3/4ths to the left or right, like the example below.

This view suggests that our characters aren't clearly standing up to the viewers; they're figured 3/4ths to the other side or perfect.



Screenshot

Step 3: Creating Storyboard



Title-Storyboard Attribution-Angela rees Source-

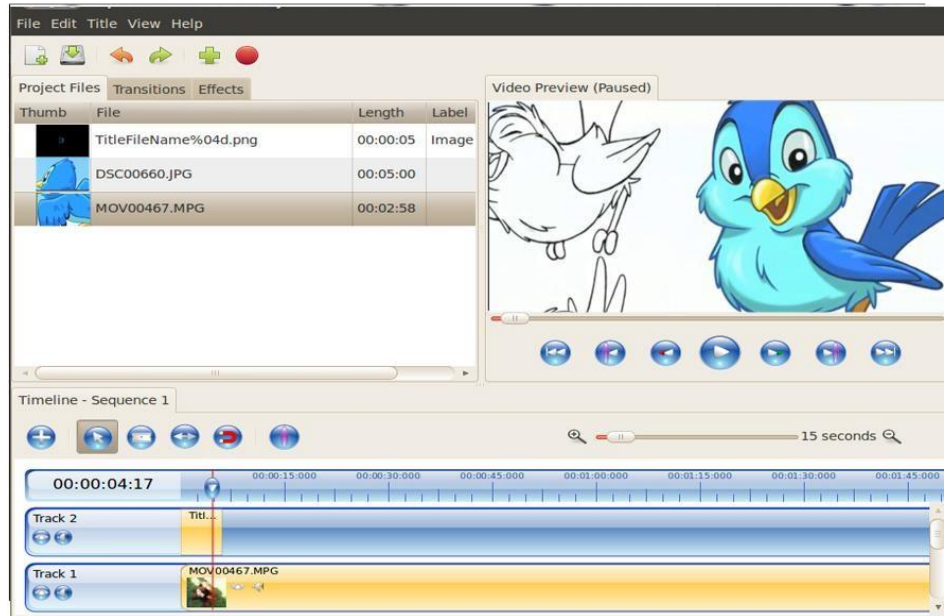
Link-<https://mooc.employid.eu/storyboarding-tutorial/>

The Storyboard is a manual hardcopy version of the animation film and plan for the actions and dialogues for animation. It contains the shot locations, camera angle, sounds and all details of cinematic requirements. A storyboard does not need to be super realistic with good drawings. But all the key poses should be drawn. It will make the work easier.

After completing and properly naming all the sheets, it should be scanned to have them in digital formats. After the scanning you can move them for editing.

Step 4: Creating Animatics

Animation -- Bird -- Animatics



Screenshot

Simply put, animatic is an animated storyboard or rough cuts of animation. Making animatics is fun. In this process, all scanned image files are imported into the editing program. At this stage, we match the sound and scanned frames as per requirements and decide the length of animation. It acts as a reference for animators; here, we can see how our movie will look like and the story is built-up.

Step 5: Creating Background Layout



Screenshot

A background layout is the pencil hand drawing for a scene. It is not the final background, just for reference of the scene. Here we start drawing in the right place and size as per our BG field guide.

Since we know what our backgrounds look like as of now, we will draw as it is required to be in the shot. For instance, we don't have to draw a whole mountain when we might be utilizing section of trees.

If we are re-utilizing the BG later in a different field size, we need to draw a large size background so that we can use it for both without losing any pixels.

Step 6: Creating Exposure Sheets

ACTION	DIAL	EXTRA	CEL LEVELS	BACKGROUND	CAMERA INSTRUCTIONS
HAND REACTS FOR CLOSE				72	U/A
				71	
				70	
				69	
				68	
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				3	
				2	
				1	

Screenshot

Exposure sheet is a very important thing in animation. A simple exposure sheet contains a table with some lines and column segments like Action, Dial, Cel Levels, Background, Camera, Scene, Sequence and Sheet Number. Each line signifies one frame of animation. A normal exposure sheet holds upto 4 seconds of activity (i.e. 4 seconds x 24 frames = 96 rows). A well-prepared exposure sheet will help in maintaining the perfect timing.

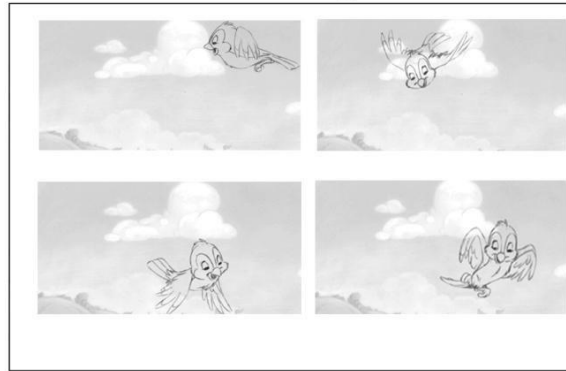
Step 7: Creating Rough Animation

The initial step in traditional animation is the rough animation, which is its skeleton. We should always start the animation from the main action. For instance, to animate a walk cycle, we should begin with the body movement and the legs. Head, hand and clothes can be added later during the secondary animation. All the key poses on the storyboard should be made.

For a perfect animation, always complete the main action before adding every other detail. If we start animating all the details right away, we may lose a lot of time. If you have

to make corrections, it will be difficult.

Animation -- Bird -- Rough Animation



Screenshot

Step 8: Clean-up

Animation -- Bird -- Cleanup



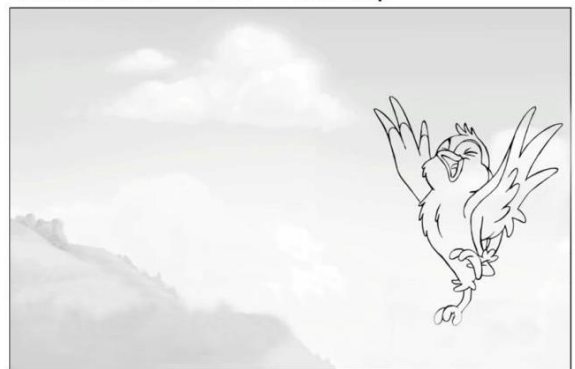
Animation -- Bird -- Cleanup



Animation -- Bird -- Cleanup



Animation -- Bird -- Cleanup



Screenshot

Once we finish the animation and are satisfied with the work, we can start the cleaning up of the images/drawings. We have to choose what kind of line we would use.

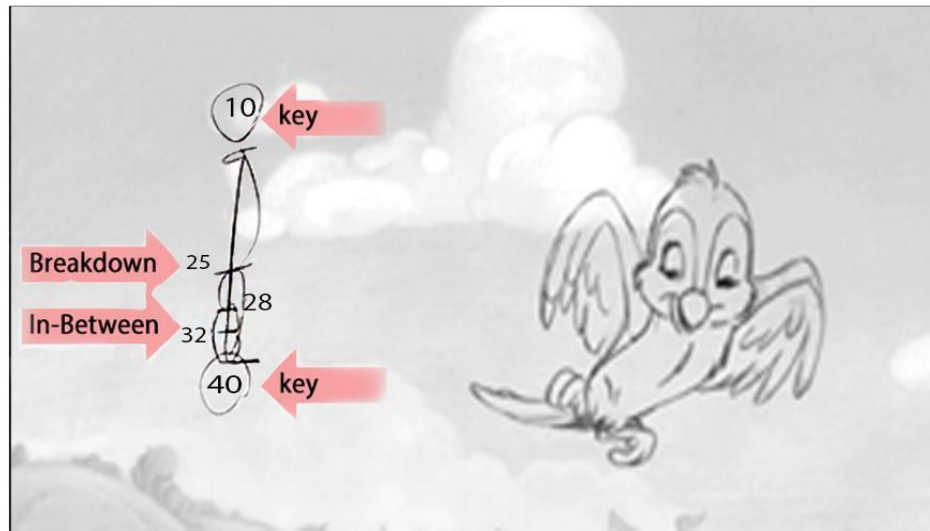
There are various types of line art we can select. Normal lines are all of the same thickness while rough lines are not closed and make your animations look like they are dancing. Cartoony lines are thick around the border with thin lines on the inside. Cleaning up the rough animation is a repetitive work, but when we do it properly it will make the inbetweening and colouring easier.

Step 9: Making In-between

For smooth animation, in-betweens are important. Keys lead the animation but the in-betweens smooth out the movements. This process is called inbetweening. A huge amount of in-betweens are not always required. When we animate an action shot, we can make with a few keys and two or three in-betweens. For fine animation, more in-betweens give us a smoother result.

So now let's check the example below.

Animation -- Bird -- In Between

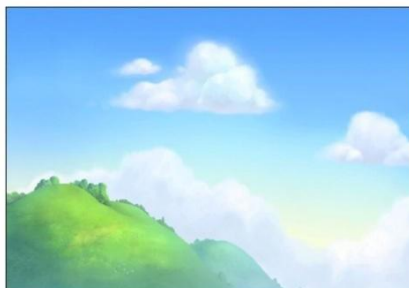


Screenshot

First we have put frame number 10 and frame 25 on a light box. Then label it with frame 25 to add in betweens this. Always it should be started from frame breakdown. Here 25 number frames are at the centre in between 10 number frames and 40 number frames. Now start drawing right in between the two lines of those drawings and that is how we create the breakdown. When it's complete, we can go to frame number 25 and 40 and create the in-between number 28. After we are done with that one, we take frame number 28 and 40 to create the last one in the scene number 32.

Step 10: Backgroundsync and Paint

Animation -- Bird -- BG Paint



Screenshot

Background painting should be included behind our characters using inking. We can ink it the traditional way with the crayons or paint or we can scan the drawing and paint it

through the paint program like GIMP. Our backgrounds are a mix of crayons, water paints and GIMP.

It's important to mark all layers and keep them isolated because the animation will be placed in the middle of the layers to create depth.

Step 11: Characters Ink and Paint

Animation -- Bird -- Colour, Ink & Paint



Animation -- Bird -- Colour, Ink & Paint



Animation -- Bird -- Colour, Ink & Paint



Animation -- Bird -- Colour, Ink & Paint



Screenshot

When all our animation has been cleaned up, it is ready for colouring. When we begin this ink and paint, all our movement has been tidied up and prepared for paint.

We can use specialised software to ink all the characters.

Here, the hard work of clean-up that we did before truly pays off. With great line work and closed lines, colouring will be an easy walk.

Step 12: Compositing

When all the artworks and characters are painted, we can use any compositing software to composite it. Compositing is the process of combining all the elements into a scene.

Now we set up the entire film together and make it flow into one.

Ideas for exercises

Here are some suggestions for animation exercises.

- Two leg character walk and run cycle
- Tiger walk and run cycle
- Man juggle
- Throwing balls
- Man hits a door with a briefcase
- Baby chews food
- Sword tussle
- Kung Fu styles
- Man cycling
- man with diving board
- character's happy and sad expression
- Loudly smiling a man
- dialogue
- Underwater swimming
- Walk and run transitions
- Birds feathering

Unit summary

In this unit, you learned what portfolio is and how to prepare a 2D animation portfolio. We also discussed about the various steps in making animated short films. You need to prepare a good and impressive portfolio of you skill and work to draw the attention of your prospective employers or clients to start you professional

career in multimedia.

Assignment

1. What thing should you keep in mind while creating a portfolio
2. Explain the clean-up model sheet
3. How to create a portfolio
4. List the various steps in creating a 2D animation portfolio
5. What are animatics
6. Explain uses of portfolio
7. What is an exposure sheet
8. What is the requirement of portfolio
9. List the different types of rows and columns as in the exposure sheet
10. Evaluate the 2D animation portfolio

Resources

- <https://google.com>
- <http://wikipedia.com>

युनिवर्सिटी गीत

स्वाध्यायः परमं तपः

स्वाध्यायः परमं तपः

स्वाध्यायः परमं तपः

शिक्षण, संस्कृति, सद्भाव, दिव्यबोधनुं धाम
डॉ. बाबासाहेब आंबेडकर ओपन युनिवर्सिटी नाम;
सौने सौनी पांज मणे, ने सौने सौनुं आत्म,
दशे दिशामां स्मित वहे छो दशे दिशे शुभ-लात्म.

अत्मज्ञ रही अज्ञानना शाने, अंधकारने पीवो ?
कहे बुद्ध आंबेडकर कहे, तुं था तारो दीवो;
शारदीय अजवाणा पछोंच्यां गुर्जर गामे गाम
ध्रुव तारकनी जेम जणहणे अकलव्यनी शान.

सरस्वतीना मयूर तमारे इणिये आवी गहेके
अंधकारने हडसेलीने उजसना इल महेके;
बंधन नही को स्थान समयना जवुं न घरथी दूर
घर आवी मा हरे शारदा दैन्य तिमिरना पूर.

संस्कारोनी सुगंध महेके, मन मंदिरने धामे
सुषुप्ती टपाल पछोंये सौने पोताने सरनामे;
समाज केरे दरिये हांकी शिक्षण केरुं वहाण,
आवो करीये आपण सौ
भव्य राष्ट्र निर्माण...
दिव्य राष्ट्र निर्माण...
भव्य राष्ट्र निर्माण

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