

## Technology's Impact on the Processes and Quality of Animation and Animating

From decades-old classics to present-day blockbusters, animated cartoons and films have grabbed the attention of hundreds of millions of people around the world. Though some studios still create works of art with the old techniques, the ubiquity of computers, smart handheld devices and dedicated systems has given rise to digital animated productions that have the quality to potentially rival their traditional counterparts. Many of the processes that traditional celluloid and acetate animators use to make and manage their projects have translated into the digital realm to varying degrees of success. Techniques that have been practiced for decades can be replicated on the screen with shocking amounts of detail. Besides the process of creating it, animation has changed in its methods of delivery, at times allowing individual users to interact with them in ways that could be interpreted as gamelike. The process of animation has been changed in the past decades due to the proliferation of dedicated animation software and novel spins on century-old techniques, and because of that, computer-generated renderings are able to compete with old technologies in terms of quality and interactivity.

The techniques and key concepts that celluloid or acetate-based animators used to draw characters, backgrounds, and other key features of animated works have been given new lives in modern computer applications. These tools are designed to be utilized in the digital world to make it easier for artists and animators to work with pieces of art in a specific frame or scene. Piece by piece, the artist can create assets, manage those assets, and arrange them in ways that give an illusion of movement in still frames. It is necessary to understand the key concepts that are needed to produce an animation in the first place, whether it be in a tangible or intangible form, so that it is easily evident why animation programs are laid out in the ways that they are.

Animations, independent of what type of medium they are produced on, are simply rapid successions of images, or composites of images, that register so quickly in the viewers' minds that they appear to have movement. The way that the animator accomplishes that feat makes all the difference. Animations of both varieties include three main types of frames: normal frames, keyframes, and in-betweens, or "tweens". A set of static keyframes, called an animatic, is created to show all the artists who are working on a scene what should be emphasized the most and be prioritized, and an article published on the Penn State University website explains that animatics are what "often expresses what the main animators will see as what they call the key frames of the film" (Penn State University). Those key frames, or keyframes, are built upon by other artists who fill in the gaps in between them to create a more fluid piece. The digital equivalent of a physical set of stills is officially named a "timeline" in the world of Adobe Animate, formerly Adobe Flash, and it is what gives Animate the capacity to grant artists the power to create illusions of movement where they may not exist. This is the backbone of both digital and physical animation productions.

Tools such as Onion Skinning are utilized to expedite the process of creating in-between frames by granting the animator a peek at what has happened in the frames prior to the current one that they are working on. The Session College for Professional Design article on character animation in Flash describes that it works by "allowing you to get a ghosted view of the previous frames to use as reference. With character design, this enables you to create precise motion from frame to frame" (Georgenes). It is partly thanks to that tool that hand-drawn animation is possible in Animate and similar programs which have that feature as well.

The illusion of movement, specifically in the world of Animate, is created by either the artist's hand or through the use of special effects known as tweens. Named after what they are

dependent on, motion and classic tweens are composed of a symbol and a new position, color, angle, path, or effect. The Animate software calculates all the positions, colors, angles, paths, and effects in between two specified keyframes, and the animator may alter the symbol as seen fit. Motion tweening is created by using the system to “define properties such as position, size, and rotation for an instance or text block at one point in time, and then you change those properties at another point in time” (Adobe). The learning guide argues that “When you do this, Flash automatically creates the gradual change between the first and second point in time.” This development is one of the improvements on traditional animation because it gives the animators more time to pursue the more difficult parts of a frame and, if used properly, can provide the same quality look as a traditional celluloid animation would. Tweening is but one tool in the toolbox of effects that both expert and novice animators can use to improve efficiency and maintain a standard of quality.

Select tools are made to be compatible with tablets or touch screen devices, because mouse clicks may not be the most appropriate drawing implement in certain circumstances. The ease of use is one factor in luring users into being dependent on computer programs for animation projects. One example of such user-friendly tools is found in the Adobe Animate program. According to Adobe Animate’s program documentation on its official website, users with the appropriate hardware may use pen pressure sensitivity and tilting to “draw art and pattern strokes with variable width, dependent on the applied pressure or tilt on the stylus” (Adobe). Other art and animation- oriented programs have this feature as well. The capability to vary brushstroke width provides the user the power to emphasize parts of anatomy or to give a sense of depth, just as an artist would do on a physical medium under similar circumstances. Using a pen provides more precision than a mouse or trackpad. This precision can give

animations a crisp and perfect appeal, and if the artist does not see that to fit the purpose of the piece, they can manufacture their own imperfections. Controlling the workspace and being able to undo or redo certain things is a major advantage in the digital animation program's favor, and using a digital pen is but one of the tools that are used to create assets for animations.

It is partly due to the program's ease of use that artists, developers, and animators have taken interest in looking into using the medium of animation in a more interactive format. Games created from animated content once expanded into entire communities and companies, some of which remain online. As a preface to a book of lessons on ActionScripting, a programming language used in Animate, the authors, Jeff and Steve Fulton, said that the advent of the language made it so that "Flash games could be designed like real software, using design patterns and object-oriented methodologies" (Fulton). He continues to point out that the complexity of the games increased as his expertise increased and improved versions of Flash came out. "The games we designed and built became ever more sophisticated with features like particle effects, parallax scrolling, and customizable levels. By the time Flash 8 was released, we were using raw bitmap data, tile sheets, and more complex physics and creating multiplayer games..." (Fulton). In short, speedy production times in tandem with a demand for games or interactive content gave some animated content makers an incentive to extend their knowledge to satisfy new generations of users on advanced electronic devices.

The proliferation of computers and smart handheld devices in recent decades has directly influenced culture in a way that may not be reversed easily. While animation has had its place in society for the past centuries, the amount of people who have taken interest in animation has increased at a brisk rate, and the capability to send animated content around the world makes starting a more tantalizing idea. Just as the use of programs to create animated works has been

made easier, the introduction of the programs themselves has had an electrifying effect on the processes and history of animating in general. One example of such a program on the market is “FlipaClip”. The Google Play Store’s description of the app encourages Android users to “Join our growing community of animators and artists creating unique and exciting animations every day!” (Google Play). It is with applications of that nature to entice users to spread the word of animation so that more would download and purchase its full version. This is a stellar example of what an orthodox animation application on a mainstream platform looks like.

On the other hand, there are unusual methods to produce animations, or animation-like products with the assistance of programs that were not intended to create them. Repurposing a software for animation purposes is for challenging a developer, designer, animator, or artist into creating something that would be absurd on a stiff professional level, but yet may find its audience in both niche and broad communities. A clever production entitled “Roflcopter” was published by a user under the alias “netprince212”, and in its 17 seconds of rudimentary ASCII, which is basically plain text characters, animation, it managed to encapsulate nearly two million people to view it and 62 thousand of those people to “like” it. The piece appears to be stitched together by two frames of low-resolution animation and supplemented with a larger, but more choppy, animation of a nuclear attack. Besides being created as a means of spreading laughter, it remains a justifiably solid piece of art. On its first frame, an image that resembles a helicopter is seen, and in the second frame, the only indication that it is more than a solid, still image, is that the rotors move to the left and right in a logical manner. This animation is one of the products of the birth of new ways of implementing change and using software.

The rise of powerful computers, smartphones, and dedicated animation systems has directly affected the way animation is created and how it is interacted with in the digital realm.

The old and new techniques that are used in the process of animating can be compared and contrasted against each other, as there are equivalencies of real-life tools and methods in computer programs and applications. Decades of advancements have made it simpler to use tools that have been perfected and tailored for use in digital art. Certain applications geared towards producing animated content have sprung towards gamifying content in order to increase interactivity and fully embrace the strengths of the computer-driven aspect of animation. The future of animation will continue to be guided primarily by digital means, but as the future leans closer, it is possible for complete traditional animation forms to return and remain in vogue.

## Works Cited

- “Exploring Motion Tweens.” *Exploring Motion Tweens*, Adobe, 16 Aug. 2011,  
[www.adobe.com/devnet/flash/learning\\_guide/animation/part05.html](http://www.adobe.com/devnet/flash/learning_guide/animation/part05.html).
- “FlipaClip: Cartoon Animation - Apps on Google Play.” *FlipaClip: Cartoon Animation - Apps on Google Play*, Google Play,  
[https://play.google.com/store/apps/details?id=com.vblast.flipaclip&hl=en\\_US](https://play.google.com/store/apps/details?id=com.vblast.flipaclip&hl=en_US).
- Fulton, Jeff, and Steve Fulton. *The Essential Guide to Flash Games*. Friends of ED, 2010,  
<https://link.springer.com/content/pdf/bfm:978-1-4302-2615-4/1.pdf>.
- Georgenes, Chris. “Flash Character Animation.” Edited by Gordon Drummond and Tara MacKay, *Flash Character Animation*, Sessions College for Professional Design,  
[documents.sessions.edu/eforms/courseware/coursedocuments/flashanimation\\_cs3/lesson1.html](http://documents.sessions.edu/eforms/courseware/coursedocuments/flashanimation_cs3/lesson1.html).
- “Keys and In-Betweens: The Traditional Animation Process.” *The Beauty of Animation*, Penn State University, 20 Mar. 2018, [sites.psu.edu/thebeautyofanimation/2018/03/20/keys-and-in-betweens-the-traditional-animation-process/](http://sites.psu.edu/thebeautyofanimation/2018/03/20/keys-and-in-betweens-the-traditional-animation-process/).
- “Roflcopter.” *Roflcopter*, YouTube, 6 May 2007,  
<https://www.youtube.com/watch?v=boh92DrYEWs>.
- “Using Paint Brush in Animate CC.” *Using Paint Brush in Animate CC*, Adobe, 15 Oct. 2018, [helpx.adobe.com/animate/using/working-with-paint-brush.html](http://helpx.adobe.com/animate/using/working-with-paint-brush.html).