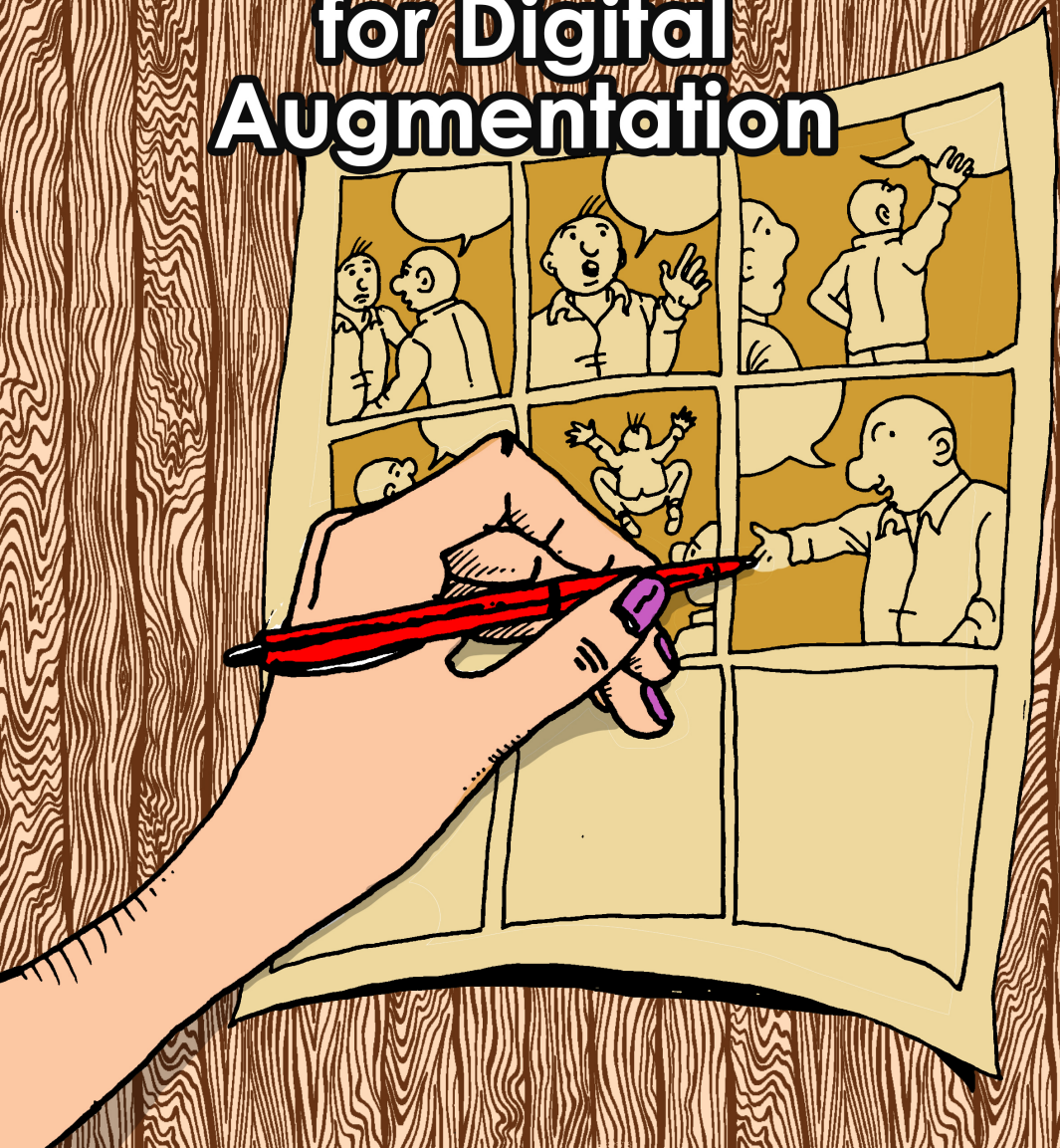
MIRACLE

BOOKLET 2

Creating Comics for Digital Augmentation



MIRACLE

jaitek

L-Università ta' Malta

Maria Regina College
St. Paul's Bay Primary

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Booklet 2

Creating Comics for Digital Augmentation

prepared by
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Introduction

"Graphic novels are a combination of art, content, and delivery that engage readers on emotional, cognitive, and visual levels. Consequently, graphic novels are a strong educational medium, precisely because this alternative means of delivering information can effectively school many different types of learners. And because of the format's inherent versatility, graphic novels present another exploratory tool for many undergraduate and graduate courses at the university level." (Marall, 2013).

But not just at University level. Comics can be a massively effective pedagogical tool for all levels of learning, not least at Primary level.

"Children's emerging understanding of writing can also be inspired by the field of comics and the creation of images, as shown in a study by Nixon (2012), which found that children in their study aged 8-12, drew pictures as part of the story writing process, to help with generating ideas, escaping writer's block and adding detail to finished drafts. Significantly, such drawings often sprung from the children's reading of comics at home. Bowkett (2011) states that children can be shown that their 'ability to draw simple pictures (however well) combined with an understanding of how comics 'work', will equip them with a powerful set of thinking tools for improving their own writing and hopefully motivate them to read more too'. The act of creating narrative with embedded drawings allows children to make links between home and school, making use of their 'funds of knowledge' (González et. al. 2005). Comics have been used to teach traditional literacy skills, including characterisation, building vocabulary, grammar and punctuation, awareness of figurative language and writing in different genres (Bromley 2002; Marsh and Millard 2001; Ogier & Ghosh, 2017).

In other words, comics and graphic novels made by (1) professionals, for the purpose of being used in classrooms with pupils and teachers in order to disseminate learning about environmental issues; (2) teachers, tailor made to their own lesson plans, and, in circular fashion, also infusing those lesson

plans, also based on the concept of environmental issues, climate change and any and all social and psychological issues related to them; and (3) pupils (potentially with parents), as a self-expression that utilises many of the skills that children find quite easy to master – writing and drawing and bringing them together along with their thoughts on the issues discussed in the format of a comic – of course, the skill-set of which needs to be imparted by the teachers after they are trained by experts.

This booklet is a "how-to" instructional booklet, suggesting steps for the creation of comics, which will then be enhanced (see Booklet 3 in this WP 2 of the MIRACLE project) for the sake of immersive interactivity.

The language of comics and graphic novels

The following detailed explanation of the physical language of comics comes from Mario Saraceni's book, The Language of Comics (Routledge, 2003).

The panel

Each page is normally composed of six to nine rectangular frames called panels. Usually, panels display single instants of action or 'stills' and, although they are often referred to as 'frozen moments' and compared to photographs, their contents are actually much more varied. It is in fact very rare for a panel to represent only an instant of the story. That is because comics panels typically contain pieces of dialogue that are longer than the duration of a camera shot (i.e. a fraction of a second). For this reason they are perceived as different from photographs, for example. The reader of comics considers the panel as a portion – which can be of various lengths – of the narrative, where something actually takes place and takes time.

Dialogues are not the only elements indicating that the duration of panels goes beyond single instants. Panel 5 of Figure 1.1, for example, represents a whole event – a character flipping through the pages of a book – not just a point in time.

At other times the duration of panels is also represented

by their width. In the short extract shown in Figure 1.2, the second panel is much wider than the others, while the third one is much narrower, which reflects the different duration of the events shown: in the second panel a marble is thrown with force, its route indicated by a long motion line across the sky, while the following panel shows the precise moment in which the marble falls in the water with a splash.

The gutter

Each panel is separated from the others by a blank space called the gutter. The gutter is a very important element, since it is the space containing all that happens between the panels. This means that the reader has to guess the missing elements in order to reconstruct the flow of the story. The gutter is similar to the space that divides one sentence from the next: there is always a certain amount of information that is missing from the narrative and the readers have to provide it for them- selves.

The actual width of the gutter is not very important; what counts is the division itself between the panels. Some authors of comics, for example, prefer to draw panels adjacent to one another, with no blank space between them; but this is only a stylistic choice, as the separation remains there, as does the concept of the gutter. Such comics are sometimes referred to as 'gutterless'. However, this is misleading, because it only takes into account the physical space, rather than the conceptual separation, between panels.

The balloon

The balloon is probably the element that most people associate with comics. It is the space in which most of the verbal text is contained. Balloons are used to report speech or thought, and that is why the terms speech balloon and thought balloon are used.

Typically, balloons are of oval or cloud-like shape, but variations are possible and sometimes significant. In the case of adaptations of clas sics of literature, for example, the shape of the balloons is often square

– this unusual shape is used in order to give more

respectability to the publication.The tail of the balloon indicates the character who is speaking (or thinking). Normally the tail looks like a small pointed projection, but it can sometimes be a simple line.

An important variation is when the tail is formed of a series of small bubbles, which indicate that the balloon is a thought balloon. The function of the tail is equivalent to that of clauses like 'he said' or 'Ann thought' in reported speech or thought.

The caption

The caption is the other element of comics that contains linguistic elements. Unlike the balloon, the caption is not positioned inside the panel, but is always a separate entity, often on the top of the panel, but sometimes at the bottom or on the left side. Normally the text contained in the caption represents the narrator's voice, very similar to the back- ground voice that is sometimes heard in films. Its function is to add information to the dialogues contained in the rest of the panel.

In its simplest form, a caption is just an indicator of space and/or time.

In other cases the caption has the function of providing information to help the reader reconstruct the flow between panels, filling the gap represented by the gutter.

Sometimes captions have a fundamental importance in the narration of the story, since they contain most or all of the linguistic components of the text.

Comics creation: Sequential Visual Storytelling

Comics tell stories, and they do so by utilising text and images, but these must come together in a way that narrates the story in a coherent, graspable way. We describe this process as "sequential visual storytelling". This is how this is defined by Carl Potts (2013):

Sequential visual storytelling is not an exact art, but there

are consistent concepts, goals, principles, and techniques that have evolved.

The principles of sequential visual storytelling are not hard and fast rules. Since there are usually multiple ways to meet each principle's objectives, different artists can draw the same story, each utilizing the principles of SVS, but produce very different interpretations of the story. The principles liberate comics creators to tell their stories as effectively as possible while maintaining each creator's unique approach, voice, and style.

A solid foundation in SVS principles allows creators to experiment from a base of knowledge instead of from naiveté (a nice word for ignorance!). It is fine to "violate" the principles occasionally as long as doing so is a conscious decision made to impart a specific effect in the service of the story being told.

Picasso's abstract work probably would not have been as powerful or compelling if he had not had such a solid grounding in representational art. His knowledge of representational drawing gave him a firm base from which to abstract—he knew what he was abstracting from. The same concept applies to experimental SVS. If you know the basic principles, you can experiment in ways that still keep the reader immersed in your narrative.

For all three elements that combine to make comics (narrative + art + SVS) it is best to keep a balance between the conventional and the inventional. (An inventional approach utilizes unconventional or unexpected panel design, layout, drawing techniques, or other visual approaches.) That means comics creators can utilize the standards and conventions of the comics medium that enable the audience to easily follow and understand the story while occasionally doing something outside the norm as long as it adds to the audience's experience without being too distracting."

The overall guiding goal for the sequential visual storyteller is: Keep the reader immersed in the story or narrative.

The goal is that simple.

Executing the work to support that goal is not so simple!

There are some key principles that comics creators can observe to help them reach the goal of telling clear and compelling stories.

Comics creation: The Process

These are the most typical roles for comics creation in the professional world. Creating comics in the classroom can emulate these roles, with students, or student groups replacing each of the roles listed here. In the case of teachers, some might need to adopt more than one role. For example, writers and artists are often one and the same.

The following information is from Schmidt (2018):

Comic-Book Roles

Writer

The person who writes the script for the artist. It is entirely possible that the writer may also be the artist, but a writer may only write a script that an artist will illustrate, and then a letterer will paste up the balloons and captions. There are several different kinds of comics scripts.

Penciller

The artist of the book. The penciller's primary responsibilities are ensuring that the visual storytelling works and communicates clearly. This is the person who lays out all of the visual elements on the page and renders them fully before they are inked and colored. In general, the penciller, along with the writer, are considered the "storytellers" of the comic book. Please note: That's not meant to "undercut the importance or the storytelling aspects of the other creators involved.

Inker

The inker, if different from the penciller, will take the penciled art from the penciller and overlay ink across the pages. The inker serves several important functions, including finalizing the look of the art, adding lighting and perspective aspects and rendering tone.

Color Artist or Colorist

After the inker is finished with the pages, she typically scans them and sends copies of the digital files to the colorist and the letterer. The colorist, typically using Photoshop these days, overlays color on the completed line art, adding depth of field and lighting effects and enhancing the overall storytelling.

Letterer

The letterer places the word balloons, captions and any text onto the pages. Do not underestimate the importance of a good letterer. A frequent beginner mistake is to use a less experienced letterer on your book to save money. This is a trap because nothing signals to the reader that a book is not professionally done faster than poor lettering.

Comics creation: The Script

Dennis O'Neil was one of the top comics writers in American comics. So it was logical that he write the DC Comics Guide to Writiitng Comics (2001). In the book, he talks about the different approaches to script writing. The Marvel Comics method, for example, was based only on the writer giving the artist a basic plot, which would then be developed into full sequential visual narrative by the artist, and only returning to the writer for the text to be included.

O'Neil prefers the full script style, which is what is being recommended in this booklet for comics creation in schools. Here is what he writes about the full script method:

> Writers who choose the full-script method produce manuscripts that resemble movie and television scripts. Although, as I mentioned previously, almost every writer I know uses a different format, the basics are always the same: Each page contains descriptions of the visual content of the panels, followed by captions, labeled—big surprise here—"caption," and then by what the character is saying or, in the case of thought balloons, thinking; these are labeled with the character's name. It is essential that the writer also indicate each comic book page; this is usually

ROBIN #83 DIXON/WOODS

PAGE TEN

PANEL ONE

Robin leaps down with both feet to the foot of a chaise lounge. The lounge levers up and smacks a thug under the jaw and throws him back into another.

CAPTION: BATMAN ALWAYS SAYS TO TURN ENVIRONMENT TO **YOUR** ADVANTAGE.

THUG 1: **AGHK!**

PANEL TWO

Robin kicks a chair under the feet of the third thug who trips over it clumsily.

CAPTION: LOTS TO **WORK** WITH HERE.

THUG 2: ow!

PANEL THREE

Robin slides under that chaise as the thugs rush him with drawn daggers.

CAPTION: BUT THESE GUYS ARE **DETERMINED**.

CAPTION: WHAT KIND OF JUICE DOES DANNY **HAVE**?

PANEL FOUR

Tight shot of Robin under the chaise and looks alarmed as dagger blades come through the cushions with an explosion of stuffing.

ROBIN: aw…

CAPTION: HOW'S A **SOPHOMORE** RATE THIS KIND OF ATTENTION?

Figure 1 – An example of a full comics strip.

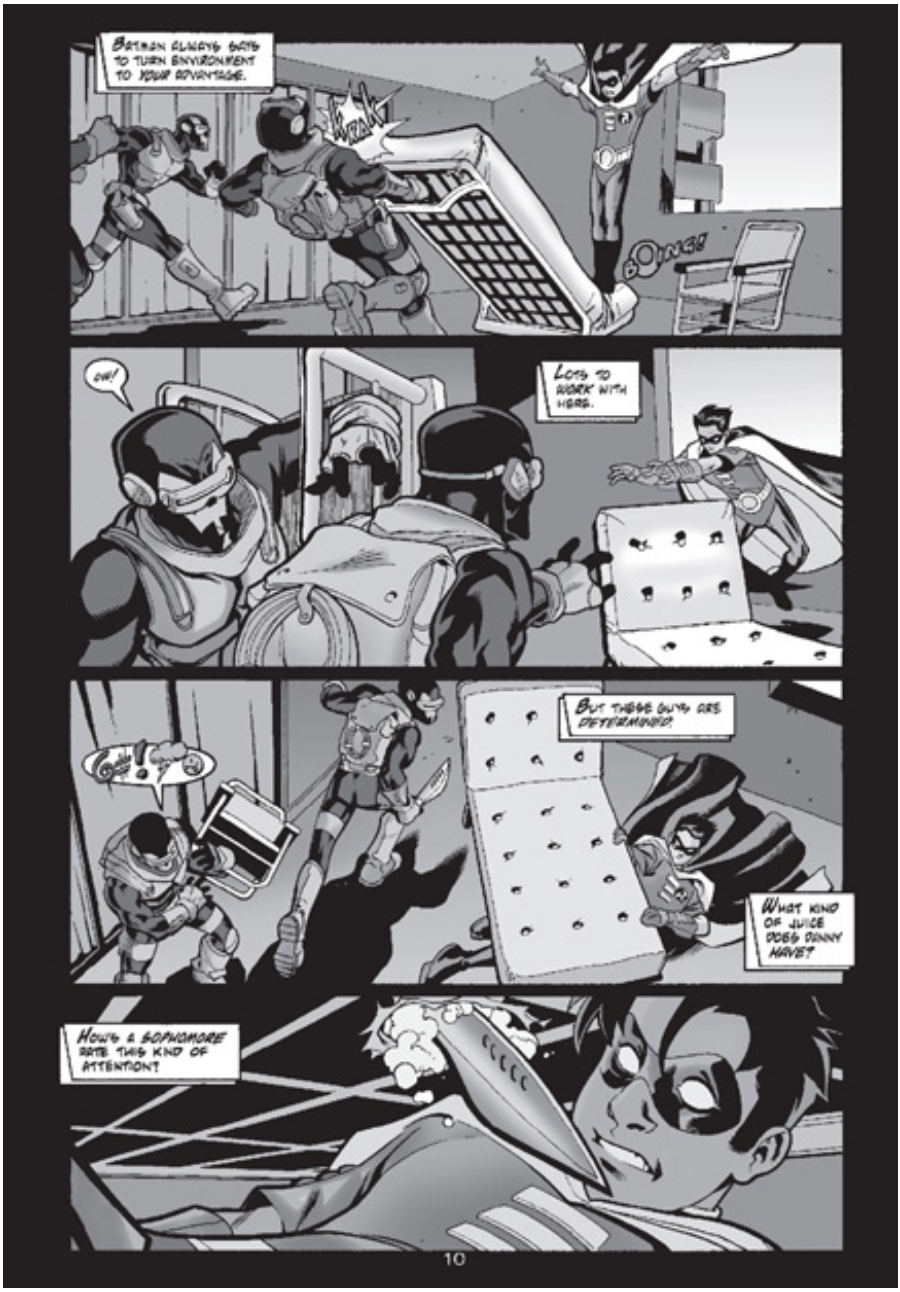

Figure 2 – The finished page that comes from the script.

done by typing that information before the first panel of the page. Note an important difference: Comic book pages contain all the visual and verbal information that will appear on a given page in the final printed magazine. Manuscript pages are the pieces of paper on which this information appears. (It's nice if these are given numbers, too, in case the manuscript gets dropped or scrambled or blows out a window or gets mixed up for some other reason.)

An example of a script for a page of comic art can be seen in Figures 1 and 2. This is by Chuck Dixon and the art is by Pete Woods and Jesse Dellperdang for the DC Comics comic Robin #83. These examples are also from O'Neil's The DC Comics Guide to Writing Comics.

Comics creation: Laying out the page

It is often recommended that the first thing an artist should do is to read the whole script first before setting out on the task. In fact, Shmidt (2018) says:

> Read the entire script first. Identify the theme, the setting, the tone, the emotions— all the details—and figure out what needs to be communicated and how best to do that.
>
> Just about every scene begins with an establishing shot (see ESTABLIHING SHOTS COMMUNICATE), where the reader is immediately told where he is, who is there, and hints about what is happening.
>
> What information beyond what's called for in the description can be communicated in the establishing shot? By reading the rest of the script, you may pick up important details such as time of day, location, surrounding buildings or parks. Do children live in the house? Is the owner out of town a lot? These facts can be shown in that establishing shot.

Brian Fairrington (2009) talks about the importance of layout, that all important first step of breaking down the script (once you've read it all) into the components of your comic. Here is what he has to say about this very important "first" step.

> When moviemakers begin production on their new picture, one of the most important things they need to

consider is the layout. How will things look through the camera lens? One of the ways filmmakers do this is by story-boarding the movie. A storyboard is essentially a large comic strip of the film produced beforehand to help filmmakers see how things will play out.

Layout and design are crucial to the storyboarding process, and you should view comic strips in the same light. When designing your comic strip, think about layout as if you were making a movie. Layout is basically the collective relationship among the characters, backgrounds, how you decide to show each individual panel, and how these components all work together to tell a story.

Your cartoon, like a movie, cuts from shot to shot; some shots are close-ups and some are long shots. You may show some shots from a certain perspective to create drama, or you may show the characters in silhouette to break up a monotonous visual story line.

Your cartoon story will be more interesting and appealing to the reader if the art and layout changes from panel to panel and you avoid showing just a bunch of talking heads (although that's fine in some cases, if the story war- rants it). Character placement, the perspective you choose, and the angles you use in each panel are all important aspects of a good layout that also add to your cartoon's appeal.

Layout is such an important facet of drawing cartoons. You don't want a flat and boring cartoon, so make sure your cartoon world is as graphically interesting as the real world. Experimenting with different perspectives, angles, and background details can help improve your story line and increase your cartoon's visual impact.

The basic layout of the art and the placement of the characters and scenes are dependent on the story line. After you write the script (what the charac- ters say in the word balloons; check out Chapter 13 for more info), you must plan the layout and the individual comic panels. You may go through several different layout roughs before achieving the desired flow.

So make sure you have the panels laid out the right way, leaving lots of space for balloons and captions, ideally drawing

in only two thirds of each panel, leaving the top part free for conversations.

Comics creation: Drawing

Now that you have the comic all laid out, it is time to start drawing it. You can do this in pencil on paper, or with a stylus on a digital tablet ... it does not really matter. If on a tablet, however, the suggestion is that you draw in blue line, so that when you go over your line in black, you will be able to distinguish between the different lines.

But there might be problems.

For exampe, what if you find it difficult to draw? Comics do not need to be drawn in massive detail, but it is important to communicate in them. That is, that what you draw is at least a recognisable version of what you have in mind. Many people find this daunting. Many say they can't draw at all and stick to their guns, never really giving it a try.

Famous comic strip artist Cathy Guisewite admits that, on her mum's insistence, what she sent to a comic strip syndicate in order to sell her new comic strip "Cathy" (which would run for decades and be very popular) were "embarrassing private scribbles to. Universal Press Syndicate agreed with Mom and sent me a contract to do "Cathy" along with a note saying they were sure I'd learn to draw if I had to do it 365 days a year." (Cathy Guisewite, writing in https://www.cathyguisewite.com/comic-strip). So one should never say never simply because one has not tried to improve their drawing.

Easily the most famous name in Comics is Stan Lee. Here is what he has to say (Lee, 2010) about drawing figures from basic shapes, which is a great way for someone to learn how to draw comics.

> From the time we're infants, we learn about shapes and sizes. We're given all sorts of toys that help us to understand spatial relationships. People learn—well, at least some of us do—to put square pegs into square holes, round pegs into round holes, and so on. As we become toddlers, we recognize shapes and shadows in ways we can describe to others. By the time we're old enough to be in school,

we learn about measurements and such things as length ("How long is that?"), width ("How wide is that?"), and depth ("How thick is that?").

As a result, all of us can draw a square. Or a circle. Or an oval. Or a rectangle. You get the idea. It's like the foundation of a house—the load-bearing part that has to be sturdy and strong. The homebuilder gets that part right, then moves on to the next step of constructing the house.

The next step for an artist, of course, is making those simple forms into something that has dimension. Today's theaters are chock-full of 3-D movies, so we're more aware of three-dimensional form (depth) than probably any other viewers in history. Let's use some of that thinking to examine giving objects proper form.

Do you prefer your pillow to be flat or fluffy? How about clouds? What's better for the tires on your car, motorcycle, or bicycle? Flat or filled? And while a flat-screen TV or computer monitor today may be infinitely preferable to those fat, heavy, cathode-ray-tube TVs of the last century, they're not truly flat. They have length ("Hey! I want that 52-incher for my den!") and width ("Will it fit into my TV cabinet?") and depth ("It's only 1½ inches thick!"). Remember those three things, and you are remembering form.

When drawing anything, think about those three dimensions. Don't go for flat. Think about an object from all sides so that you understand how it comes together. You'll be surprised to find that most of the things around you (which, of course, means all the stuff the comic book artist has to draw) are actually pretty basic shapes. So if you're just learning all this—walking before you can run, running before you can fly—each step builds on the last so that you can become the kind of comic book artist you already admire!

Realize that a circle can easily become an orange or a basketball or an apple. A couple of circles, a rectangle or two, and the shape of a blackboard eraser form the secret shapes of an automobile or a building. A basic box and three rectangles become a chair. A simple cylinder

becomes a drinking glass or a table lamp or a pipe. Circles and a rectangle transform into a jeepney. A regular rectangle transforms into a computer or a television.

Stan Lee shows a number of examples, one of which I am reproducing here (Figure 3), in which "a hungry young boy [is] raiding the refrigerator. As you can tell, the boy is a sphere, a couple of box shapes, and a series of cylinders. Likewise, the tasty foods in the refrigerator door are essentially cubes, with a sphere and circle thrown in for variety's sake."

Figure 3: An example of shapes turned into drawings from Stan Lee's *How to Draw Comics*

There are a lot of "How to draw" books that can help you learn the basics of drawing. Figures can be built in the way that Figure 3 shows, but you might also need to learn things like perspective (even if a very basic one) in order to give the pictures in your panels a bit of depth.

For example, Figure 4 is from Chistopher Hart's book Drawing Cutting Edge Comics (2001). He says, about this picture:

"Everything converges at a single point, therefore this has to be one-point perspective. One-point perspective can be an effectiive tool in organising a scene. Its simplicity and narrowness of focus keep the reader's attention very directed. It doesn't allow the eye to wander. It keeps things urgent."

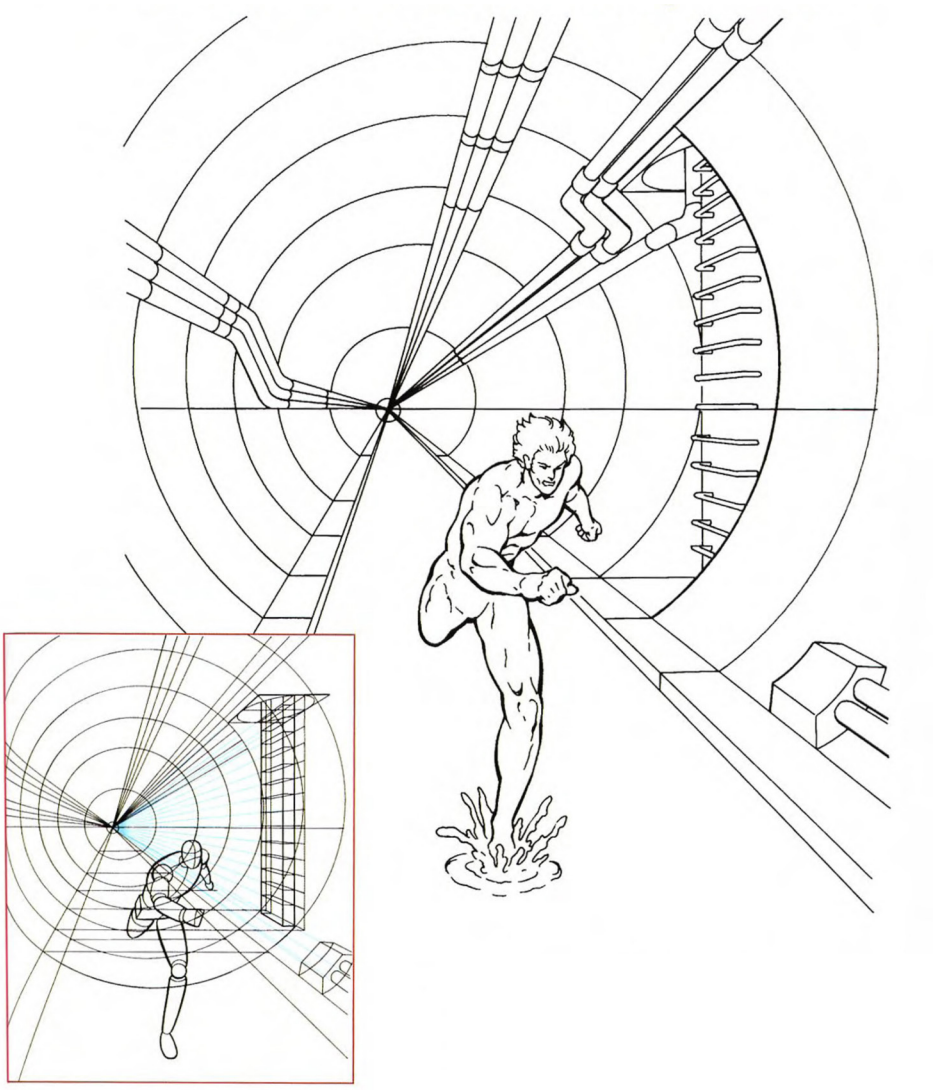

Figure 4: An example of one-point perspective use in comics.

You are now ready to start producing the pencils of your comic. It is extremely important, in order to tell a good story, that you understand how one panel transitions into another – that is, how what is in one panel moves fluidly to the next panel, and then the next, and so on.

A book that I highly recommend you read about what comics are all about, is the world-famous *Understanding Comics: The Invisible Art* by Scott McCloud (1993).

Figure 5 comes from that book. It shows what McCloud

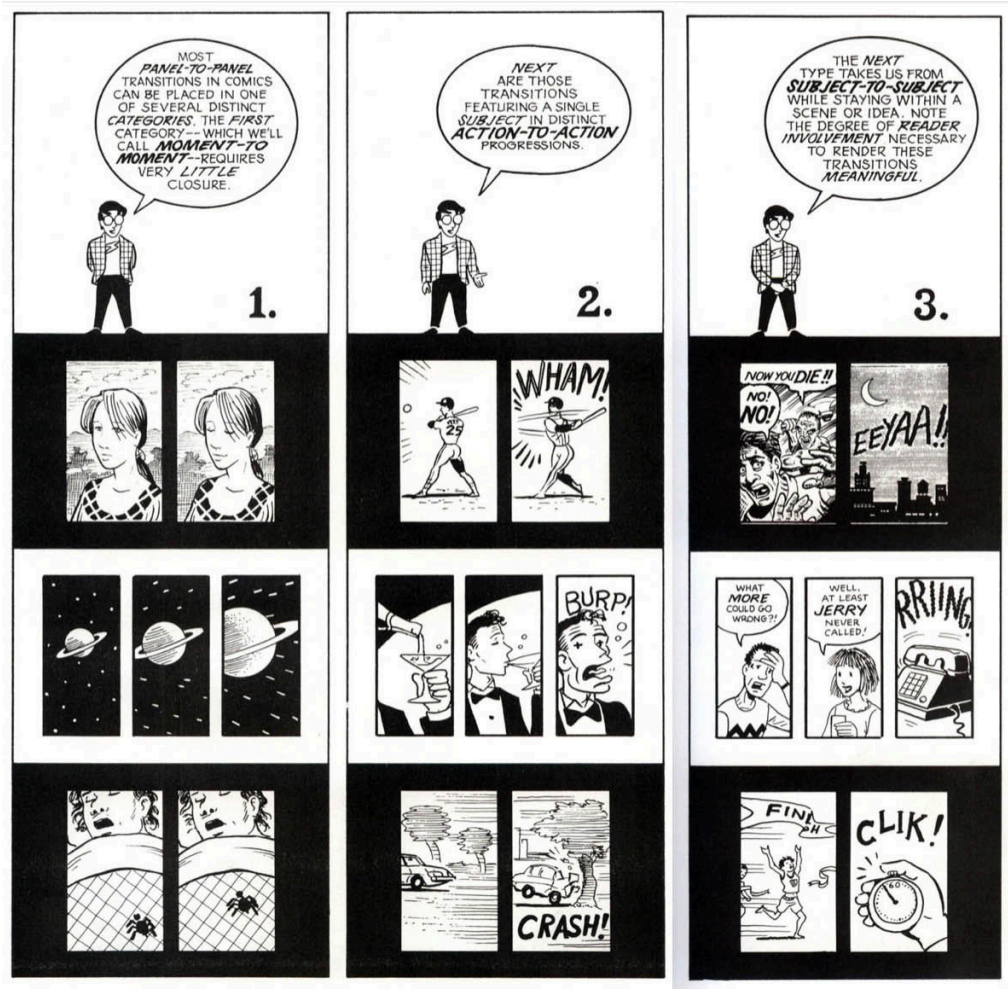

Figure 5: The six transitions from panel to

suggests are the best way that one panel can transition into another. Since the book is a comic itself, there is no need for me to explain it, since the explanations happen in true comics formats.

To finish this section on pencilling, I would like to quote directly the main part of a "what to do" section in Greg Pak and Fred Van Lente's book *Making Comics like the Pros* (2014). You should really pay close attention, particularly to the five points they make about how to narrate your story visually.

o panel as suggested by Scott McCloud

When it comes to the basics of storytelling, how you draw is irrelevant. People read stories to read about other people, even if those people are dogs, mice, cats, aliens, gods, or machines. Every panel on every page of a comic is somehow related to those characters' struggles—or it better be, if the writer has done the job correctly—and this is what the penciller must always keep in mind. You can draw in whatever style you want—cartoony or photorealistic—in a fixed-grid layout or with self-guided digital panels or with the images multiplying fractally across the page like shattered glass—as long as you're answering the three most important questions in every panel:

WHAT is happening?
WHOM is it happening to?
And HOW do they FEEL about it?

Here are some good basic guidelines to follow in storytelling, regardless of genre, tone, or drawing style:

1. Put the important thing in front. "Is that suitcase going to be important later? Well, then put it somewhere people can see it! Is there a bomb in it? Make sure we know it's there. Is somebody's dirty laundry in it? Feel free to hide it in the background. This goes double for characters.

2. Action progresses from left to right. People read from left to right in most languages around the world. In other words, stuff you want the reader to see first should be on the left side of the panel, and stuff you want the reader to see next should be on the right side of the panel. It is especially important, when drawing, to not drive your letterer crazy by making sure that whoever speaks first is on the left half of the page. Otherwise, you get into weirdly placed balloons, crossing balloon tails, and all sorts of related nastiness."

3. Always show everything at least once. Introducing elements—like props—in a scene out of nowhere, particularly when they're supposed to be there all along, can confuse the heck out of people. Do not ever forget the importance of close-ups so that the reader can see your characters' faces. Particularly as emotions change within a scene, keep cutting back so that the reader doesn't miss a beat.

4. Dynamic pages require varying shot types.

5. Small panels for small moments, big panels for big moments. This has nothing to do with shots and everything to do with using the layout of a page as a narrative tool.

Comics creation: Finishing the comic (Inking, Colouring, Lettering)

Once all the pencilling is done, it is time to go over the artwork with ink. You can do this physically or digitally. In fact, if the drawing you did was pencil on paper, then you can ink directly on that paper, trace the drawing in ink onto another paper (if you want to leave the pencils intact and not have to erase them), or scan your pencilled page and do the inking on screen, using (for example) Adobe Photoshop, that has an array of inking tools. Other programs like Procreate, normally found on the iPad Pro, is also excellent for inking.

But, keeping things basic is best. Famous inker Klaus Janson writes (2003): "A beginner inker requires five items in order to start working: ink, paper, a brush, a pen, and a drawing board. At this early stage of your artistic development, keep the amount of gadgets you purchase to a minimum. Stick to these basic items for now."

Most beginners ink with a pen, or even with felt markers. These do not really give the variety of line weights that makes for dynamic movement. For that, a brush is best. But mastering the brush in inking is not easy. A nib-pen can also give a variety of line weights.

Klaus Janson (2003) describes these lines.

1) A dead line

A dead line refers to a line that has no variation in its thickness. It has the same weight throughout the inked shape. This makes it easier to separate planes and shapes.

2) A weighted line

A weighted line is an individual line that has a variation of thickness. It can go from thin to fat in one stroke or vice versa. This particular style of inking is the more prevalent approach in comic books. The advantage to a weighted

line is the ability to create form, shape and volume in the space of one shape on one plane.

"Digitally inking over finished pencils is a lot like traditional inking—except, of course, that you'll be utilizing tools in Photoshop." (Williams, 2009). On the other hand, if you have drawn your originals digitally and created a wireframe, you can ink directly over that. Logically, this is different from inking physically.

Williams (2009), explains this: "The main difference between inking over your own wireframes and inking another artist's pencils is that, with the wireframes, you are effectively inking over an empty shell.

Inking over wireframes is like doing finishes—filling in the shadows and rendering. Because the wireframes contain no indication of a light source, you also have the freedom to try different lighting schemes."

Apart from that, digital brushes, pens, etc, can be used to emulate what you would have done physically. Of course, there is a large amount of other tools in programs like Photoshop and Procreate that can make your life easier – tweaking, deleting, layering, etc.

Which brings us to the final two steps in the process of comics creation.

Colouring first. "The goal of an effective colorist is the same as that of every other creator working on a comic: to tell a clear and engaging story. Many skills contribute to this objective, including being able to set a mood, flow a story through different scenes, and support the dramatic intentions of the writer and artists." (Chiarello & Klein, 2004)

As in the case of inking, colours can be applied by hand ... with a brush, or using coloured pens, pencils or even crayons. Of course, applying colours by hand demands a certain skill, because colours applied badly can easily obfuscate what the penciller and inker have tried so hard to communicate.

For this reason, nowadays, most comics are coloured digitally, using, as in the case of inking, programs like Adobe Photoshop on computers or Procreate on tablets.

But what is the philosophy that leads to good colouring. Chiarello & Klein (2004) provide the following:

Much in the same way a painter must visualize the finished painting before he even picks up a paintbrush, a colorist must "walk through" the scene he is about to color. It's a bit like watching a scene from a movie in your mind's eye: You must be able to choreograph it before you color it. What is the overall tone (color) of the scene? How about lighting? Shadows? What are the key points of interest and focus?

The first step in any coloring job—before you click a single pixel of color onto your scanned pages—is to read the entire story. This is so you'll know that on page seven, for example, when the narrator refers to it being "a cold and windy night," you'll know not to color the scene as a warm, sunny day. Reading the comic before you start coloring will also allow you to make sure you have all of the color reference you'll need to do the job.

The most important reason for reading through the story is to form a coloring "game plan" in your head. You've got to be able to flow the story from scene to scene using different and appropriate color schemes that change as the scenes change.

Learn the basics of colouring on (say) Adobe Photoshop. The use of the bucket tool for filling enclosed spaces, the 'multiply' layer that allows you to overlay colour transparently over the underlying artwork, the lasso tools that can be used to create shadow spaces on objects and figures, that can then be filled with darker colours for tonality purposes. And so many others. Just using the bucket tool to begin with is almost enough, but the better you get at uning the other tools available, the better your colouring can be.

Logically, no-one expects you to be an instant professional at this, but the more you practice, the better the result will be and the cleaner your comic and the clearer your message.

And finally, we come to the lettering. This from Chiarello & Klein (2004): "The letterer's job consists of creating everything on the comics page that's made of words: the balloons, captions, sound effects, display lettering, titles, signs, and sometimes the logos. It usually also includes inking the panel borders on pencilled comics art. We'll discuss all those areas of lettering, as well as techniques such as balloon placement, accuracy and

readability, making the text fit, and adding creative and stylistic touches that enhance the finished product."

Nate Pekos (2021) elaborates even more on this role: "A Letterer uses the writer's script to create virtually all the text components you see in a comic book. We're responsible for dialogue balloons, sound effects, captions, titles, logos, and sometimes even road signs, newspaper headlines, and cellphone texts. We guide the reader's eye from one element to the next, so they're never confused or taken out of the story. Our goal is to create engaging graphic design that complements the style of underlying artwork and the genre of the comic book."

The big debate, here too, remains whether lettering should be done by hand or by computer. Before computers, all comics were lettered by hand, with balloons cut out and pasted onto the artwork. Todd Klein says that "the best course for anyone who wants to pursue lettering from today forward is to learn as much as possible about both methods. Hand-letterers can bring their creative skills to the computer (which is only as creative as what you put into it), and computer letterers can benefit from learning to do things by hand. If you can master both you have the most options, and the best chance of being the right person for any lettering task."

If your comic is going to be lettered by hand, you will either need to letter it before the inking is done, if you are going to integrate the text to the actual artwork, or work the way the old letterers did by cutting out captions, balloons and sound effects and pasting them onto the artwork after both inking and coloring have been done, providing these too have been done by hand. Of course, hand lettering is not easy and demands skills that only a lot of practice can give you. You need to have a uniformity of writing style throughout, be clear, make sure you use size according to what is needed, and always convey well the atmosphere brought about by the artists who have worked before you.

If you go the digital route, things will be, in a sense, easier. You can work either on a scan of the artwork, if this has been done entirely by hand, or directly on the artwork if this has been digitally drawn or rendered.

You need to, of course, be aware of the different shapes balloons can take as part of comics language. Figure 6 gives us examples from Chiarello & Klein (2004).

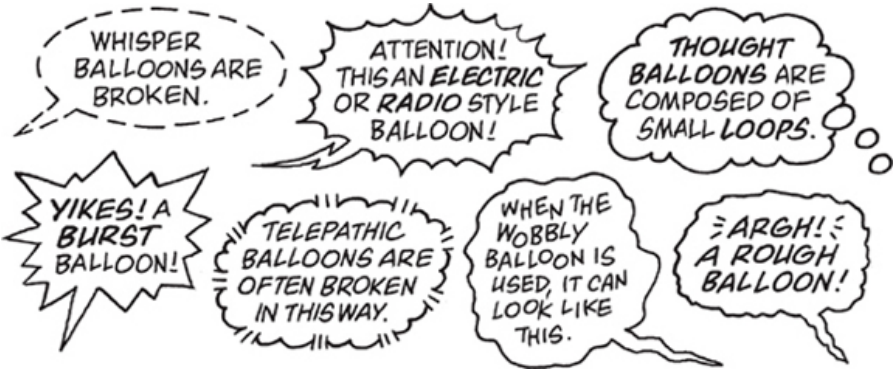

Figure 6: Balloons by Tod Klein

Tod Klein continues to give important instructions to comics letterers.

> Ideally, balloons and captions shouldn't cover figures or art important to understanding the picture, but sometimes they must. Try not to cover hands and feet, and never cover faces of those speaking (though trimming off some of the hair can be okay, if necessary). Generally balloons look best above and away from the speaker. Jamming balloons in a narrow space between figures is not a good idea, especially between two faces. Be careful with overlapping of figures and art: keep it consistent. Balloons shouldn't go behind one part and in front of another part of the same person, for "in front of another part of the same person, for instance. Nor should they go in front of a foreground figure and behind a background figure.

It is extremely important that balloons are in the correct order for speaking. Figure 7 gives us a clear example of this.

There are templates of all types of balloons that can be easily downloaded and used. Resizing of each can be done once lettering has been fitted. Text should never be too close to the balloon and caption boarder as this gives an impression of untidiness and lessens legibility.

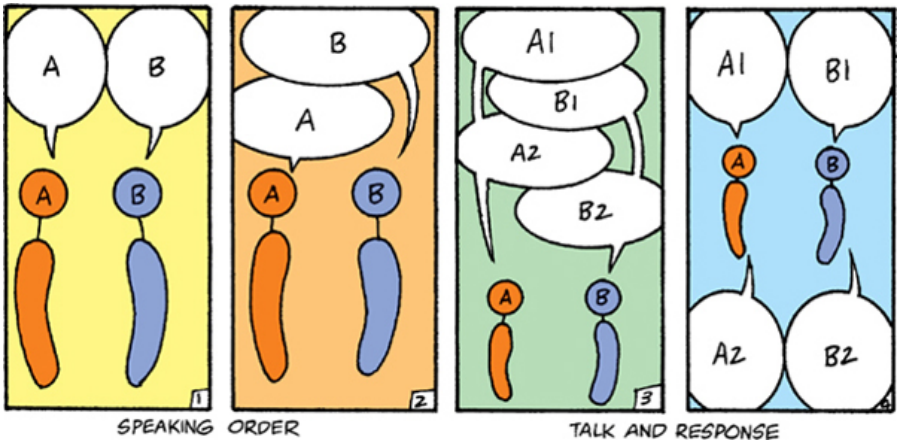

Figure 7: Todd Klein illustrating balloon sequencing.

Conclusion

And your comic is done.

If you have drawn everything, inked, coloured and lettered, all physically, that means you have one copy, which you can scan and send to everyone as a .pdf, or even print out copies on a colour photocopier, if what you need are physical copies.

You can also save a digital comic as a .pdf file and go through all the steps that a scanned copy .pdf would go through, either digitally distributing, or physically making copies.

Your comic is also now ready to be augmented digitally ... which will make the message even stronger and easier to communicate. A full, interactive experience of your hard work.

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THE MIRACLE TOOLKIT

includes five booklets

1) **THE BASIC SCIENCE BEHIND CLIMATE CHANGE** aims to empower educators to teach the elements of CC inside and outside their classrooms. It is guided by four principles: contextual relevance, knowledge-based learning, action-oriented learning, and curriculum links. It combines elements from the five types of learning (UNESCO's CCE for SD), the New European Bauhaus initiative; the Council Recommendation on learning for environmental sustainability; and the "GreenComp" to incorporate rigorous scientific knowledge and ethical reflection into CC adaptation and mitigation approaches and measures in small communities.

2) **DIGITAL COMICS CO-CREATION** aims to explore CC through art and digital technology, developing an understanding of the concepts of visual narrative-creating stories with images and words that tell stories in ways that the two cannot say separately.

3) **DIGITAL AUGMENTATION OF COMICS** aims to provide a series of design guidelines to assist teachers and pupils in the development of digitally-augmented print media. With the advances of affordable mobile AR hardware and off the-shelf AR libraries, the focus will shift from technical development to the effects of the technology on pupils.

4) **FAKE NEWS AND DISINFORMATION** discusses a truly global problem, extending beyond the political sphere to all aspects of information, including climate change.

5) **EDUCATIONAL SCENARIOS**, each including Lesson Plans, with hands-on and online activities on co-creation of comics on climate change.

MIRACLE

BOOKLET 2

Creating Comics for Digital Augmentation

Comics and graphic novels made by professionals, for the purpose of being used in classrooms with pupils and teachers; by teachers, tailor-made to their own lesson plans; and by pupils, as a self-expression that utilises many of the skills that children find quite easy to master – writing and drawing and bringing them together along with their thoughts on the issues discussed in the format of a comic – disseminate learning about environmental matters.

This booklet addresses these issues.