

WORKBOOK

# **Animation, Moving image & Interactivity**

## New Zealand Certificate in Digital and Media Design (Level 4)

### Animation, Moving Image, and Interactivity

SMS Code	MD410301	Teacher-directed learning hours	96
Level	4	Authentic work experience learning hours	54
Credits	15	Student-managed learning hours	
Prerequisites	n/a	Total Learning Hours	150
NQF Unit standards assessed in this course:			
This course approved in another Programme Yes / No			
Name of other Programme:			

#### Aim

To enable students to demonstrate the basic principles of animation, moving image and interactivity.

#### Learning Outcomes

At the successful completion of this course, students will be able to:

1. Identify, explain and apply principles of interactive design.
2. Access and use suitable materials to produce outcomes.
3. Use material and processes with an understanding of cultural, social, health and safety expectations and/or norms.
4. Converge various media to create moving images.

#### Indicative Content

- Moving images
- Digital and manual techniques for animation
- Appropriate software
- Projection mapping
- Video editing

#### Assessment

Assessment Activity	Weighting	Learning Outcomes	Assessment Grading Scheme (ie pass/fail; marks out of; percentage;marks out of/percentage; CRA)	Completion Requirements (ie must pass, must pass with minimum %, etc)
Project	100	1,2,3,4	percentage	Must pass with minimum of 50%



## Introduction

During this course, you will learn to create animation and moving images in a variety of ways including traditional hand drawn animation, stop motion animation as well as digital motion graphics. We will also explore interactive projection mapping software as a way of presenting animation and moving image in an installation context. This animation installation will become part of the final exhibition for the Certificate in Digital and Media Design.

## Project brief

During a series of workshops, you will learn to create animations and moving images using different techniques. You will then learn how to deploy these animations using creative projection in a 3D space. We will consider how to integrate the 2D animation with the 3D surfaces of the space in a creative way.

You will then work individually to produce a series of four short animations that can be projected using projection mapping software. You should use different techniques learnt in class to create these animations.

Your animations will:

- Be between 10 and 20 seconds long each

You will also consider:

- Creating animations that can loop indefinitely
- Creating animations that follow a theme
- Creating animations that respond to projecting into a 3D space

## Assessment Summary

**All work to be submitted on Friday 22<sup>nd</sup> November by 4pm**

**4 animations uploaded to moodle**

**Workbook submitted in H302**

### Workbook 10%

- Class notes (LO 1)
- Animation concepts and storyboards (LO 1)
- Research into animation design (LO 1, 3)
- Project documentation (LO 1, 3)

### Four Animations 90%

- Follows design brief (LO 1, 2, 3)
- Shows experimentation with different media and animation styles (LO 2, 4)
- Shows an understanding of site specific animation (LO 1, 2, 4)

# Animation, Moving Image & Interactivity

2 0 1 9



4  
*Elements*



SCAN ME

## 4 Elements

THEME : The 4 elements  
TYPE OF ANIMATION : 2D animation

DURATION : 00'12"  
RESOLUTION : 1920x1080

Link: <https://youtu.be/4y9-22sckIU>



T H E  
S U I T C A S E  




SCAN ME

## The Suitcase

THEME : Travel  
TYPE OF ANIMATION : Stop Motion

DURATION : 00'55"  
RESOLUTION : 1920x1080

Link: <https://youtu.be/lzT1jWb-nWY>



DISCOVER

NEW  
*Caledonia*



SCAN ME

## New Caledonia

THEME : Travel  
TYPE OF ANIMATION : Motion Graphics

DURATION : 02'21"  
RESOLUTION : 1920x1080

Link: <https://youtu.be/lxhBsJHp2TQ>

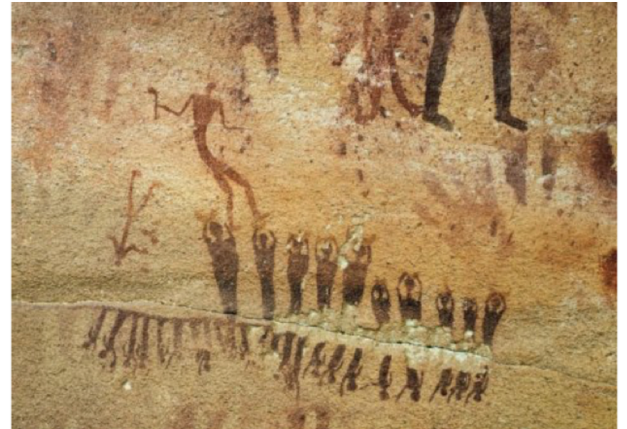
The History of animation	5
Why use storyboards	8
Exercises	12
After Effect	13
Text moving	14
The 4 Elements project	15
The Suitcase project	17
New Caledonia project	19



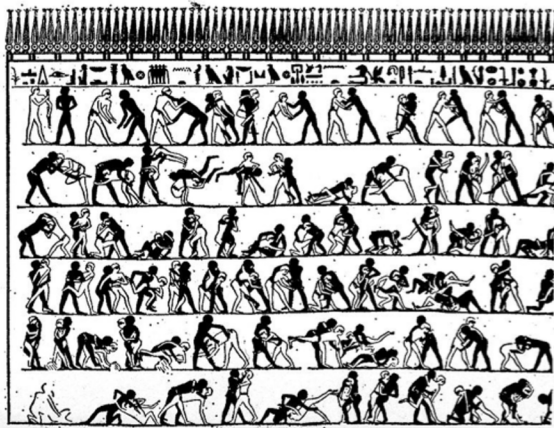
# The History of Animation



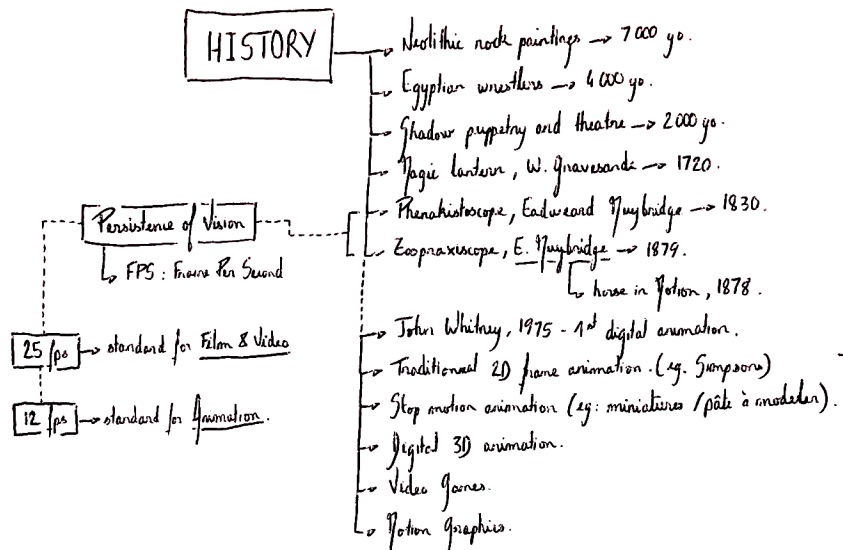
Neolithic rock paintings in the Cave of Beasts. More than 7000 years old



Neolithic rock paintings in the Cave of Beasts. More than 7000 years old



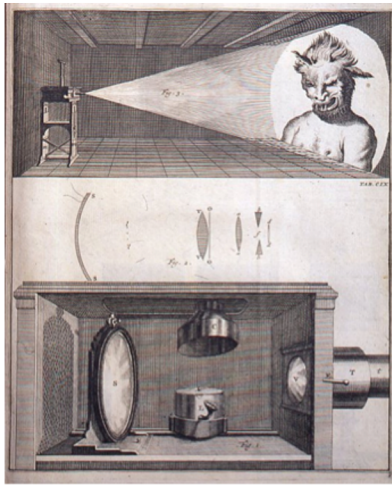
Egyptian burial chamber mural depicting wrestlers. Approximately 4000 years old. Similar to frames of animation



CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=1067986>

Shadow puppetry and theatre likely developed more than 2000 years ago

# The History of Animation



A page of William Gravesande's 1720 book *Physices Elementa Mathematica* with Jan van Musschenbroek's magic lantern projecting a monster.



Phenakistoscope, 1833, Eadweard Muybridge  
Invented in the 1830s



Eadweard Muybridge, Horse in Motion, 1878

Zoopraxiscope, 1879, Eadweard Muybridge

## Early Animations on Film



Humorous Phases of Funny Faces 1906

[https://commons.wikimedia.org/wiki/File:Humorous\\_Phases\\_of\\_Funny\\_Faces.ogv](https://commons.wikimedia.org/wiki/File:Humorous_Phases_of_Funny_Faces.ogv)



Katsudo Shashin 1907

[https://commons.wikimedia.org/wiki/File:Katsudo\\_Shashin\\_1907.webm](https://commons.wikimedia.org/wiki/File:Katsudo_Shashin_1907.webm)



Fantasmagorie 1908

[https://commons.wikimedia.org/wiki/File:Fantasmagorie\\_1908\\_YouTube.theora.ogv](https://commons.wikimedia.org/wiki/File:Fantasmagorie_1908_YouTube.theora.ogv)

By Émile Cohl -  
<http://www.animatingapothecary.com/leafantag.gif>  
- Public Domain,  
[https://commons.wikimedia.org/wiki/File:573351\\_2](https://commons.wikimedia.org/wiki/File:573351_2)



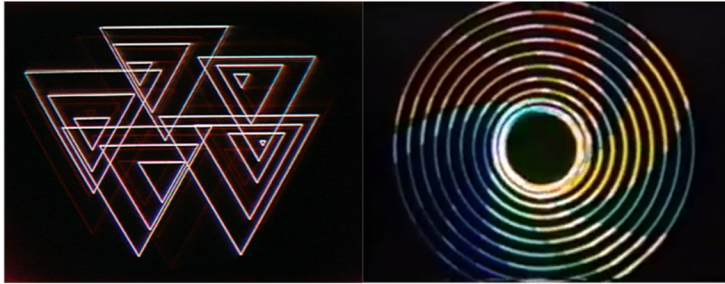
Gertie the Dinosaur 1914

[https://commons.wikimedia.org/wiki/File:Gertie\\_the\\_Dinosaur.ogv](https://commons.wikimedia.org/wiki/File:Gertie_the_Dinosaur.ogv)



# The History of Animation

Early Computer Generated Animation

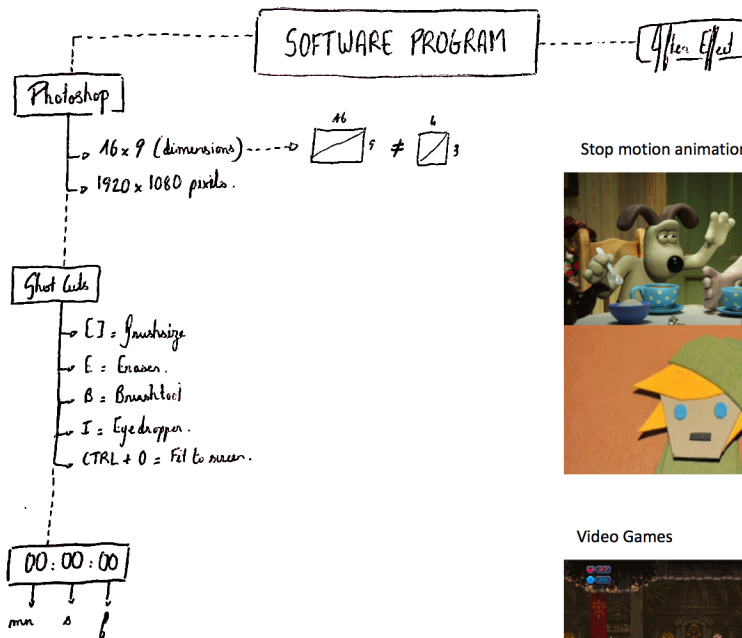


John Whitney

<https://www.youtube.com/watch?v=3DyV5p0b6>  
<https://www.youtube.com/watch?v=3DyV5p0b6>

Early Motion Graphics  
Saul Bass and John Whitney

<https://www.youtube.com/watch?v=3DyV5p0b6>  
<https://www.youtube.com/watch?v=3DyV5p0b6>



Stop motion animation

<https://www.youtube.com/watch?v=Xl8CpDdR5>  
<https://www.youtube.com/watch?v=BpWMDfNP75s&t=48s>



Video Games



Traditional 2D frame animation



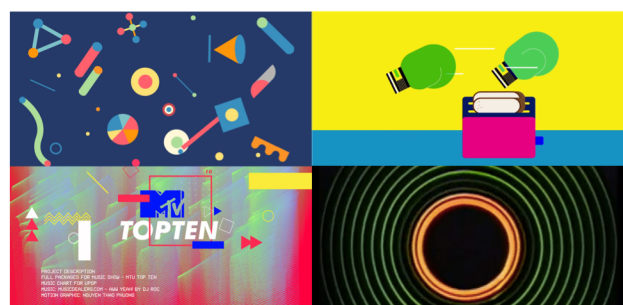
Digital 3D animation



Motion Graphics

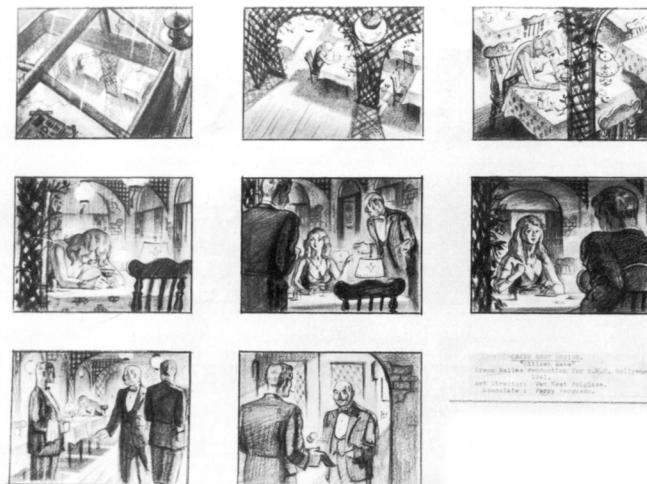
<http://bito.tv/>

<https://www.youtube.com/watch?v=3uenXdygY>



# Why use storyboards

1. Storyboards allow a designer to previsualise time based media.
2. Storyboards serve as the clearest language to communicate ideas about your project to other people.



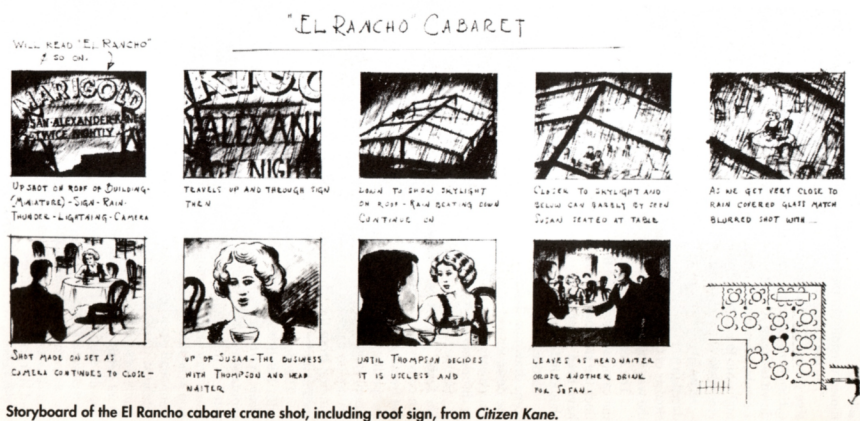
Storyboard of the El Rancho cabaret crane shot from *Citizen Kane*.

This storyboard conveys a complex series of camera shots



Storyboard for the Thatcher Library scene in *Citizen Kane*.

This storyboard conveys mood and lighting choices.

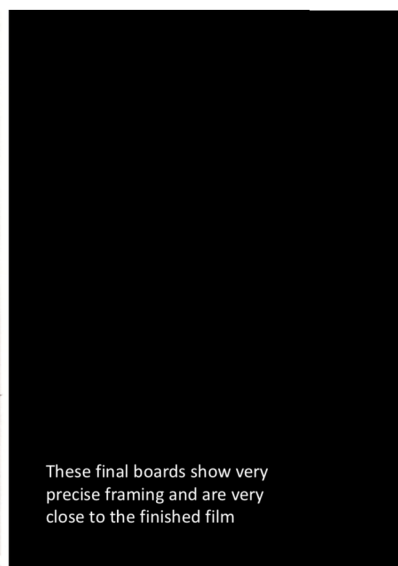


Storyboard of the El Rancho cabaret crane shot, including roof sign, from *Citizen Kane*.

This storyboard builds on the previous one with notes that describe both the camera movement and what the actors are doing



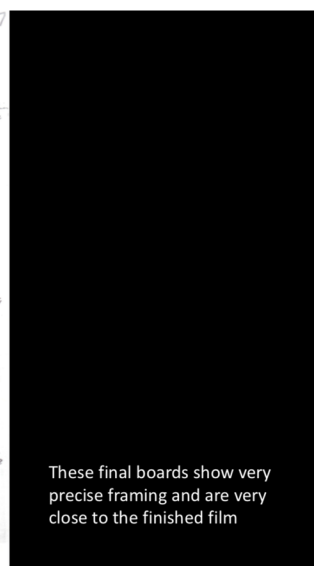
Storyboards for *The Birds* by Harold Michelson. Production design by Robert Boyle.



These final boards show very precise framing and are very close to the finished film



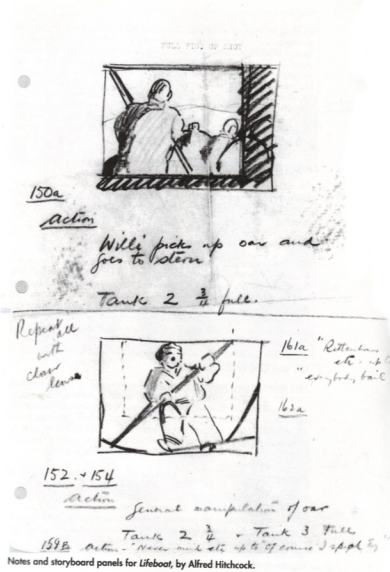
Storyboards for *The Birds* by Harold Michelson. Production design by Robert Boyle.



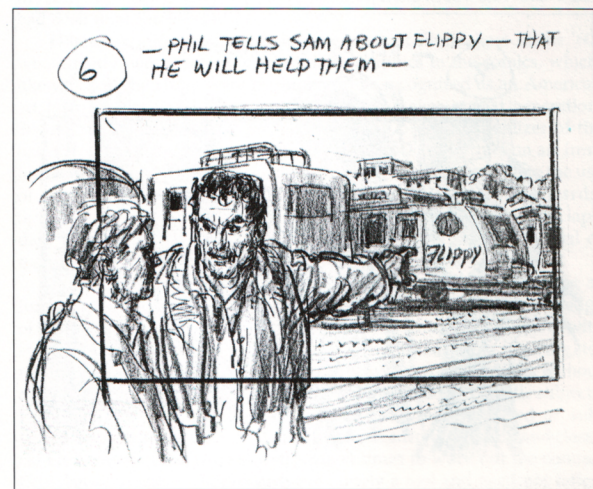
These final boards show very precise framing and are very close to the finished film



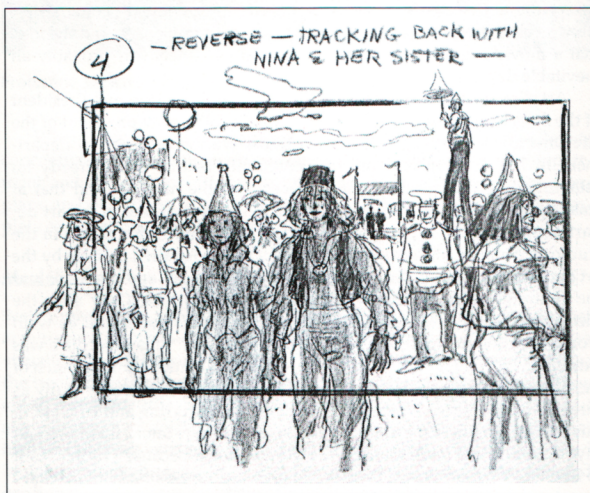
# Why use storyboards



These are Hitchcocks own sketches. Your own workbook should contain sketches and development like this



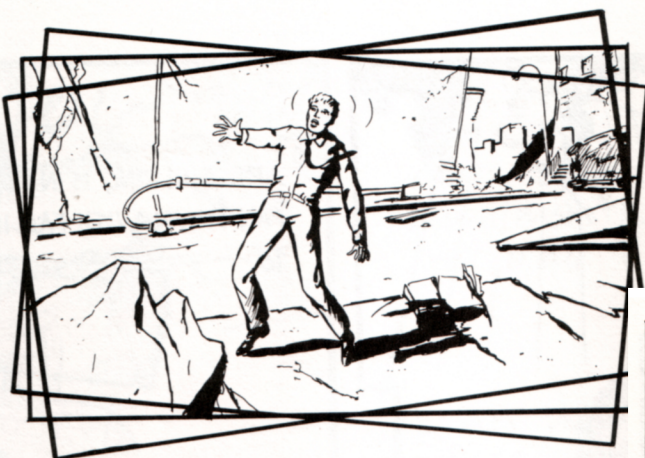
A style of storyboard sketching to show framing and camera choices



↑ DOLLY INTO CLOSE-UP ↑



Dolly into close-up



WOMAN WALKS IN FRONT OF CAR. WE VIEW HER FROM BEHIND.



WIDE SHOT-WOMAN + CAR

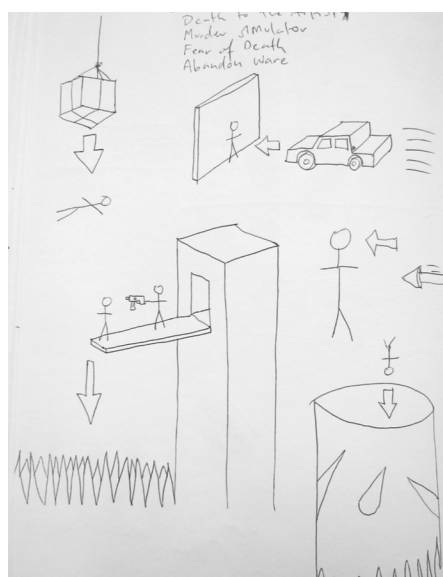
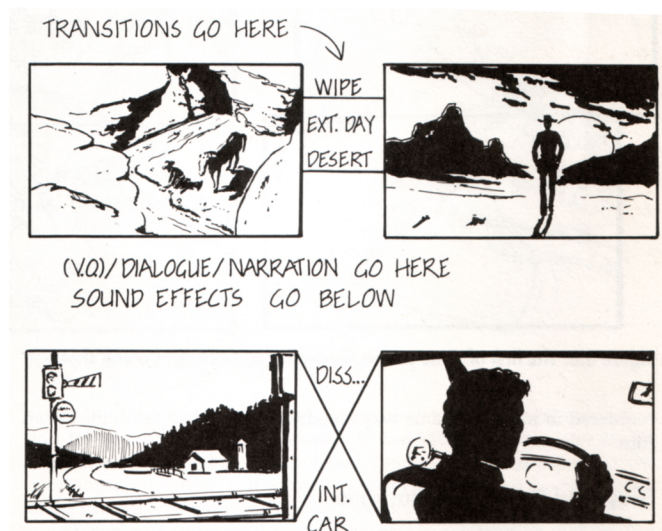
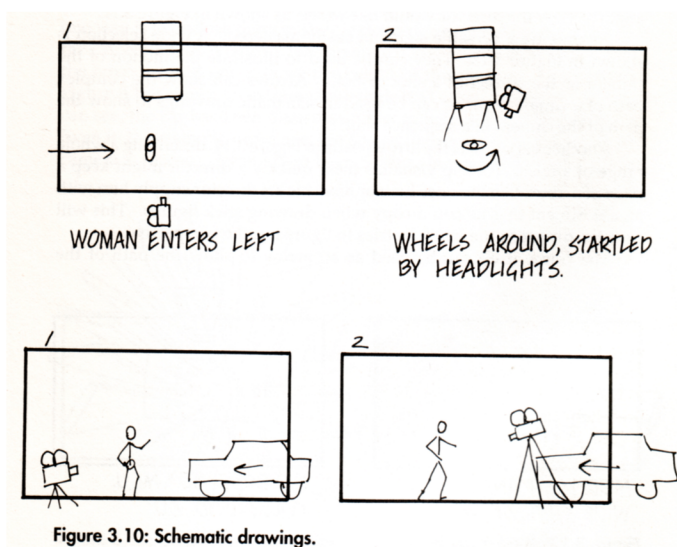
REVERSE ANGLE AS SHE'S CAUGHT IN HEADLIGHTS. CAMERA MOVES INTO C.U.

↑  
M.C.U. — WOMAN

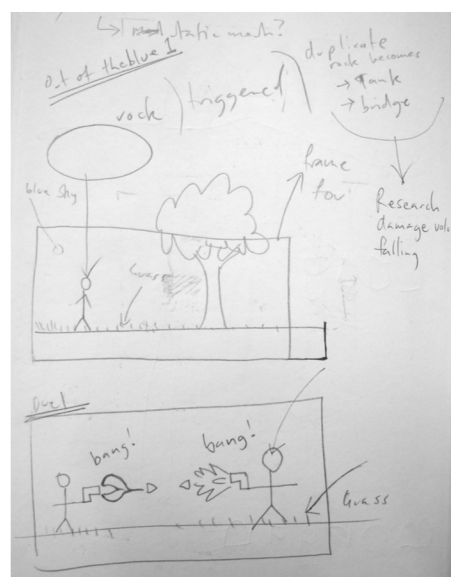
Figure 3.9: Written descriptions in boxes are the simplest type of storyboard.



# Why use storyboards

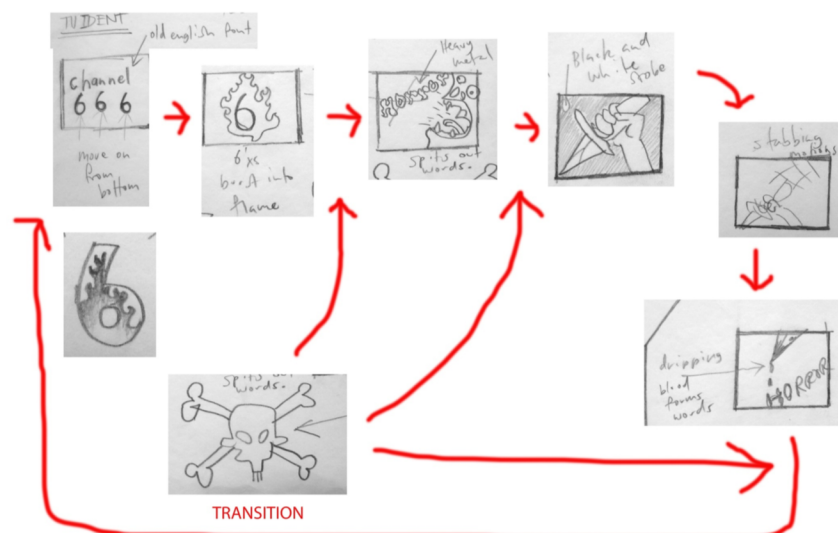


Sketches showing action for animation.

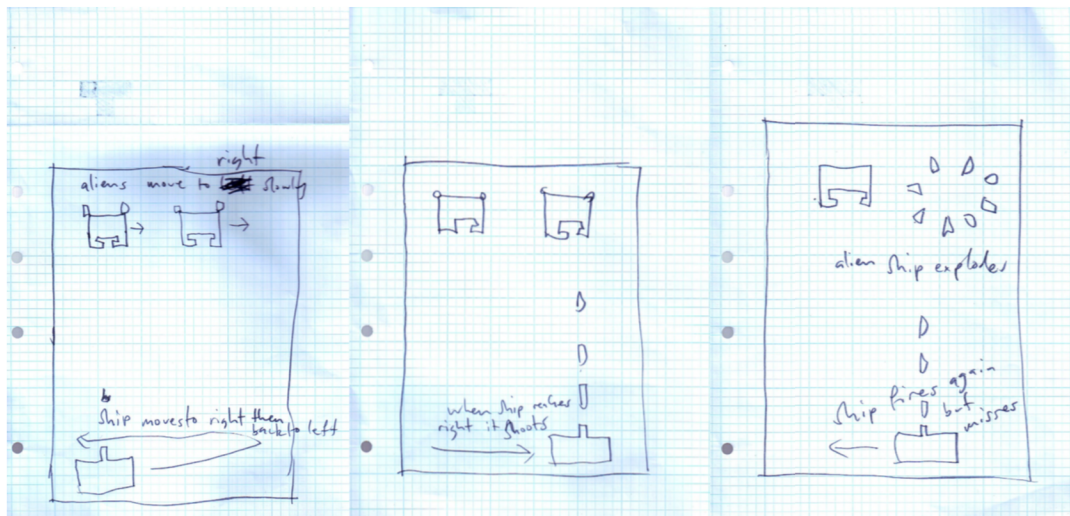


Sketches showing action for animation.

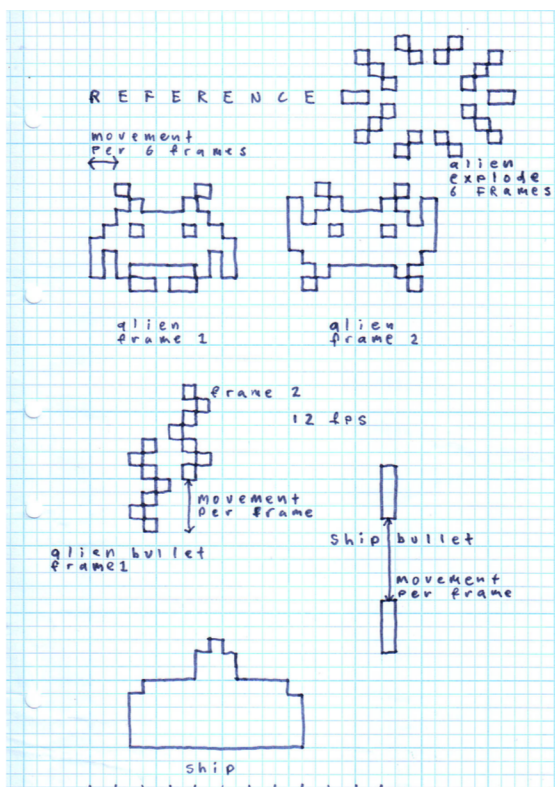
## CHANNEL 666 TV IDENT STORYBOARD



# Why use storyboards

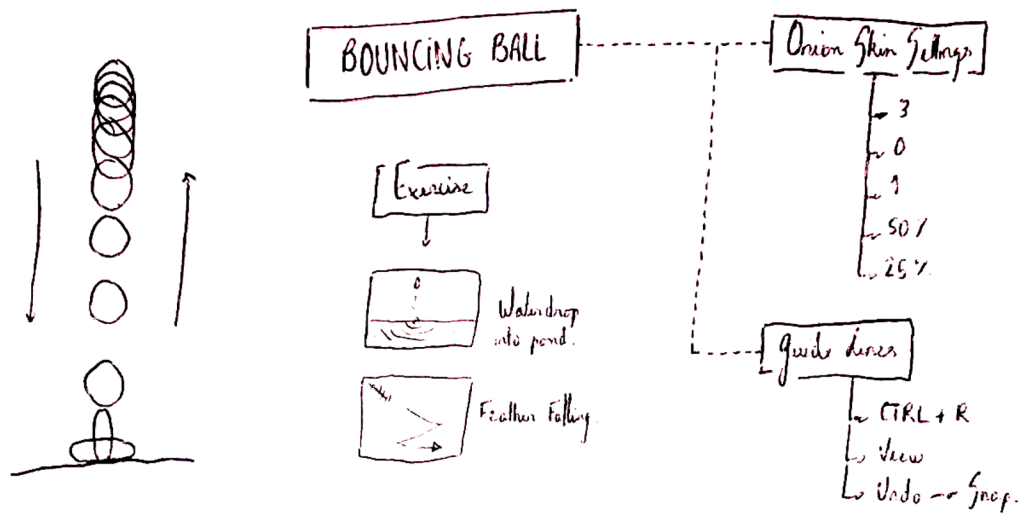


Short storyboard for post it note or graph paper animation.



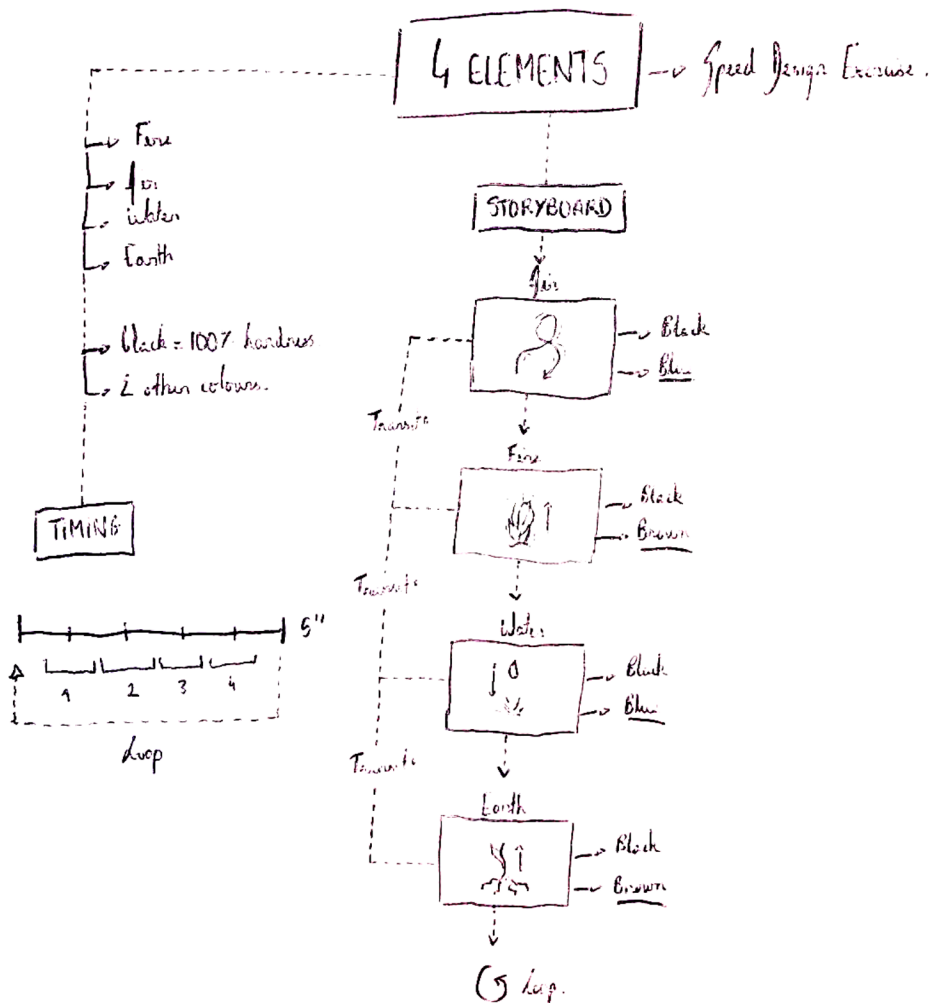
Reference drawing for post it note or graph paper animation.

# Exercise 1



# Exercise 2

Speed exercise - the 4 elements



FIRE



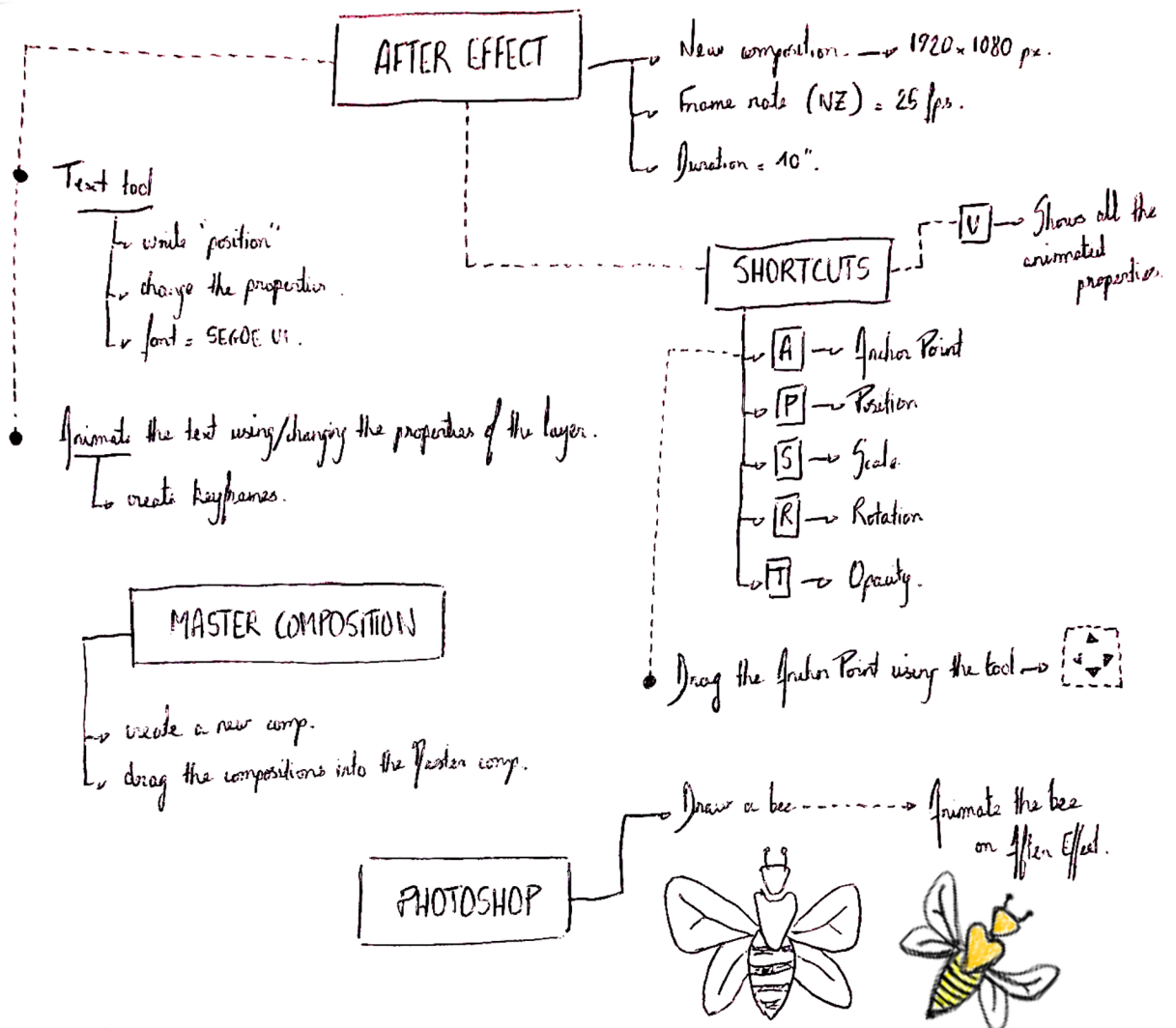
WATER



EARTH

# After effect

## Text moving



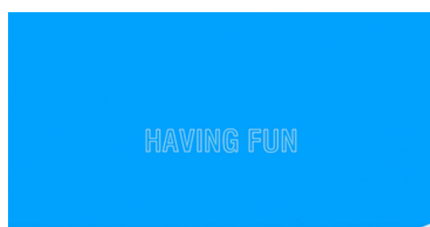
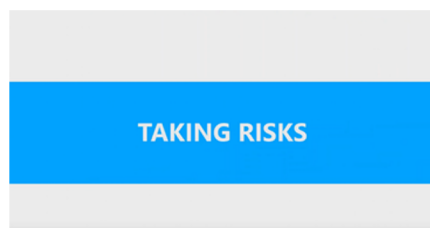
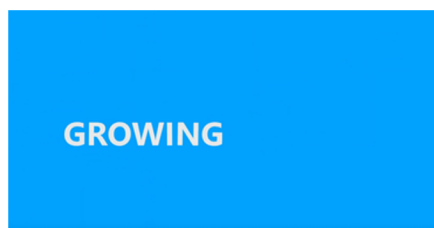
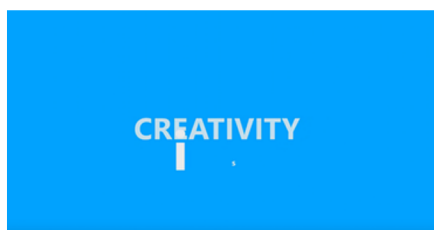
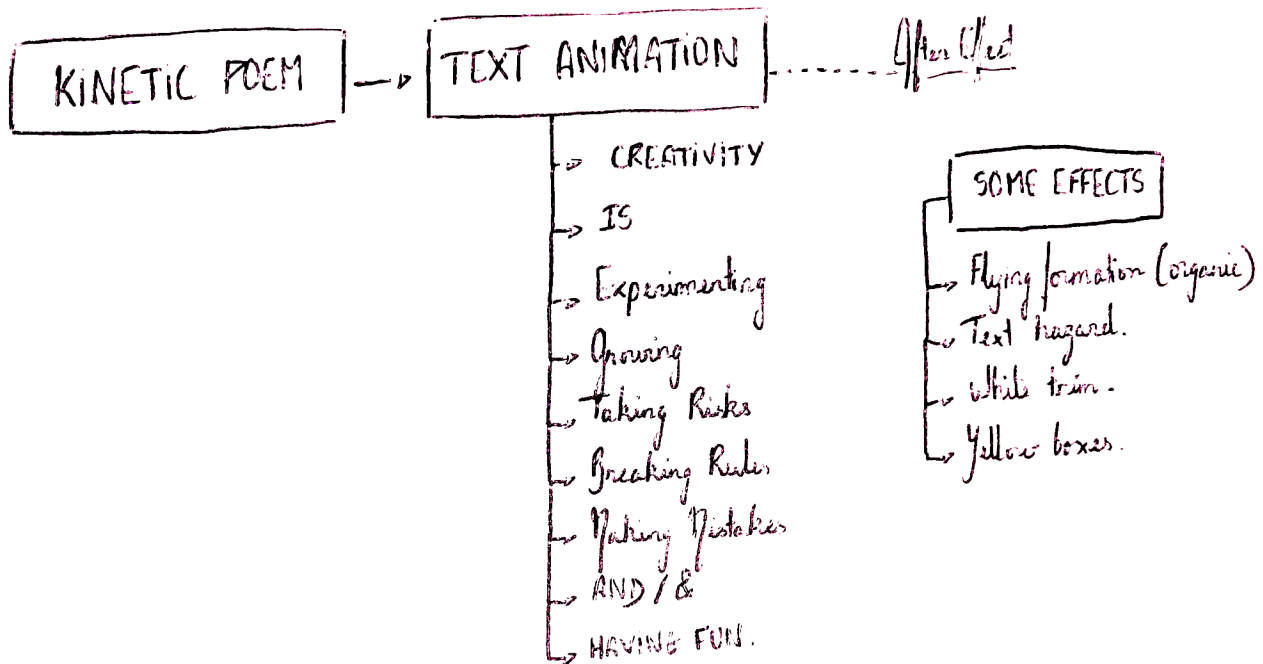
### Inspirational Quotes.

- "A good teacher is like a candle - it consumes itself to light the way for others."
- "Show respect even to people who don't deserve it, not as a reflection of their character, but a reflection of yours."
- "creativity is - experimenting /

- growing
- taking risks
- ~~rules~~
- breaking rules
- ~~rules~~
- making mistakes
- ~~mistakes/failure~~
- & having fun.

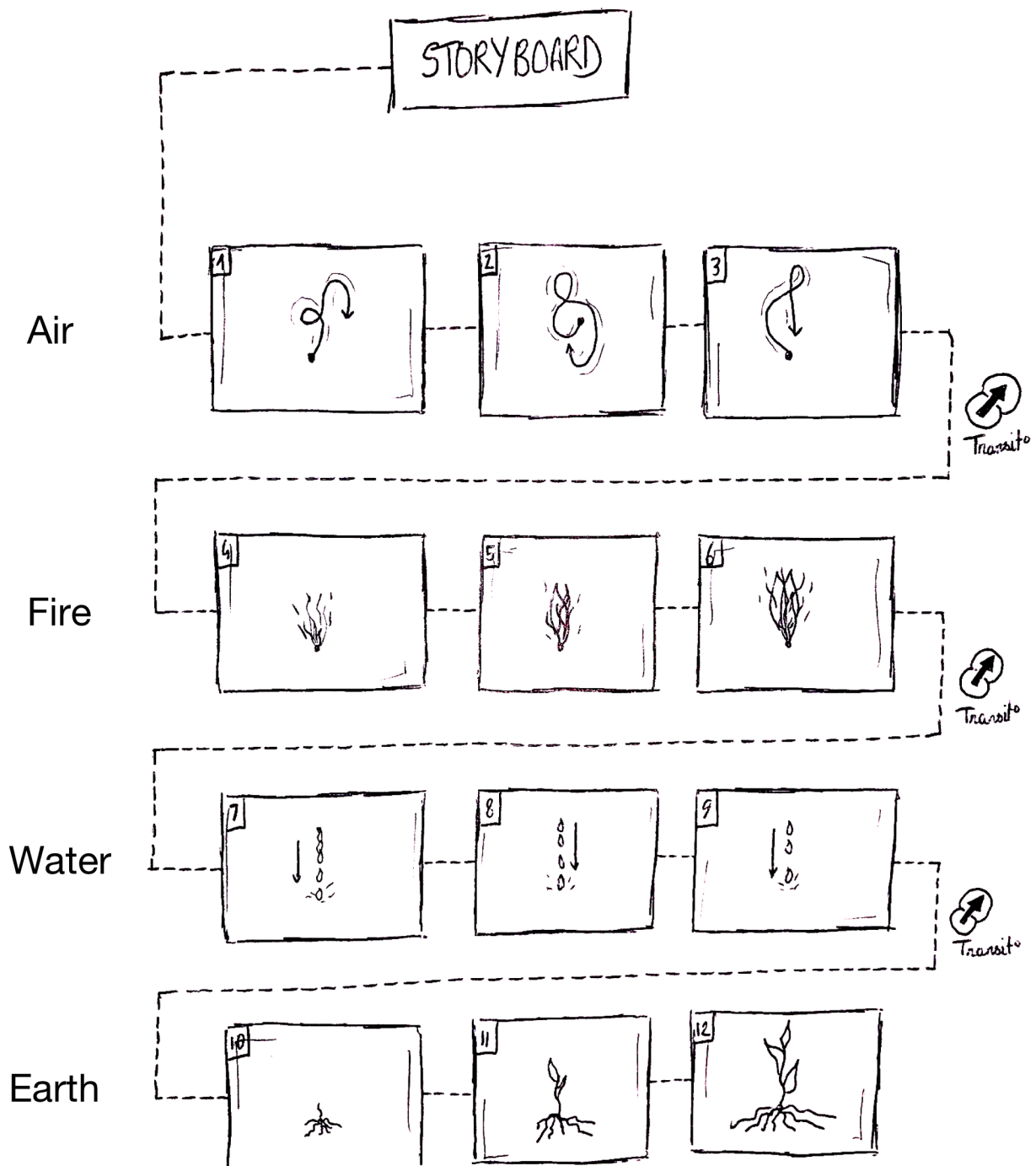
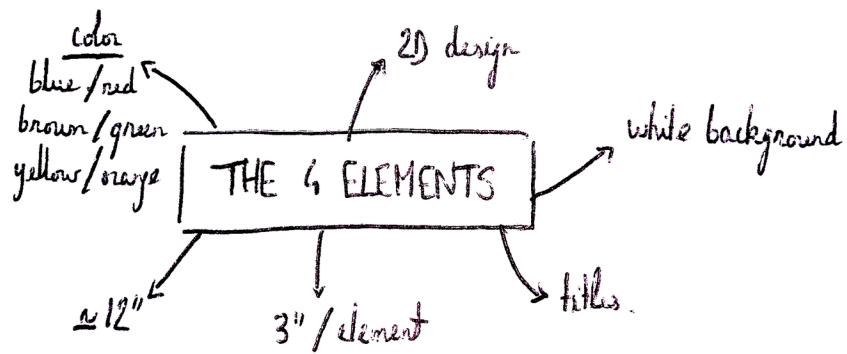


# Text moving





# The 4 Elements project



# The 4 Elements project



## Informations

Resolution : 1920x1080

Duration : 00'12"

Size : 7,3 Mo

Drawing : Photoshop

Typography : After Effect

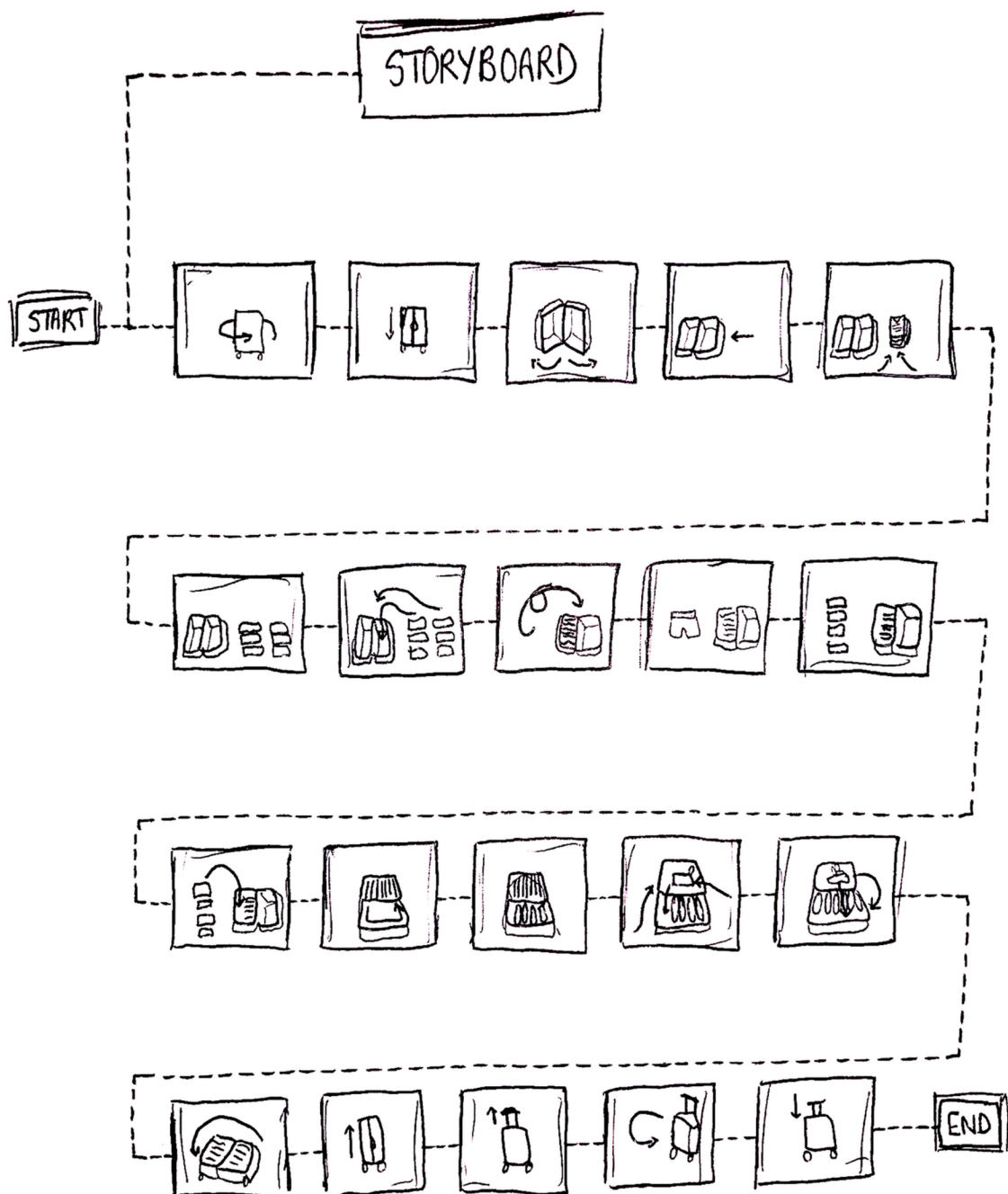
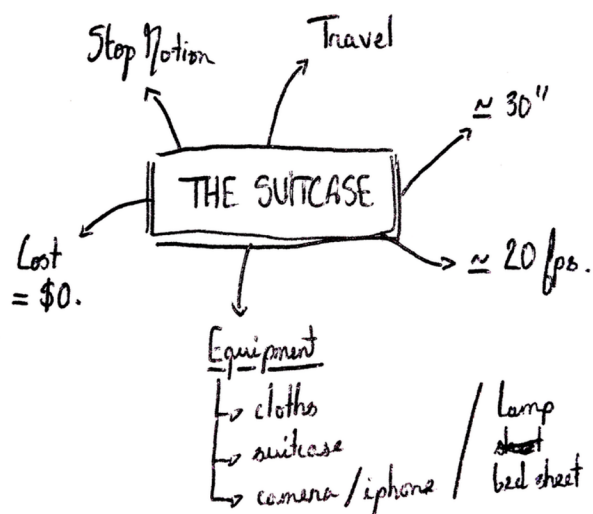


WATCH THE VIDEO



<https://youtu.be/4y9-22sckIU>

# The Suitcase project





# The Suitcase project

Grey bedsheet

Suitcase

Motivation

Lamp

Table +  
Smartphone

## Informations

**Resolution :** 1920x1080

**Duration :** 00'52"

**Size :** 98,3 Mo

**frames :** 1029

**fps :** 19

**cost :** \$0

**work :** 6 hours

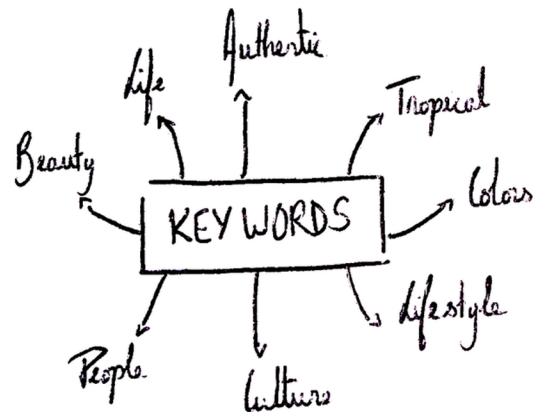
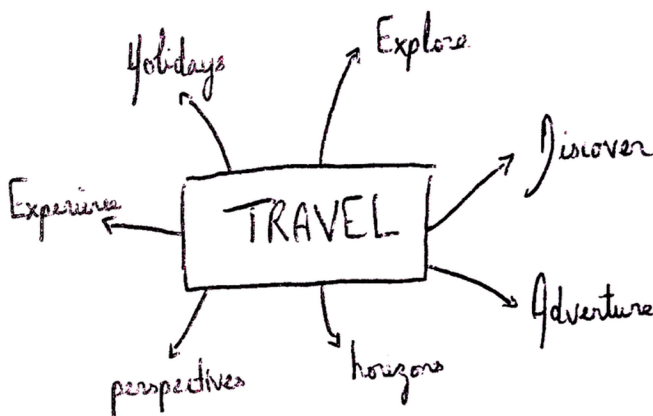


SCAN ME

<https://youtu.be/lzT1jWb-nWY>



# New Caledonia project



## Background

### DRONE FOOTAGE

These videos have been captured by myself in New Caledonia (2018)

Type of drone : DJI PHANTOM 4

2018 Moins de détails

DJI_0033.MOV	DJI_0036.MOV	DJI_0040.MOV	DJI_0041.MOV	DJI_0045.MOV	DJI_0049.mov	DJI_0053.mov
DJI_0057.mov	DJI_0061.mov	DJI_0070.mov	DJI_0075.mov	DJI_0079.mov	DJI_0081.mov	DJI_0082.mov
DJI_0083.MOV	DJI_0084.MOV	DJI_0091.MOV	IMG_0961.mov	IMG_1109.mov	IMG_1329.mov	IMG_1333.mov

Location : ILE OF PINES



# New Caledonia project



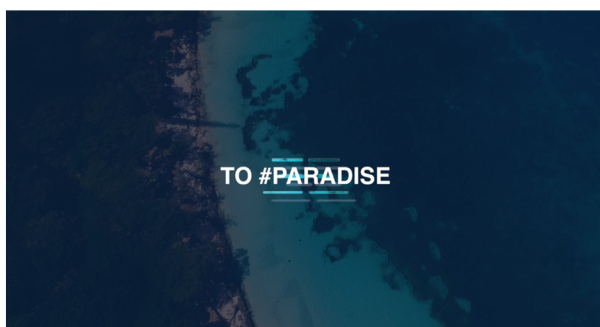
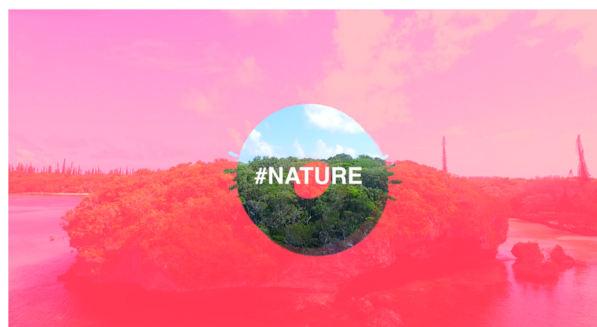
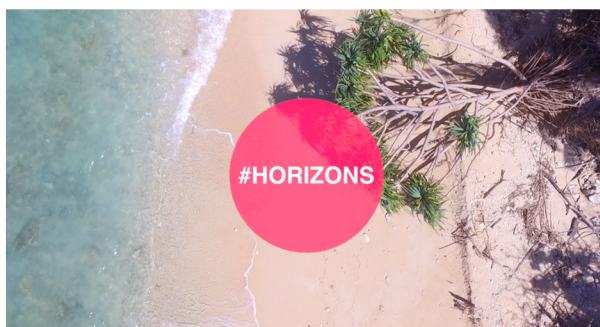
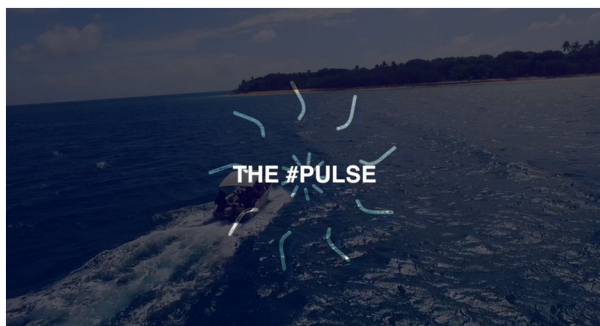
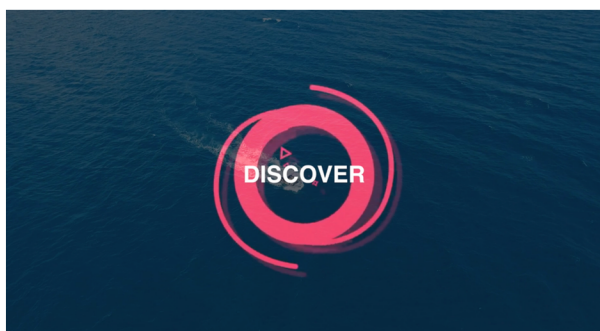
## Informations

Resolution : 1920x1080

Duration : 02'22"

Size : 550,8 Mo

<https://youtu.be/lxhBsJHp2TQ>



# Resources

How to import and export your animations using Photoshop

How to resize images in Photoshop using Automation

How to set up Keyboard Shortcuts for Next and Previous frames

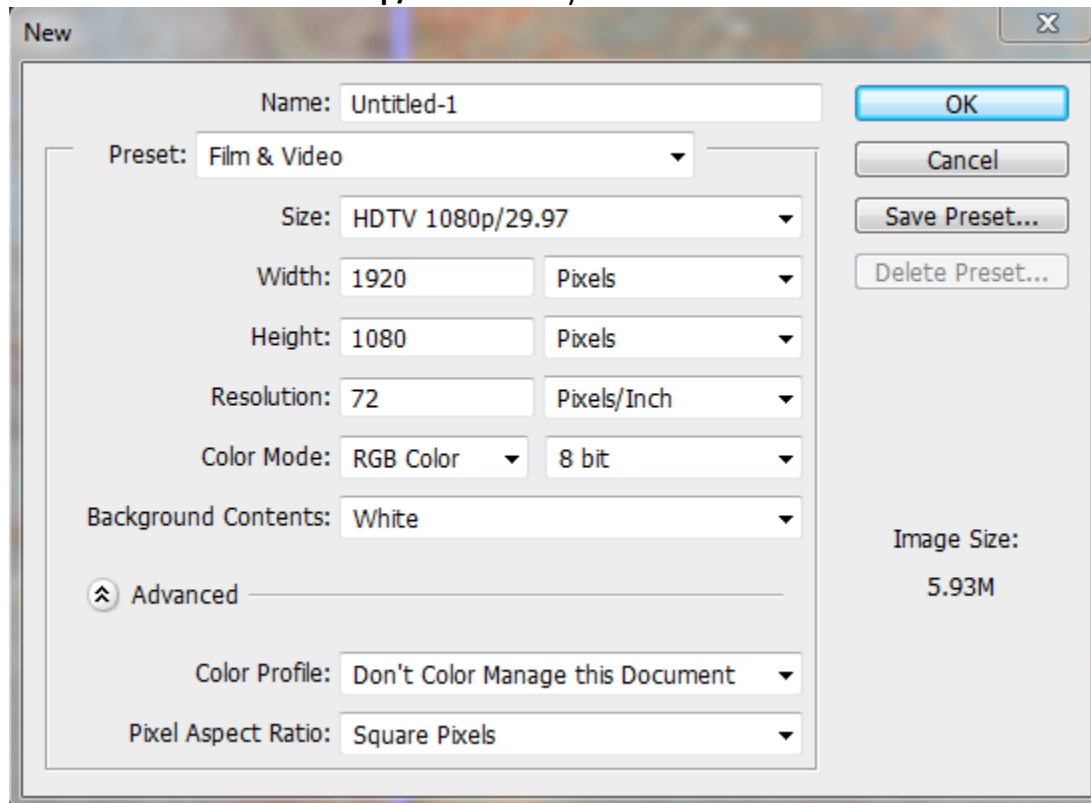
How to set up Photoshop for rotoscoping

How to set up Photoshop for traditional animation

How to batch rename files in Adobe Bridge

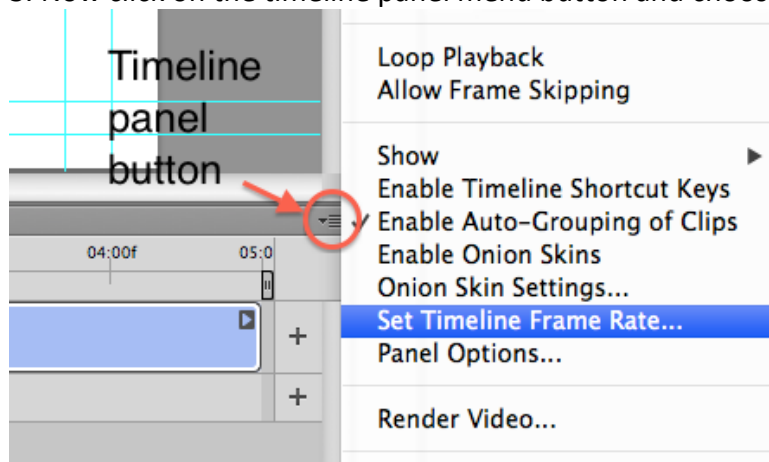
## How to import and export your animation using Photoshop

1. Open Photoshop and go to **File > New**. Set the preset menu to **Film & Video**, and set the size menu to **HDTV 1080p/29.97**. Give your document a name and click OK



2. Now go to **Window > Timeline** to open the timeline panel. We need to create a dummy layer so that we can set the frame rate to 12. Do this by going to **Layer > Video Layers > New Blank Video Layer**.

3. Now click on the timeline panel menu button and choose **Set Timeline Frame Rate**.



4. Set the frame rate to 12 and click OK.

5. Now import your image sequence by going to **Layer > Video Layers > New Video Layer From File**. Browse for your image sequence and select just the first file in the sequence. Click Open.

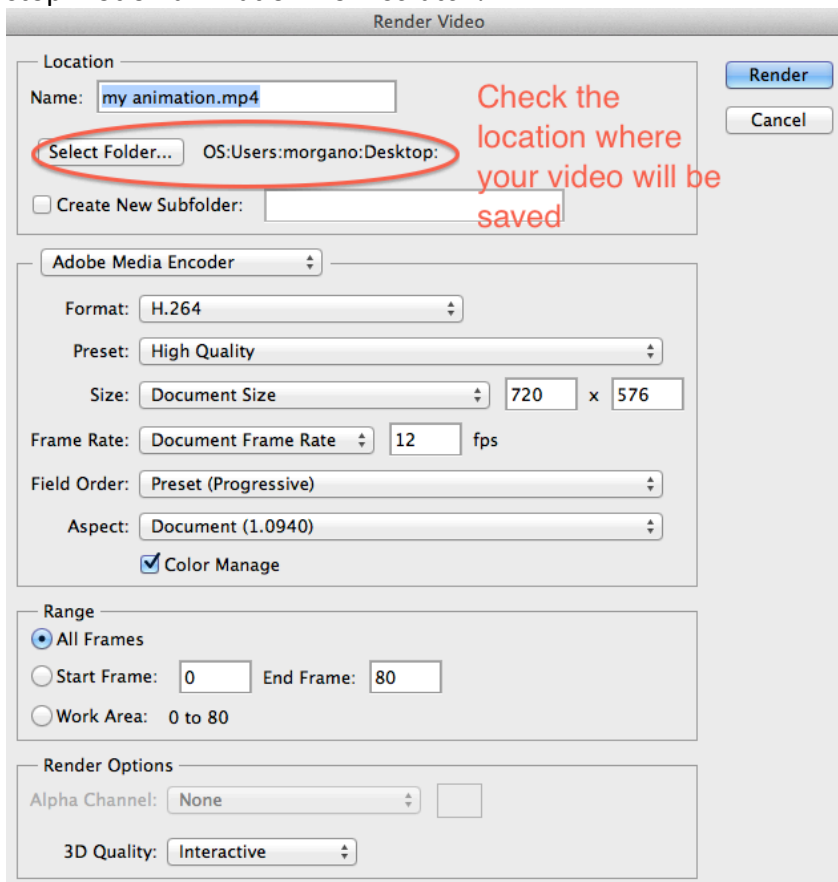
Your animation will now be in your timeline. Drag the time indicator or use the play controls to preview your animation.

If you need to brighten your animation go to **Layer > New Adjustment Layer** and choose Brightness and Contrast. Use the controls on this adjustment layer to brighten the animation.

Save your Photoshop document at this point.

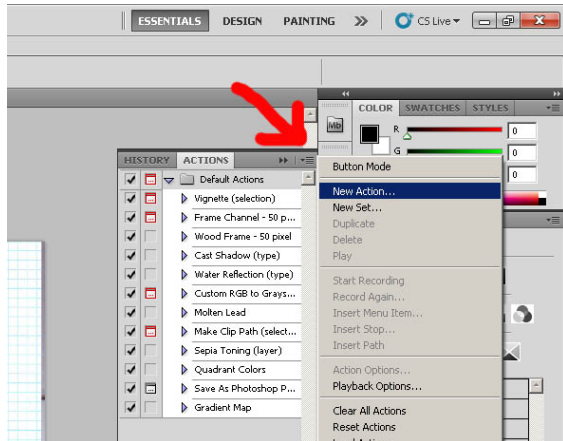
6. To export your animation as a video file and save it to your hard drive, go to **File > Export > Render Video**. In the dialogue window that appears make sure that in the Location area you have chosen an appropriate folder to save the video into.

Leave all the other settings alone and click Render. Congratulations on producing this stop motion animation from scratch!

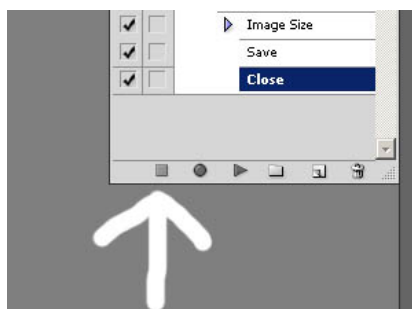


## How to resize images in Photoshop using automation

1. Open Photoshop and open the first frame in your animation sequence.
2. Go to **Window > Actions** to open the actions panel.
- 3 In the top right corner of the actions panel is a small button. Click this to open the actions menu and choose **New Action**. In the New Action window that pops up click **Record**.



4. Now go to **Image > Image size** and in the pixel dimensions area, in the Width field type **1920** then click **OK**.
5. Now go to **File > Save**.
6. Now go to **File > Close**.
7. Now look at the bottom of the Actions panel and click the square stop recording button.

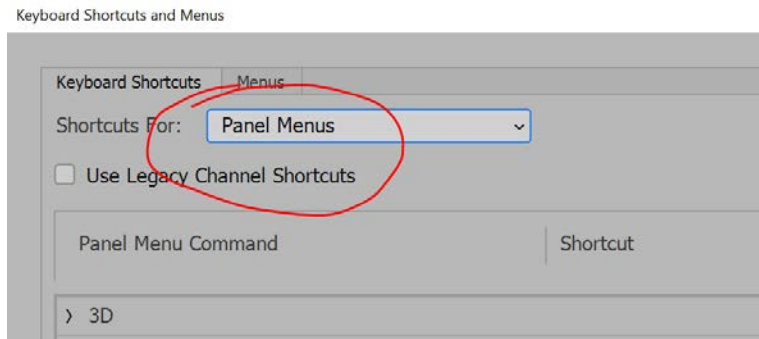


8. Now go to **File > Automate > Batch**. In the Batch window where it says Source Folder click on the Choose button and browse for the folder that contains all of your frames. Choose this folder then click OK in the Batch window.

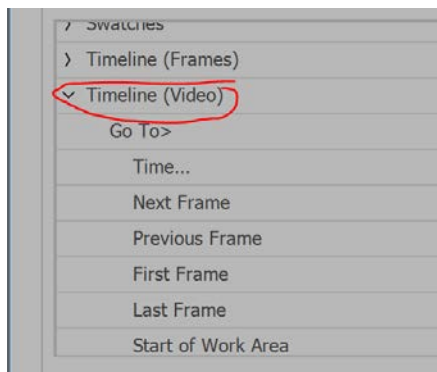
Photoshop will now open each image in that folder, resize it, save it then close it. Wait till it has finished then go through the Premiere worksheet.

## How to set up Keyboard Shortcuts for Next and Previous frames

1. Once Photoshop is open, got to **Edit > Keyboard Shortcuts**.
2. In the window that opens, click the **Shortcuts For** menu and choose **Panel Menus**.



3. In the area below, scroll down until you find **Timeline (Video)** and click the arrow next to it.



4. Click **Next Frame** in the list to select it, and then press **F6** on your keyboard. You will get a warning but click the **Accept** button anyway. Now click **Previous Frame** in the list, and press **F5** on the keyboard, again click the **Accept** button. Finally click the **OK** button.



You can now use the **F5** and **F6** keys to move the Time Indicator backwards and forwards one frame at a time.



## How to set up Photoshop for rotoscoping

1. Create a new document in the same way we have before at 1920 px wide and 1080px high.
2. Go to Window > Timeline, create a video timeline and set the timeline framerate to 12fps.

**NOTE:** There is a guide on moodle (How to set up Photoshop for animation) which explains the above process in detail. Please use it if unsure about these steps, It is important to get this part right.

3. Go to Layer > Video Layers > Add Video Layer From File. Browse for the video on your harddrive and open it.
4. Your video will now appear in your timeline. Rename this layer to 'video'. Use the Move tool to position the video where you want. You can also scale the video larger or smaller. To do this click Show Transform Controls in the options area at the top when using the Move tool, this will show the handles around the video. Start dragging a corner handle and click OK in the window that pops up. The video may go white, don't worry. When you have scaled the video press enter to apply the change.
5. Now create a new video layer to animate on by going to Layer > Video Layers > Create Blank Video Layer. Make sure this new layer is above the previous layer and name it 'animation'. Drag it up in the layers palette NOT the timeline.
6. Now you are ready to animate on the 'animation' layer over the top of the video layer!

### TIPS:

- You might want to reduce the opacity of the 'video' layer to about 75% so that you can see what you are drawing more clearly.
- It's a good idea to lock the 'video' layer once you have it set up so that it can't be moved accidentally. You also only want to draw on the 'animation' layer so that you can delete the 'video' layer later if you wish to.
- Remember to set your brush to 100% hardness.
- You don't have to start animating on frame one of the timeline. Move the time marker to an interesting point in the video and start drawing there. You can render a section later using the work area bar.
- Draw quickly, and don't be tied down to all the detail.
- Add your own elements! Use your imagination!
- Draw in black and white, but add a splash of colour for impact every now and then.
- Save your work often!

## How to set up Photoshop for traditional animation

1. Open Photoshop and go to **File > New**. In the New Document dialogue set the units to pixels and the width to 1920 and the height to 1080. Leave the resolution as is. Click Create.
2. Go to **Window > Timeline** to open the timeline. Click the Create Video Timeline button in the center of the timeline.
3. Click the panel menu button in the top right corner of the timeline and choose **Set Timeline Frame Rate...** In the window that pops up set the frame rate to 12.

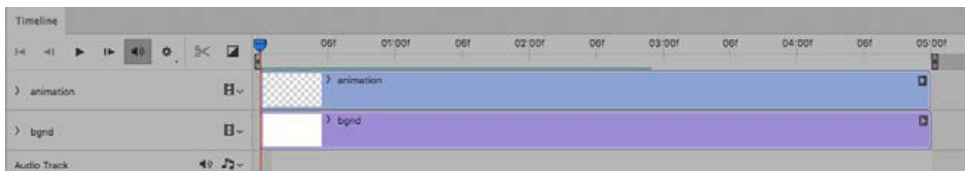


Panel menu button

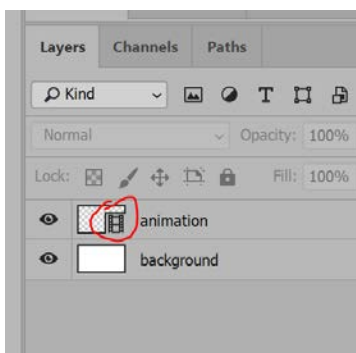
4. Slide the zoom slider at the bottom of the timeline roughly to the middle so you can see the layer clearly.



5. Create a video layer by going to **Layer > Video Layers > New Blank Video Layer**. Rename the bottom layer by double clicking its name in the Layers panel. Call it "background". Rename the video layer "animation". Your timeline should look like this:



NOTE: Video layers are light blue and static layers are purple. Also look at your animation layer in the Layers panel. Note that it has a filmstrip icon in the thumbnail.

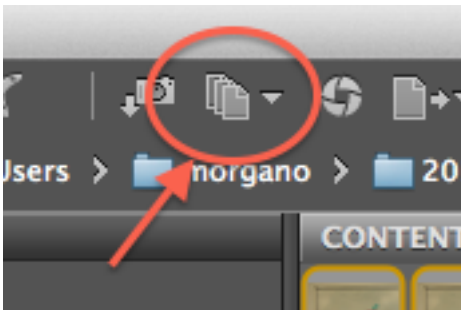


## How to batch rename files in Adobe Bridge

1. Open Adobe Bridge
2. Browse for image sequence using file browser at the left of the screen
3. Once you can see your images in the content pane, slide the zoom slider all the way to the left.



4. Select all images in the content area by dragging a selection box over them. Make sure they are all selected.
5. Click and hold the Refine button and choose Batch Rename



6. Set up file name with appropriate information. Remove the date, give it a new name and set the number of digits.

The image shows two screenshots of the 'Batch Rename' dialog box, illustrating the steps to remove a date from a filename.

**Top Screenshot:**

- Presets:** Preset: Default (Modified). Buttons: Save..., Delete..., Rename, Cancel.
- Destination Folder:** ☒ Rename in same folder, ☐ Move to other folder, ☐ Copy to other folder. Button: Browse...
- New Filenames:**
  - Text: animation
  - Text: \_
  - Date Time: Date Created, MMDDYYYY (circled in red with a red arrow pointing to the minus button next to it). Buttons: -, +
  - Sequence Number: 80, Three Digits. Buttons: -, +
- Options:** ☐ Preserve current filename in XMP Metadata. Compatibility: ☐ Windows, ☒ Mac OS, ☐ Unix.
- Preview:** Current filename: animation\_001.JPG. New filename: animation\_02262013080.JPG. 79 files will be processed.

**Bottom Screenshot:**

- Presets:** Preset: Default (Modified). Buttons: Save..., Delete..., Rename, Cancel.
- Destination Folder:** ☒ Rename in same folder, ☐ Move to other folder, ☐ Copy to other folder. Button: Browse...
- New Filenames:**
  - Text: animation
  - Text: \_
  - Sequence Number: 1, Three Digits. Buttons: -, +
- Options:** ☐ Preserve current filename in XMP Metadata. Compatibility: ☐ Windows, ☒ Mac OS, ☐ Unix.
- Preview:** Current filename: animation\_001.JPG. New filename: animation\_001.JPG. 79 files will be processed.

Red annotations in the top screenshot: "remove the date by clicking the minus button" with an arrow pointing to the minus button next to the Date Time field.

Red annotations in the bottom screenshot: "should have something like this" with an arrow pointing to the new filename "animation\_001.JPG".

7. Click the Rename button