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Bring Stuff to Life? You can with the 12 Principles of Animation

Author: Ben Simpson
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Abstract

The output is an artefact created by Ben Simpson (AKA "Doctor Simpo") with contributions from Peter McDonald, Cindy Cheng, and Tim Webb. The artefact is a book which simplifies and demonstrates the 12 Principles (building blocks) of successful animation.

Collaboration contribution: The project was devised, compiled, and contributed to by Ben Simpson, with sections written and illustrated by Peter McDonald, Cindy Cheng, and Tim Webb. The foreword for this output was written by Tom Box.

Research process: The aim of the project was to create a simple but effective means to communicate the core elements of successful animation to children and young people. It was important to Simpson that the book was in a format which is accessible to others, and that the information was presented in a fun and engaging way.
The output was created via long distance communication between the authors, who all contributed sections which provide visual explanations of a core principle of animation.

Research insights: Through collaborating on this output, Simpson was able to reflect on the core elements to successful animation in a group of his peers in the animation industry – producing an output which stands as a culmination of different perspectives and interpretations of these foundations.
This output provided Simpson and his collaborators a new insight into ways in which illustrated instructions can provide accessible learning to those who are new to or struggle with English.

Dissemination: The output was published through Red Bird publishing in November 2019, has been used in workshops at Thought Bubble Comic Art Festival in 2019 and 2021.

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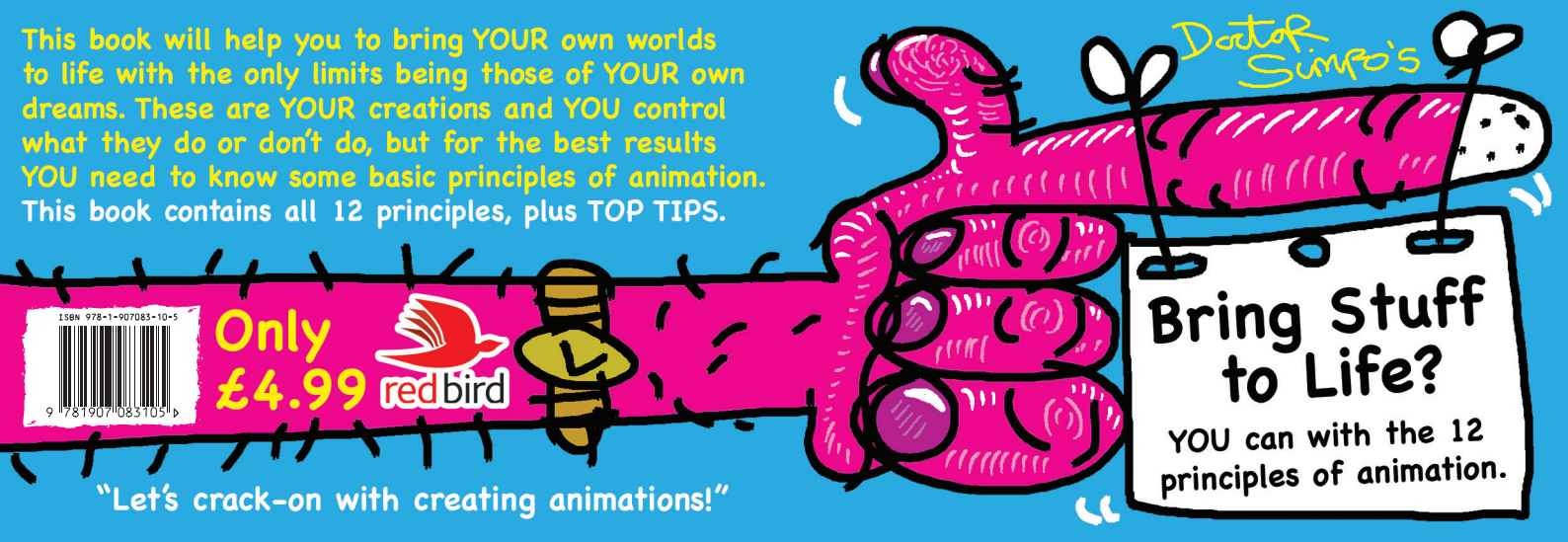
This book will help you to bring YOUR own worlds to life with the only limits being those of YOUR own dreams. These are YOUR creations and YOU control what they do or don't do, but for the best results YOU need to know some basic principles of animation. This book contains all 12 principles, plus TOP TIPS.

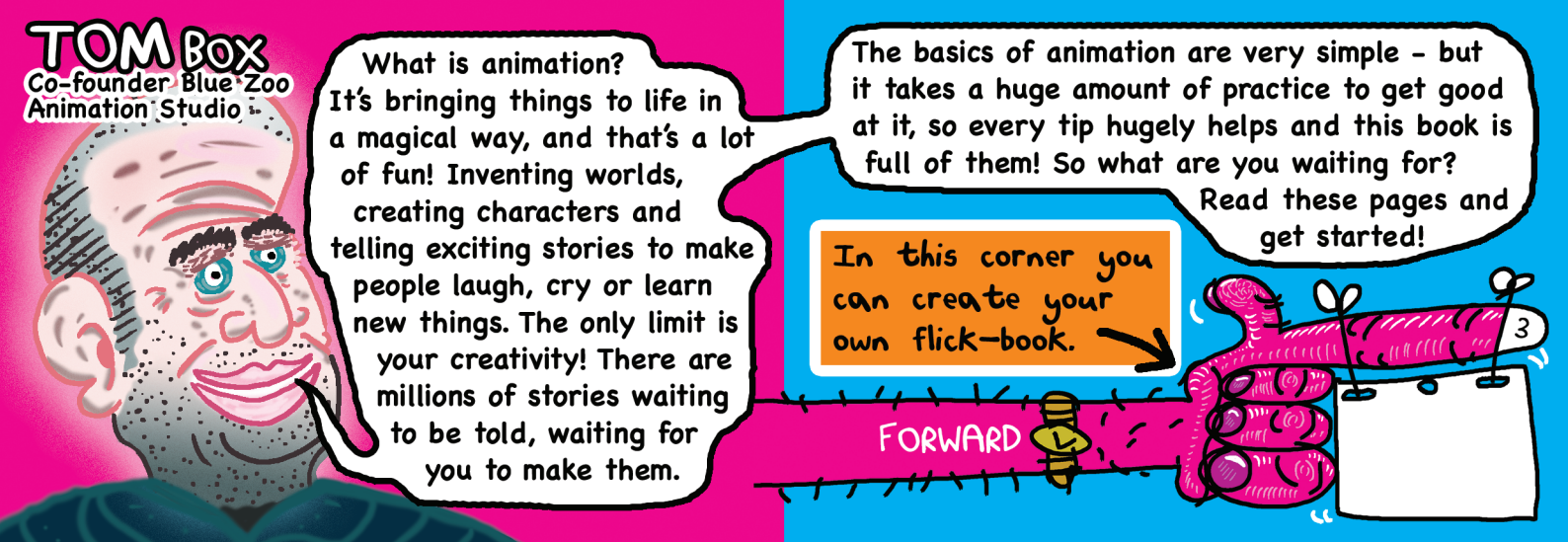
ISBN 978-1-907083-10-5

Only £4.99

redbird

"Let's crack-on with creating animations!"



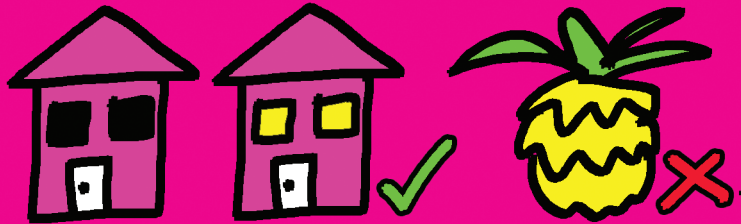

TOM Box
Co-founder Blue Zoo Animation Studio
What is animation? It's bringing things to life in a magical way, and that's a lot of fun! Inventing worlds, creating characters and telling exciting stories to make people laugh, cry or learn new things. The only limit is your creativity! There are millions of stories waiting to be told, waiting for you to make them.
The basics of animation are very simple - but it takes a huge amount of practice to get good at it, so every tip hugely helps and this book is full of them! So what are you waiting for? Read these pages and get started!
In this corner you can create your own flick-book.
FORWARD
3

AN ANIMATORS GUIDE TO THE 12 PRINCIPLES OF ANIMATION

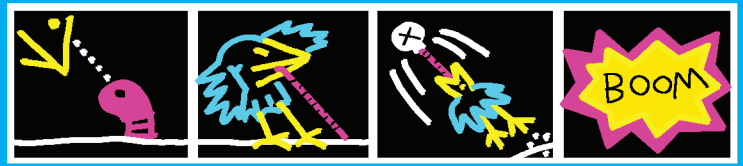
7- Good Ideas and The Illusion of Animation
9- Draw and DRAW and Draw Some More
11- Pipe Cleaner Pete Construction Kit
13- Basic Animation Tool Kit
15 - Good Posing (1st)
17- Appeal (2nd)
19- Staging (3rd)
21- Squash & Stretch (4th) TOP TIPS: P. McDonald
23- Exaggerate: 'Over The Top' (5th)
25- Straight Ahead Vs. Pose-to-Pose (6th)
27 & 29- Timing (7th)
31- Easing: 'Cushioning' (8th)
33- Arcs: 'Arches' (9th)
35- Anticipation (10th) - TOP TIPS: C. Cheng
37 - Follow Through: 'Following-on' (11th)
39- Secondary Action: 'Rippling Effect' (12th)
41 & 43- Storyboarding - TOP TIPS: T. Webb
45- About the Author
47- About the Academics

WARNING!
THIS BOOK CONTAINS AUGMENTED REALITY

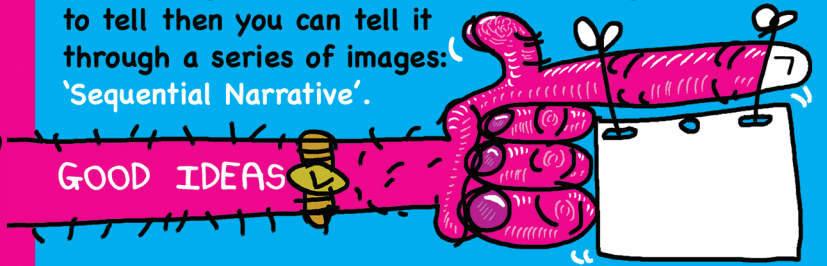
Animation or the illusion of life is a trick that can be created from the differences between 2 images, if these images are similar then an illusion of movement is created. Like house lights off to house lights on works:



But if these images are too different like house to pineapple then the illusion is broken.



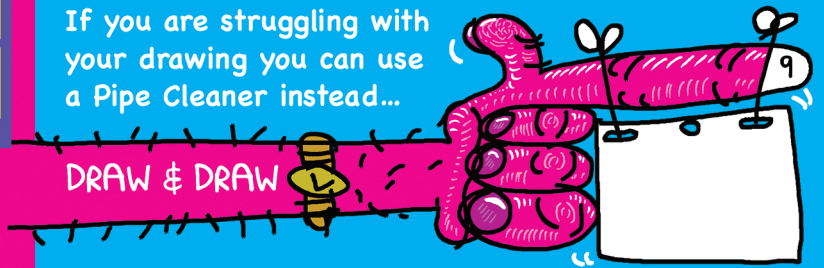
Images in sequence can be used as very powerful storytelling tools. If you can think of a good story to tell then you can tell it through a series of images: 'Sequential Narrative'.



Drawing will help you to plan your animation.
Doodling helps to loosen up your wrist.

Let's do some doodling to warm-up.

If you are struggling with your drawing you can use a Pipe Cleaner instead...

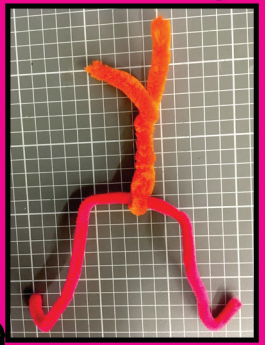


So, if you aren't great at drawing, then you can use this simple step-by-step guide to build pipe cleaner Pete:

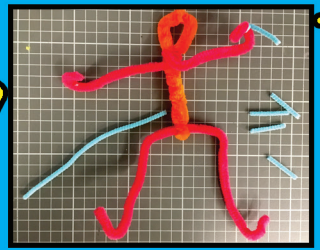
FIND

TWIST

LOOP



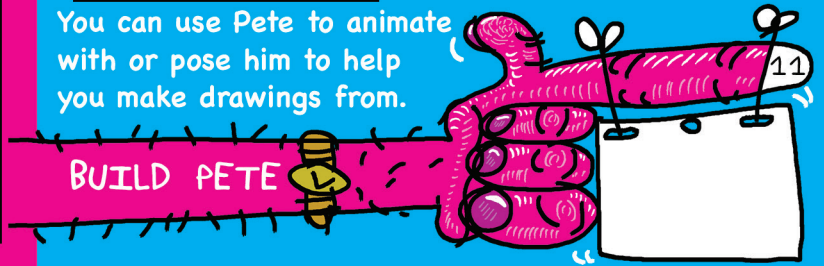
CUT&GRIP



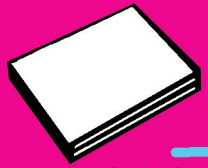
PIN

POSE

You can use Pete to animate with or pose him to help you make drawings from.



I don't have much money, what's the most basic equipment that I need?



A pack of A4 paper.

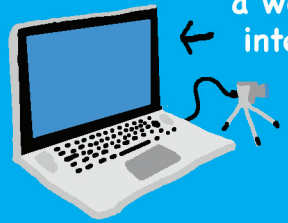
A pencil, a pen, a pencil unblunter and a rubber.

A hole-punch to punch holes in the paper so that the drawings can be kipt in the coreect positions.

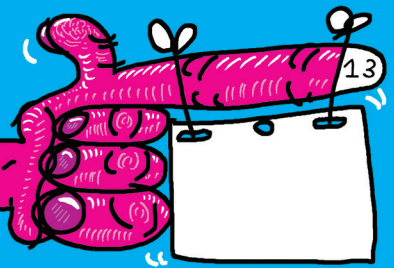
Split pins for holding your paper together.

What will I need to see and show my finished animation?

A computer or similar device with a web camera and internet access for downloading free software.



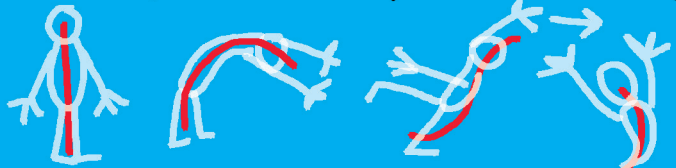
TOOL KIT



There are many different ways to draw, you may draw in your own way. The most important thing is to make your drawings clear so that you can get your point across.

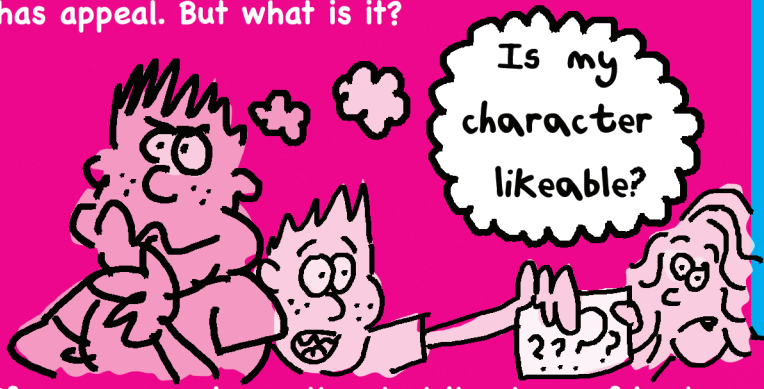
Good clear drawing should start with simple shapes.
Think about objects as simple shapes.
Get this right and then you can draw a person.

NOW can you bring this person to life?
HOW can you draw this person with energy?



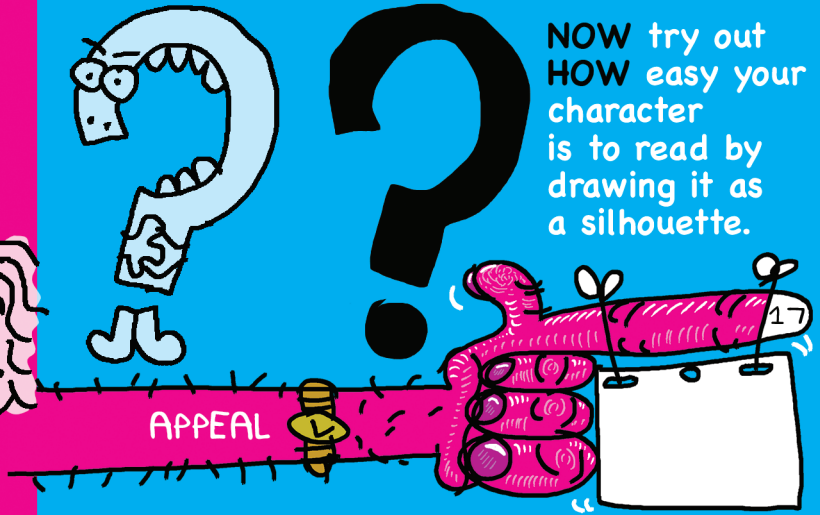
If you are really struggling with your drawing then use Pete the Pipe Cleaner Man.

An actor has charisma. An animated character has appeal. But what is it?



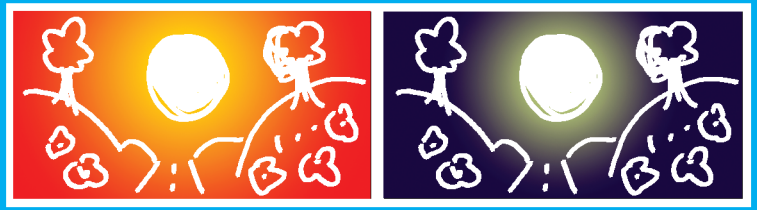
If your answer is yes then test it out on a friend, see if they like it as well. **Is this appealing?**

NOW try out HOW easy your character is to read by drawing it as a silhouette.



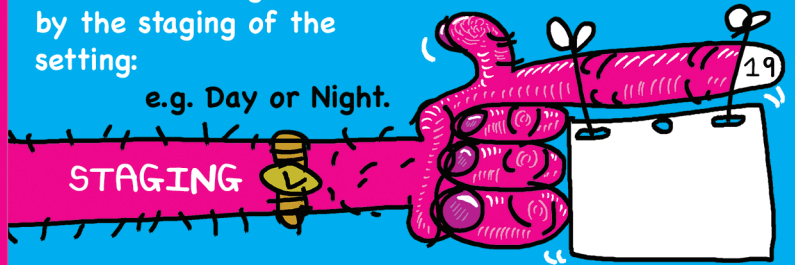
Staging is clearly showing an idea and making the characters action, feeling or purpose clear.

You should be thinking: Look at this!



Also, the feeling of the animation can be affected by the staging of the setting:

e.g. Day or Night.



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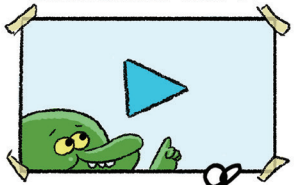
@PETERMCD.ART

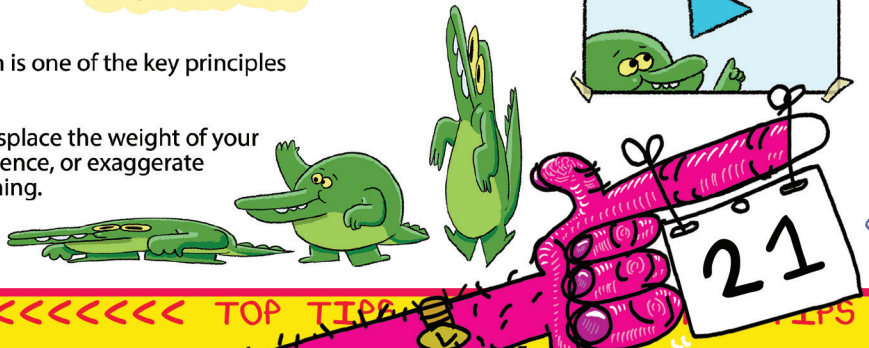
SQUASH AND STRETCH

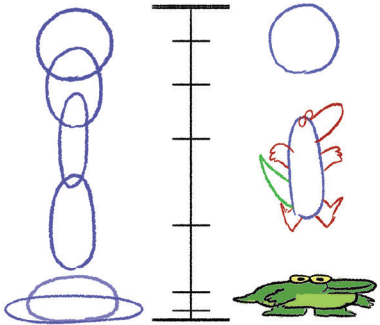
Squash and Stretch is one of the key principles of animation.

It is the way you displace the weight of your character in a sequence, or exaggerate movement and timing.

Use your SMART device to watch the AR animation here:







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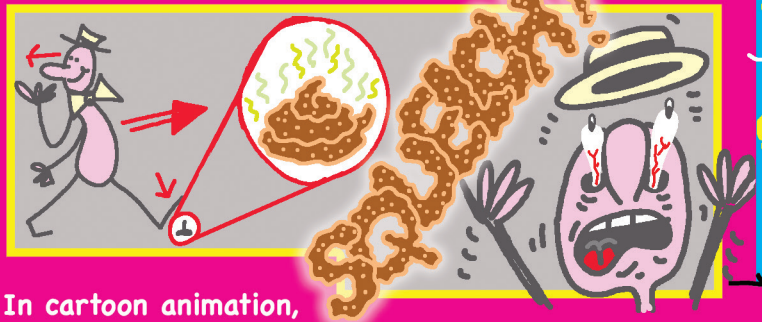
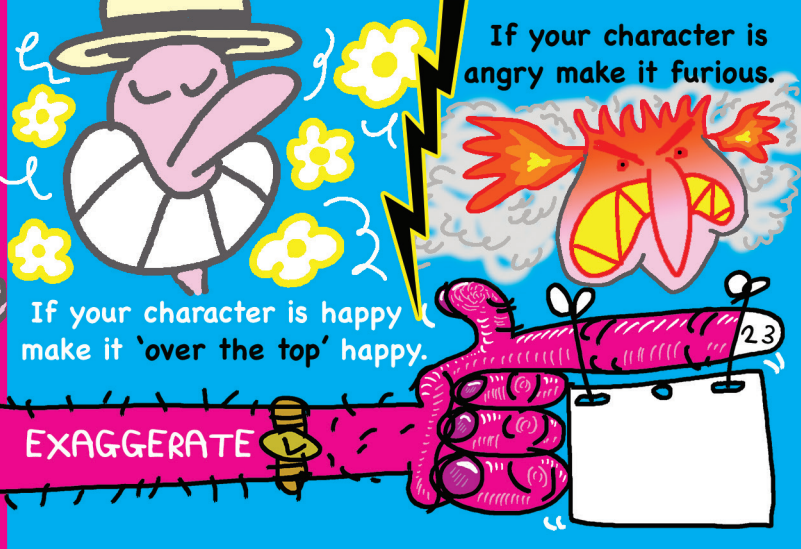
Make the audience understand what the character is about to do, perhaps before they even know.



In cartoon animation,
it is very important to exaggerate the characters feelings and emotions so they are clear.



'Straight Ahead' is where you animate, well straight ahead, the results often being creative and wild. This is often used in stop-motion animation.

STRAIGHT AHEAD vs. POSE2POSE

KEY INBETWEEN KEY EXTREME

Pose-to-Pose is where all of the animation is planned and timed using **KEYs** (the most important bits of the animation) these poses are then linked together through **INBETWEENs** and sometimes with **EXTREME** poses.

Animation is all about timing ;)

GOOD *Timing* = **GOOD** *Animation*

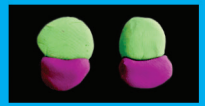
GREAT *Timing* = **GREAT** *Animation*

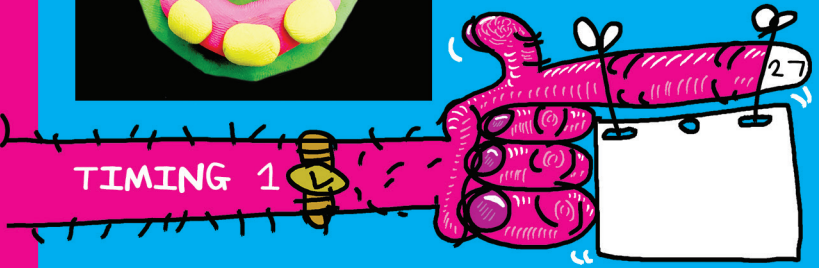
In 'classic' animation:

1 second = 24 frames (or separate pictures)

Now let's make YOUR character blink.

You will need to draw or make a character's face and 2 replacement eyes.





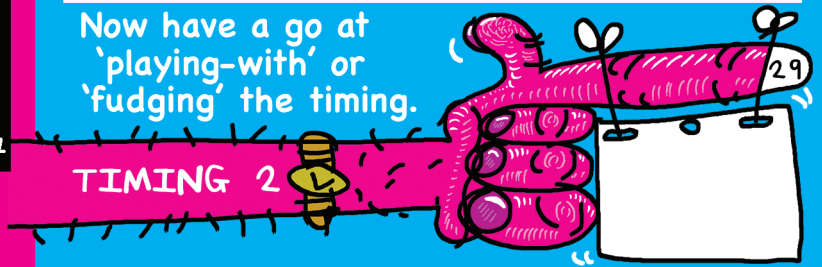
The character's eyes should be open for 24 frames or 1 second. Then close them with your replacement eyes for 2 to 8 frames.

Test out what works best for your character.

2 step walk cycles should last 1 second (24 frames), but you can play-with or 'fudge' the timing so that you can get away with making less than 24 images. This can be done by holding images for more frames:

8 images = 3 frames	*OR*	*6 images = 4 frames*
4 images = 6 frames	*OR*	*2 images = 12 frames*

Now have a go at 'playing-with' or 'fudging' the timing.

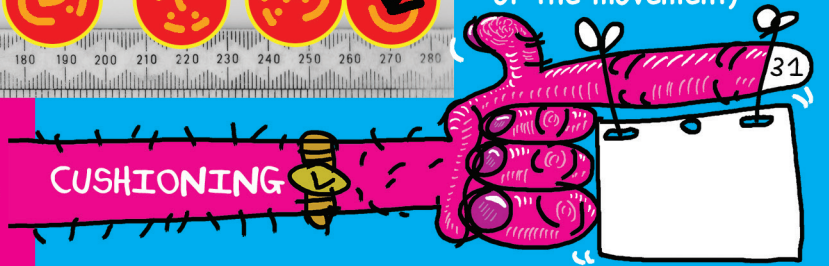


Lets think about your character's head rolling across the table. You will have a start point (key 1) and an end point (key 2), how do you make it get from 1 to 2 in a believable way?

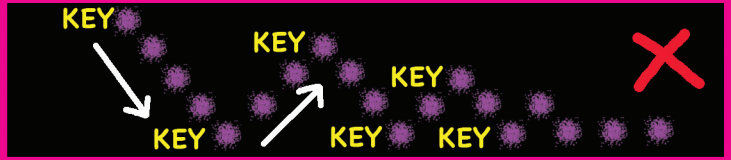
GOOD cushioning = slow in and out

(more positions at the start and the end of the movement)

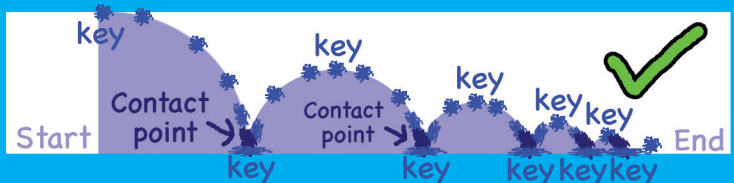
If you place the head in certain positions it will move across the table in a measured manner. This may look robotic, but if you 'mix-up' the placement of your heads then this will look more natural.



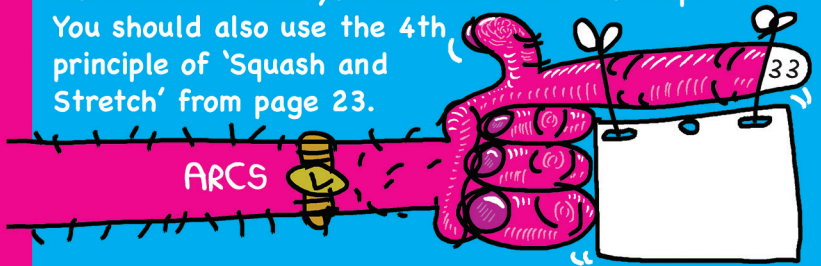
Arcs have a similar shape to an arch. They are the visual path of action from one key frame (pose) to another. In animation a 'bouncing ball' is a good example of using an arc. In your kit you will find a coloured 'potato puff' to use for a 'bouncing ball'.



You could move your 'potato puff' in a straight line from 1 key pose to another, but this will have a stiff and robotic feeling to the movement.



If you want the movement to be more believable and more natural then you will use an arc to help. You should also use the 4th principle of 'Squash and Stretch' from page 23.



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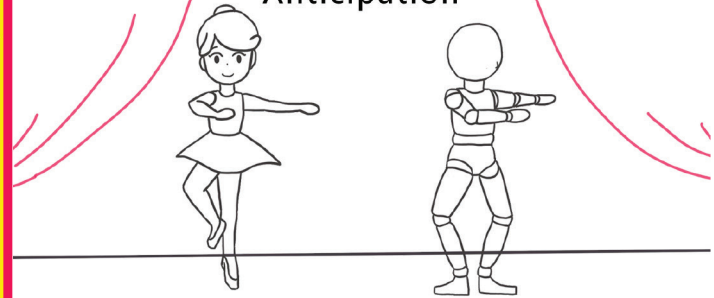
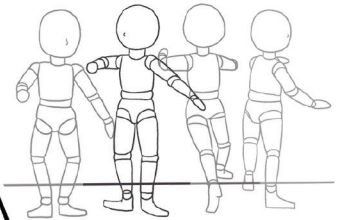
Anticipation



Generally applying to human-character to show the power and realistic look of action.

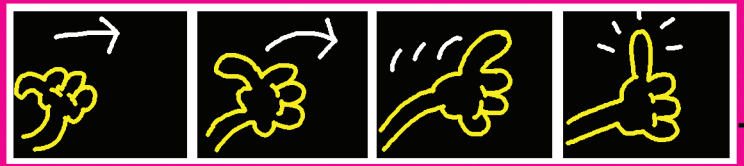
With anticipation



Without anticipation

If
anticipation = preparation
then
follow-through = ending

Actions don't come to a sudden stop - the action usually continues past the end point.



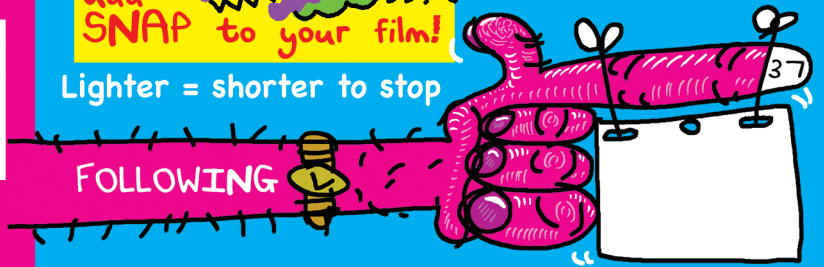
In character animation, some parts move and other parts follow.

The loose parts weight can change the speed:
Heavier = longer to stop

Lighter = shorter to stop

An action should never be brought to a complete stop:

UNLESS THIS IS THE POINT.



An action that is caused directly by another action is called a rippling effect a good example of this is like dropping a pebble in a puddle:

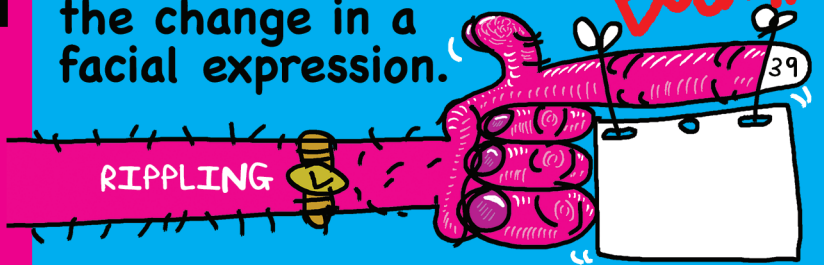
This should make your animation more believable.

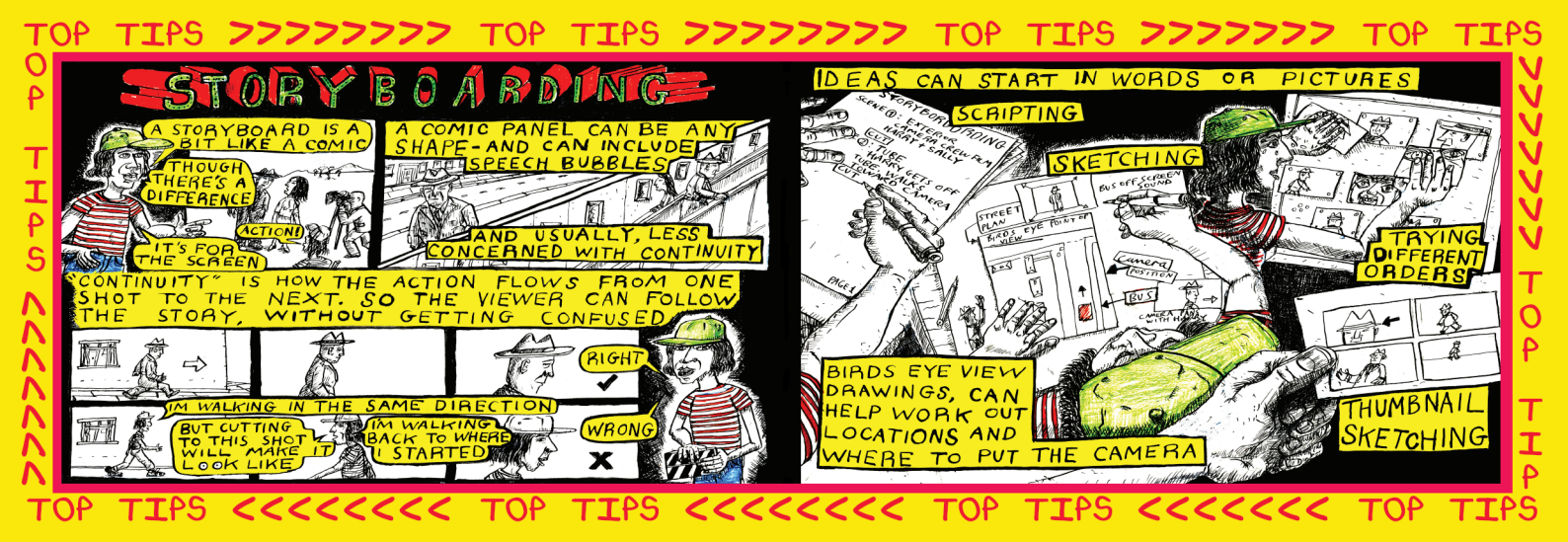
WARNING!

Make sure that this doesn't dilute the main action.

For example:

the change in a facial expression.

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STORYBOARDING
A STORYBOARD IS A BIT LIKE A COMIC
THOUGH THERE'S A DIFFERENCE
ACTION!
IT'S FOR THE SCREEN
A COMIC PANEL CAN BE ANY SHAPE - AND CAN INCLUDE SPEECH BUBBLES
AND USUALLY, LESS CONCERNED WITH CONTINUITY
"CONTINUITY" IS HOW THE ACTION FLOWS FROM ONE SHOT TO THE NEXT. SO THE VIEWER CAN FOLLOW THE STORY, WITHOUT GETTING CONFUSED
RIGHT
IM WALKING IN THE SAME DIRECTION
BUT CUTTING TO THIS SHOT WILL MAKE IT LOOK LIKE
IM WALKING BACK TO WHERE I STARTED
WRONG
IDEAS CAN START IN WORDS OR PICTURES
SCRIPTING
SKETCHING
STREET PLAN
BIRDS EYE VIEW
POINT OF VIEW
BUS OFF SCREEN SOUND
Camera
POSITION
BUS
TRYING DIFFERENT ORDERS
BIRDS EYE VIEW DRAWINGS, CAN HELP WORK OUT LOCATIONS AND WHERE TO PUT THE CAMERA
THUMBNAIL SKETCHING
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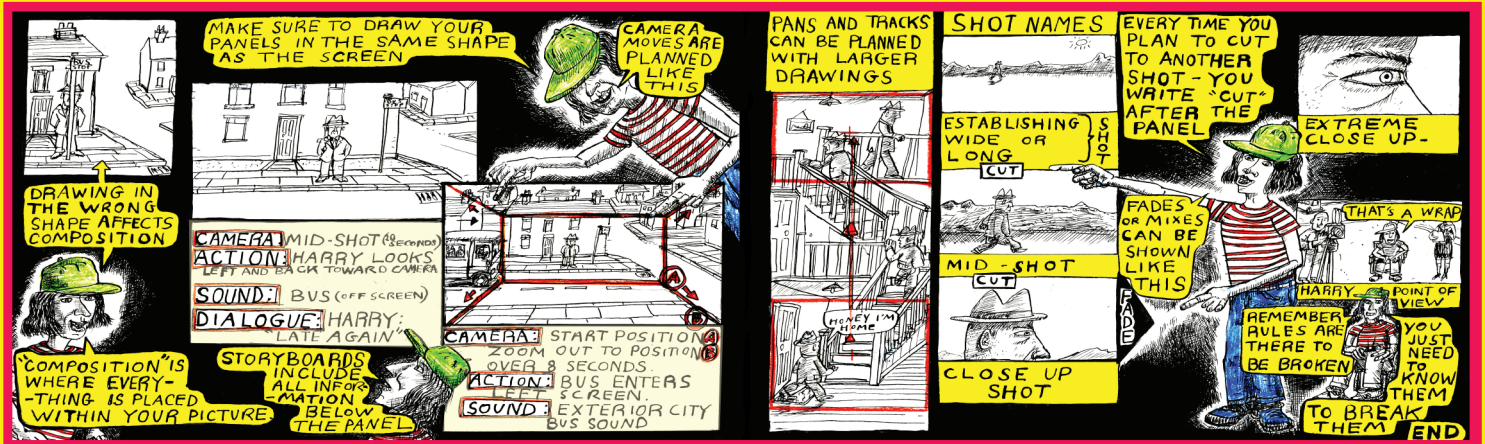

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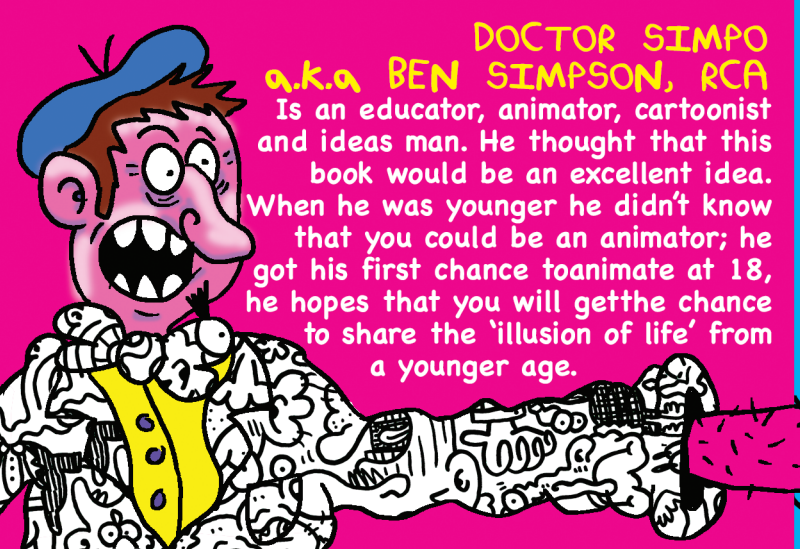

DOCTOR SIMPO a.k.a BEN SIMPSON, RCA

Is an educator, animator, cartoonist and ideas man. He thought that this book would be an excellent idea. When he was younger he didn't know that you could be an animator; he got his first chance toanimate at 18, he hopes that you will getthe chance to share the 'illusion of life' from a younger age.

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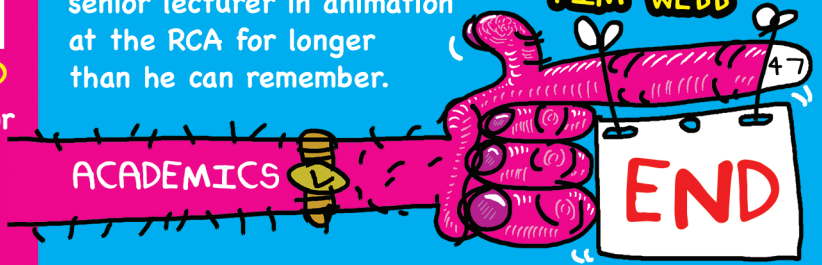
Get more information from: www.ameliorate animation.com

Cindy or Chengi-Cheng is an animator and educator working at the Southern Taiwan University of Science and Technology.

DR. CINDY CHENG

PETER MCDONALD

Is a 2D animator, illustrator and avid zine creator. He also teaches animation at RMIT in Australia.

Tim has animated on numerous classic kids televison series including: Mr Men, What-a-Mess and Gumball. His film 'A is for Autism' won him a BAFTA nomination and he has been the senior lecturer in animation at the RCA for longer than he can remember.

TIM WEBB