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Frame of reference: toward a definition of animation

Keywords

animation
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Abstract

Some animation scholars assert that framing animation in a formal definition would necessarily impose intellectual limits on inquiry, while others contend that any definition wide enough to encapsulate the full gamut of 'all things animated' must be too wide to be meaningful. International organizations of animation

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'experts', who have taken on the responsibility of helping humankind to understand animation, fare poorly in terms of their commitment to the pursuit of a definition, citing 'too wide a range' of things qualifying as being animation, and that forcing a definition could create dissonance within the animation community of scholars. Despite being experts however, the group will not formally say what properties or commonalities unite the things that they consider to be animated. After a pointed and persistent effort at uncovering a definition through spirited queries and dialogue with these groups of animation experts, I was left with many unanswered questions. Why don't international organizations of animation scholars believe that a definition of animation is necessary? Is a definition of animation necessary? If these organizations of animation scholars cannot define animation, who can? Who will? If an 'animated thing' is part of a distinct group of 'things that are animated', then what are the properties of the thing that makes it a part of the group of 'animated things'? Moreover, who would benefit from a definition of animation, and who would not? The purpose of this article is to explore and discuss some of these questions, in the hope that knowledge and understanding will result from the central question: what is the core set of properties that makes a thing 'animated'?

practice
theory
persistence of vision
apparent movement

Introduction

After over ten years of teaching in higher education, I was not surprised to learn that animation theorists and scholars cannot, or will not, formally define animation. This oversight is not new, and it does not set a precedent; after all, the International Astronomical Union (IAU) did not formally define the term 'planet' until 2006, much to poor Pluto's chagrin. While the importance of defining animation is not a matter of universal significance or astronomical proportion, it will certainly add to the world's body of knowledge, and it is a matter of significant importance to the scholarly animation community. In fact, it is so important that squabbles within the scholarly community have erupted over it. I know ... you are picturing Daffy Duck arguing in his Schlesingerly, lispful and impassioned way with some egg-headed, stoic professor-type character over something as trivial as insisting on a definition of a 'Warner Brothers cartoon picture'. Such is the life of academicians and theorists, which quite saliently exposes the juxtaposition between theory and practice in which their work is framed. 'But for now', says Daffy, 'we muthst bend back toward the theoretical ... bub!'

Some animation scholars assert that framing animation in a formal definition would necessarily impose intellectual limits on inquiry, while others contend that any definition wide enough to encapsulate the full gamut of 'all things animated' must be too wide to be meaningful. International organizations of animation 'experts', who have taken on the responsibility of helping humankind to understand animation, fare poorly in terms of their commitment to the pursuit of a definition, citing 'too wide a range' of things qualifying as being animation. They contend that forcing a definition

1. Much of this discourse emerged in a dialogue with a number of members of the online discussion groups affiliated to the International Society for Animation Studies during 2008. It resulted in extended discussions between individuals and groups engaged with thinking about definitions of animation.
2. Fourth Annual Society for Animation Studies Conference Proceedings, October 1992. <http://gertie.animationstudies.org/index.php?option=content&Itemid=10&task=view&id=64&List-of-Annual-SAS-Conference-Papers-1989-2000#fourth>. Accessed 17 February 2011.

will create dissonance within the ranks of the scholarly animation community (politics, sheesh!). Despite being experts, however, the leadership of these groups cannot or will not, formally, say what taxonomic properties or commonalities unite the things that they consider to be animated. After a pointed and persistent effort with these groups at uncovering a definition through spirited queries and dialogue, I was left with many unanswered questions: why do international organizations of animation scholars not believe that a formal definition of animation is necessary? Is a definition of animation necessary? If these organizations of animation scholars cannot define animation, who can? Who will? Who would benefit from a definition of animation, and who would not? More to the point, if an 'animated thing' is part of a distinct group of 'things that are animated', then what are the attributes of the thing that makes it a part of the group of 'animated things'?¹ The purpose of this article is to explore and discuss some of these questions, in the hope that knowledge and understanding will result from the central question: what are the core properties or attributes that make a thing 'animation'?

Dan McLaughlin (UCLA Animation Emeritus) once told me, 'There can be many definitions of animation.' Phil Denslow also stated, as the opening sentence of a paper presented to the Fourth Society for Animation Studies Conference in October 1992, 'There are many definitions of animation.'² This must be true, because of the many different definitions put forward over the years by animators, historians and theorists in the animation field. In fact, almost every book written about animation, except for some of the practical 'how to' guides, starts with the author's definition of animation as a way to frame further discussion in following chapters (see Solomon 1987; Cholodenko 1991; Wells 1998). It must also be true then, that providing a definition of animation to people is important, otherwise so many would not have created so many definitions. Whilst I agree with the assessment that many definitions of animation exist, I beg to ask the question, 'Should there, or could there, be a single, succinct *formal* definition?' What barriers stand in the way, and need to be overcome, in order for scholars to agree to *attempt* this task?

One of the things that makes animation so challenging as a scholarly discipline, or as a creative medium, is because it uses, as a central property, the (quite experimental) human construct of measuring time. Because of this, it has attracted some very inquisitive minds such as that of the brilliant Canadian animation film-maker Norman McLaren. His now famous statement: '... animation is not the art of drawings that move, but rather the art of movements-that-are-drawn. What happens between each frame is more important than what happens on each frame' (quoted in Solomon 1987: 11) points to the philosophical, the physiological and the metaphysical. Not only is he saying that animation happens during the 1/24th of a second between frames of film (the predominant time-based visual medium during his time), but he is also referring to the way in which the human perceptual apparatus's combination of eye, nerve and mind integrate, evaluate and communicate, so quickly and effortlessly, the most profoundly subtle changes in *time and*

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space. The properties of animation, McLaren and others have noticed, provide the artist with the almost magical and universal ability to simultaneously control both time and space, and to use them as media for creative expression. When contemplating the concept of time, things can get a little uncertain, especially in terms of being definitive. In spite of this complexity, we should not be deterred.

I further inquire, 'Might these many different definitions possess commonalities or properties of animation amongst them that may be coaxed out, or "distilled", in order to arrive at a more succinct, and more widely accepted definition?' Surely, such an endeavour would be worthwhile, and would be in the interest of theorists, historians, practitioners and emerging scholars. If you wished to study theories or learn the practice of animation, would you not find it beneficial to know what *animation* is? Would you not look towards the world's animation experts to offer a framework for understanding?

It is precisely because there are so many definitions of animation, that a more succinct definition is warranted. Is such a task to be considered folly, given the diversity of ideas and opinions among scholars? Is it possible that, as a result of this intellectual tickling and prodding, further discussion amongst and within the animation community will follow, and that through the talking points which dance around the unspoken conflicts, a more communicative and learned animation community will emerge? If astronomical and astrophysical scholars can come to an agreement on what a 'planet' is, cannot animation scholars accomplish the same? Says Daffy, 'Thith ain't rocket thience!'

I often recite to my students a mantra that intends to protect their emotional, intellectual and creative equilibrium whilst I tear their work to shreds upon the critique board, 'It's not about you, it's about the work,' I say. 'You are wonderful, but the work can always be stronger.' With that as parenthetic preface, and in my best Daffy Duck Voisth, 'Let the sthredding begin, busthter!'

Etymology and lexicology

The first English-language use of the term 'animation' is undocumented, although it appears to originate from Latin 'animationem' (nom. animatio) c.1590s, meaning 'Action of imparting life', or 'A bestowing of life'. The root of the word 'anima' is well known from Latin: a noun meaning 'soul, spirit or life' and stems from the verb 'animare' meaning 'vitality' which originated apparently in the 1610s. The cinematographic sense and usage stems from 1912 and describes a certain, specific technical process (see *Online Etymology Dictionary*, <http://www.etymonline.com>). Interestingly, the verb 'animation', which describes the act of imparting soul, spirit or life upon an object, shares action with the noun 'animation'; both describe a 'state of being', a 'state that currently exists', or 'a state that already exists, or has already existed'.

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The known conjugated forms of the verb 'to animate' are 'animates, animated, animator, animating and animation'. The word 'animations', although sometimes used, albeit improperly, is not found in any dictionary. I have been guilty of using the incorrect form 'animate-able', but usually only when describing a character design that may not seem particularly suited for the medium because of the difficulty in visualizing the form in three-dimensional space. (Have you ever taken a look at the character designs of Klasky Csupo's series *Duckman* (Everett Peck, USA, 1994–97)? 'Huh?' says Daffy, 'Hith eyebrows are floating in thpace?' 'How can I draw that from behind?' 'And that hair and beak, what'th up with that hair and beak?' ... When I was a student of animation, I once attempted a 'layout test' of *Duckman*, which I never completed. Animating Klasky Csupo character designs, as it turns out, is not for rookies!

The term 'animatic' is also frequently used by practitioners to describe a visually presented 'timed storyboard', but an animatic can also include character layout drawings or animation 'key poses', which are placed in a timeline and displayed sequentially. Finally, the term 'animatronic', first used (I believe) by Walt Disney's early 'Imagineers', was used to describe life-sized puppets that were controlled electrically, electronically, mechanically and pneumatically in order to emulate life-like movements, although the mechanical movements were unconvincing.

The properties of animation

Animation is a visual communications medium. It seems unlikely that anyone would challenge this foundational premise, but there is a strong community dedicated to what is named as 'Visual Music' (i.e. Oscar Fischinger, Norman McLaren, Len Lye) where the traditional lines between visual and auditory forms of expression are becoming blurred, and this convergence has been a wide trend in media production for at least a decade. Nevertheless, without the visual portions of the communicative and expressive presentations, the groups would find it difficult to effectively call the works 'animation'. Visual images without sound can be animation, but sound without images cannot. I can think of no examples of 'animation' that are not visual, prompting me to assert:

Animation property #1: Animation is a visual form of communication.

Paleolithic cave paintings are cited as being an illustrated precursor to animation's origins because the paintings seem to portray movement, as the movement was perceived by the painting's creators. It seems reasonable to infer that Paleolithic hominids had intended to portray movement, illustrated by one famous example of the bison in Altamira Cave (see Figure 1). An allusion to an animal's movement in the images, however, does not imply that the creators of those paintings cognitively understood that a sequential set of images, displayed in rapid succession, could be used to recreate the movement. The painting of the bison on the wall convinces us that the painter perceived

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Figure 1: Painting of a bison in Altamira Cave, Spain.

movement, but the image itself does not move or change. The image is static. The cave painting of the bison, I argue, is not animated. In order for something to be *animated*, the visual image must appear to *physically move or change*. Therefore:

Animation property #2: For a thing to be animation, it must appear to physically move or change.

Consider again, the image of the bison above. There is no actual reference, real or implied, to a specific period of time through which the bison moves. If the bison were to remain in that same position with its legs curled up under its body for a period of, say, ten minutes, then the bison would appear to be flying or floating, rather than running. Since it seems unrealistic to think that a Neanderthal painter would paint a flying or floating bison, it seems reasonable to infer that the painter would be referring to a specific discrete unit of time in which the bison's run was captured in the mind, and painted as seen, mid-stride. This image of the bison must therefore portray only one very short discrete unit of time during which it is (was) running. There is no hint, other than our modern supposition, that the bison's legs will occupy a different position in subsequent units of time. Because the drawing depicts a single pose, captured in the artist's mind and drawn in a single, fixed moment of time, it may be reasonably concluded that the image of the bison is static, and that the bison is not animated.

Animation property #3: For a thing to be animation, it must move or change over a perceptible and discernable period of time, comprised of two or more discrete units of time. These discrete units of time are known in animation as 'frames'.

The concept of 'frame' has traditionally been thought of as a container of, or outside border around, a static, visual image such as a 'picture frame'. In time-based media, the term is used to describe a single image, in a series of images, such as in a 'frame of film'. This is, as it turns out, an over-simplified way to think of 'frame' as it is used in relation to time-based media. Indeed, a frame does contain a single, static visual image, but in animation it also represents a single, discrete unit of time, that is designed to be presented in a succession with other discrete units of time. It is the successive display of static images, each represented by a discrete unit of time that *is* 'animation'. Without a series of still images, each presented or displayed in a series of frames (discrete units of time), in succession, there can be no animation. The concept of 'frame', thought of as a discrete unit of time, therefore, is absolutely essential to the foundational 'being' and function of animation.

Seven drawings by Leonardo di ser Piero da Vinci (c.1510) extending over two folios in the Windsor Collection, 'Anatomical Studies of the Muscles of the Neck, Shoulder, Chest and Arm', show detailed drawings of the upper body (with a less-detailed facial image), illustrating the changes as the torso turns from profile to frontal position and the forearm extends. It seems clear

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Figure 2: Leonard da Vinci. Sequential view of the shoulder, neck and torso.
W 19001 verso, Royal Library, Windsor Castle (Clark and Pedretti).

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that Leonardo perceived and visually understood a turning of the human figure in three-dimensional space. However, it is not clear that he was attempting to communicate or portray motion as a premise in this set of drawings. It is also unclear that the motion (perhaps) depicted in the drawings was important, or intended, for what he was attempting to communicate or illustrate. The name given to the drawings relay no information about movement, but are rather called 'Anatomical Studies', so Leonardo's intent to communicate motion or sequence is not overtly present.

Look closely at the individual drawings above. If there is intent to show a successive presentation of drawings in this work, which drawing did Leonardo intend to display first, or last, and for what discrete unit of time? If, in fact, Leonardo intended these drawings to be presented in succession, there are no indications, such as numbers on each drawing, that leads us to believe he intended this. I certainly would not wish to assume that the top-left drawing was intended to be displayed first, even though that is the way my culture tends to evaluate and read images and text. What indications do we get of Leonardo's 'timing'? That is to say, for how long (how many discrete units of time) did Leonardo intend to display each static image? Alas, no indications of time or timing are provided. It may be concluded therefore, that Leonardo's drawings are not animated. This case seems to establish that an '*intent to create or recreate movement*' is a central property of animation, and that a lack of evidence to support intent may be used to argue against whether an object is animated.

Animation property #4: For a thing to be animation, it must be, or have been, intended to display the physical properties of movement or change.

A third example is illustrated upon a 5200-year-old earthen bowl found in Sharhr-i Sokhta in Iran. The bowl has five images painted on and around its sides that depict a goat leaping up to nip at a tree. While it seems clear that the bowl creator's intent was to portray movement of the goat, the images of the goat itself are static. The images of the goat do not move, or appear to move, unless the bowl moves.

As a tangential note, I find it intriguing that the process of creating a clay bowl includes a rapid revolution of the clay on a potter's wheel. This rotating action, necessary for the goat to be animated, will become a very important mechanical movement in the future development and manifestation of animation.

Evidence of the bowl's physical rotation during creation, however, becomes conspicuously absent once the creation of the bowl has been completed. The images of the goat do not appear to be painted on the bowl until after the bowl has finished being thrown, and in fact, except for the goat painted on the sides of the bowl, the bowl loses all reference to rotation (except, perhaps, to a potter). The images of the goat are, by themselves, static images, unless they are aided by some form

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Figure 3: A 5200-year-old earthen bowl found in Iran in Sharhr-i Sokhta has five images of a goat painted around the sides.

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of movement of the bowl in relation to the viewer. Unless the bowl moves, the goat will not physically move or change, therefore:

Animation property #5: For a thing to be animation, it must move or change in relation to the viewer, aided by some form of external action or force such as mechanical work or technical process.

An early frame of reference

Consider Plato's 'Allegory of the Cave'. In this work, Plato imagines a group of people who have been chained as prisoners in a cave for the whole of their lives. The people have been chained in such a way so that they can only see a blank wall in front of them, upon which shadows are cast, projected by a burning fire. The prisoners ascribe what Plato calls 'forms' (ideas) and meaning to the moving shadows. These moving and changing shadows are the only 'reality' that the prisoners have been allowed to see and know. Plato goes on to say, through a dialogue between his teacher, Socrates and Socrates's brother Glaucon, that a philosopher is like one of the prisoners that has been freed from the cave and has come to believe that the shadows cast upon the wall do not describe reality at all, but are only representations of reality with ascribed meaning. While Plato goes on to describe the nature of a philosopher in society, and some properties of education and politics, it is difficult to escape the allegory as a possible precursor to some attributes of modern theatre and cinema.

Plato is describing an idea of a 'shadow theatre show', and he writes about it somewhere between 428 and 348 BCE. This is likely one of the earliest written accounts of such a performance where 'created moving images' were projected with light upon a wall. It seems plausible that early hominids saw and manipulated shadows of their hands upon cave walls, but it is Plato's written notion of 'created moving images' that I find most supportive in my assertions about animation properties.

It is easily possible now to recreate Plato's allegorical shadow theatre, and these presentations are commonly called 'shadow puppet shows'. There are many important similarities between a shadow puppet show and animation, but the two are not wholly synonymous. The shadow puppet show, or *any* puppet show for that matter, does indeed meet many of the criteria for 'animation' that I have been describing. A puppet show:

- Is (in part) a visual communications medium
- Displays physical movement or change
- Occupies a discernable period of time
- Is *intended* to display physical movement or change, and

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- Changes in relation to the viewer, aided by some external action or force such as mechanical force (in this case either light, or the puppeteer's controlling hands). Additionally, the puppet show, like animation, is a 'performance'.

A puppet show, however, is a *live* performance. Could a person convincingly argue that *any* live, onstage, theatre performance is animated? Would a reasonable person suggest that a live, stage production of *Faustus*, for example, is animation? I struggle to think so. A puppet show is no different than these examples of live performances; it is performed 'live' by actors, in the moment. Significantly, the quality and outcome of a theatre performance can be positively or negatively influenced by the reaction of the viewing audience. An *animated* performance, conversely, is not subject to change based upon the dynamics of the actor's reacting that is based upon the viewing audience's reactions. An animated performance, I argue, remains steadfastly and absolutely consistent between the initial performance and all subsequent viewings or performances. This absolute consistency of performance, I assert, is a foundational attribute of animation:

Animation property #6: An animated performance must remain absolutely consistent, exactly as its creator committed to creating it, throughout all viewings and screenings. If the animated performance changes in any way, from how it was initially created, the artistic integrity of the animated performance is lost, and the animation has the potential to be interpreted very differently than how its creator(s) intended.

The only way it is assured that an animated performance remains absolutely consistent throughout all subsequent viewings is through some form of recording. More importantly, the created *recording* of the animated performance *is* the animation performance.

'Live-action' film or video records images at a frame rate (number of visual images per unit of time) that adequately duplicates the human perception of how things move or change in time. Because of this, when projected or played back at the exact same rate at which it was recorded, film or video seems to play back a version of 'reality' in a manner that we humans perceive in time and space as 'real-timeness'. This perception of real-timeness, however, is not realized when film or video is played back at rates that are faster or slower than the rates we perceive as real.

Animation that is recorded on film or video can be played back at the same frame rate as live action, but animation differs distinctly from live action in that it most often *records* the images at rates that are vastly different than those recorded in live action. For example, in animation, a single frame of film may be recorded at the rate of *one frame per year*, and when 24 frames are played back at film projection speed (24 frames per second), the resulting film will play back for a period of time lasting only one second, even though the film took 24 years to record! Thus, one of the most significant ways that animation and live action differ is the frame rate at which they are each recorded.

Animation is recorded, or digitally rendered, as a sequential series of frames, one discrete frame (unit of time), at a time. The discrete unit of time may be (almost) any amount of time: 1/24th of a second, 1/30th, 3/24ths, 5/24ths, one second, or even ten seconds, but each discrete unit of time must be represented by only one still image in the series for the resulting series of images to be considered animation.

Animation property #7: Animation is comprised of a sequential set of still images, each recorded for a discrete unit of time, and these discrete units of time are displayed in relatively rapid succession in order to achieve the illusion of lifelike movement or change.

Additionally and not insignificantly, the rate at which the animation is recorded may be a part, or all, of the statement that the animation performance intends to make. In short, it is the choice of the animation's creator(s) how, what and when to record the still images, and that choice may be the entire reason for creating the animation performance in the first place!

Since an animation performance exists precisely because it is recorded, it stands to reason that:

Animation property #8: For something to be animation, it must have been recorded, and it must exist in a recorded state of being.

The assertion that animation must be recorded, I am sure, is at odds with some theorists and practitioners' understanding of animation (see Wells and Hardstaff 2008; Selby 2009). For example, consider an 'animated installation' comprised of a series of sequentially posed physical sculptures, all placed upon a spinning armature, with strobe lights supplying the illumination during short intervals of time. As the lights strobe, the sculptures mounted on the moving armature appear to be physically moving and changing. The medium is visual, the movement or change is intended, the sculpture moves in relation to the viewer, the time intervals are completely determined by the creator(s), and the performance, for all practical discussion, is unchanging. Is this device, and the resulting images we see, considered animation?

These three-dimensional, time-based installations are among the most interesting cases, and they completely challenge traditional notions of what animation has previously been thought to be. It is understandable that animation theorists and practitioners would open their hearts and minds to accept new and innovative forms of time-based methods of creative expression. Animation has always been considered an 'experimental' medium and it seems altogether fitting that new cases that challenge traditional paradigms should be granted due consideration.

There are a few things about these mechanical and electrical devices, however, that stick in my craw. Some of these devices 'feel' more mechanical than alive. Since 'animationem' means 'action of imparting life', it seems reasonable that these devices somehow need to provide the viewer with a feeling of 'aliveness and vitality'. The predictably repetitive, and constant-rate 'timing' of these devices,

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coupled with the repetitive rotations, lights and (oftentimes) mechanical and electrical noises emanating from these machines, leave me feeling amazed by the device, but I do not get a feeling that they are alive. I have yet to see one of these devices that 'feels' alive, or has any 'personality' whatsoever. These machines feel more like an early version of a robotic or 'animatronic' figure, than a type of animation that possesses a life force. Even the very early hand-drawn, silent animation of Otto Messmer's Felix the Cat, and the very early Fleischer Brothers' work feels more alive than do these strobing, repetitive, mechanical devices. These devices appear and function more like a 'projector', than an animated 'projection'. Would we look at a whirring, mechanical film projector and call it animation? I think not.

Secondly, these devices exist in the same physical space as we do, reminding me of a live performance or of a three-dimensional sculpture that I might see in an art gallery setting. These devices also perform in the same 'real-timeness' that we do, which, in my mind, is reminiscent of the feeling I get from live-action film or video. I am definitely not accustomed to having a tactile sensation of 'real-spaceness', and the visual sensation of 'real-timeness' with animation. Can animation exist in the same time and space as we do (the traditionally understood four dimensions), or is it relegated to another dimension; a dimension of 'projected' time and space that one might perceive as 'other-timeness' and 'other-spaceness' existing parallel to our 'real-timeness' and 'real-spaceness'?

On the surface, it seems that an argument could be made to create a definition of animation that would include moving sculptures such as these, but after further scrutiny, I do not believe they qualify as animation proper. The reasons for this, I believe, are because these devices are not recorded (if they were recorded in real-timeness they would be considered live action), because they exist in the same four dimensions in which we exist, and because they do not 'feel' alive, or provide the viewer with the illusion of aliveness.

Instead, I see these animated sculptures as three-dimensional installation art that possess and exhibit some, but not all, of the properties of animation. They are, to me, a combination of mechanical, electrical and electronic three-dimensional sculptures that move in strobing lights. Like live-action film or video, the movement and the audience's perception of these sculptures happens in so-called 'real-timeness'. There is no different or unique and separate process of recording and playback, precisely because there is no recording involved. There is also no alteration of rhythm, or change in timing that animation is noted for possessing. Life is not mechanical, and it does not feel mechanical.

Do not get me wrong, I love these devices for what they are: innovative and mesmerizing three-dimensional structures, and I find the aspect of 'time', which they use to amazing effect, to be fascinating. I do not, however, consider these devices to be animation.

One of the central tenets of animation, it seems to me, comes into being the moment when a series of carefully chosen and manipulated still images are placed carefully and meaningfully together, recorded and played back in succession. The experience of playing back a series of created images that were previously seen as only discrete pieces of a whole is the greatest joy offered by

animation. It is the moment of creation when, quite literally, the whole is much greater than the sum of the parts. It is the moment when inanimate objects (or inanimate images of live objects) come to 'more-than-life'. This has been called 'hyper-realism' or 'over-illusionism' (see Wells 1998), and it is the moment when time and space, and the 'essence' of life itself seem to be recreated by the master animator. This realization of a 'life force vitality' at the moment of creation is unparalleled by almost any experience I have ever felt. 'I know, I know', utters Daffy (rolling his eyes), 'Oh Brother ... thath's rich!'

'Okay, ohhh ... kay, Leth's get on with the programme'.

I would also like to add that, in order to classify these peripheral forms of 'moving sculptures' as animation, one might possibly, even if unintentionally, dilute the basic essential and unique qualities of animation. That is to say, if the animation community accepts these other forms of 'real-space' and 'real-time' media as 'animation', what is not animation? For example, would a machine, such as an internal combustion engine that is running, also be considered 'animation' when I use a strobe light to adjust the engine's timing? A running machine with a strobe light on it is not animation, even if created with intent. Is it?

Taken to its logical end, is it possible that if a concept is sufficiently diluted, it will eventually cease to be? Is the taxonomic category of 'all things animation' large enough to accept alternative and experimental forms such as these, while still remaining true to its pure and essential self? That question shall remain unanswered within the scope of this inquiry for some things are best left open-ended, to be ruminated over, and written about, by other scholars.

Through it all, I am still left to ponder yet one of the important and 'defining' attributes of animation that Frank Thomas and Ollie Johnson called 'Appeal', in their seminal work, *Disney Animation: The Illusion of Life* (see Johnson and Thomas 1981).

Animation property #9: Animation should feel as though it possesses certain qualities that have an appeal of 'aliveness'; a particular life force or vitality.

This is a challenging assertion for several reasons. First of all, this assertion uses 'feeling' as a criteria for evaluating whether a thing is animated, and as we all know, 'feeling' is a purely subjective animal reaction. Secondly, it presupposes that all animation must elicit a vital emotional response from the audience. Is this true?

Consider a case of 'motion graphics'. Graphic images, in motion, are generally accepted by most people to be animation, by definition (if a person subscribes to a definition that is). They meet all of the criteria that I have been discussing, except (maybe) that they do not possess a vitality of 'aliveness'. But can they? Indeed, letterforms are shapes and forms are certainly to be considered 'visual design elements', and typography is certainly expressive. If it were not, the use of Helvetica and Verdana might be the only typefaces in existence today ...

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It seems clear that letterforms must elicit *some* form of an emotional response from the audience, which is precisely the reason that different typefaces are chosen. Title sequences in feature films choose typefaces for titles and credits precisely for emotional effect. It is important to note, however, that if animated text is executed poorly, and the resulting motion graphic feels mechanical or forced, the ‘aliveness and vitality’ may be weak or missing altogether. The idea that ‘quality’ is a necessary property of animation is problematic at best, prompting an answer to the question: ‘Are motion graphics that do not elicit an emotional response from the audience, still animation?’

‘Oh for crying out loud!’ Daffy interjects. ‘Are we going to get to the bottom of thith caper someday?’

Since it seems that the meaning of the original Latin word ‘animationem’ is ‘action of imparting life’, and the meaning of the Latin word ‘anima’ is ‘soul, spirit or life’, it stands to reason that an argument could be made that motion graphics which do not feel alive might not qualify (by very definition of the word) as being ‘animation’ per se. Further thought and exploration on this aspect of a definition of animation, however, seems warranted.

Moving to another foundational property, no discussion about animation would be complete without at least one section dedicated to the now *unseated* concept of ‘persistence of vision’. This theory, with which I am sure you are familiar, explains the idea that an after-image is retained on the retina, or in the vision centre of the mind, until another image replaces it. The concept is credited to Lucretius, and was published as ‘Explanation of an optical deception in the appearance of the spokes of a wheel when seen through vertical apertures’ by Mark Roget in 1824. While Dr Roget’s explanation of the illusion was probably wrong (Roget did not even use the term ‘persistence of vision’. According to Pamela Cole, it was coined by film historian, Terry Ramsaye in 1926 (see <http://www.pamcole.com/DOCS/POV.html>). Roget’s consideration and publication of the phenomenon of the illusion was arguably an important step in the history of film, and it likely influenced the development of the Thaumatrope, the Phenakistiscope and the (modern) Zoetrope. The theory has since fallen from favour, being replaced by other theories called ‘short and long range visual apparent movement’ and ‘short range apparent motion’ (see Anderson and Fisher 1978 and 1998).

Apparent movement is a central and essential property of animation, although it is not apparent only in animation. We see this phenomenon every day in the world around us (such as in the revolving spokes of a wheel through a fixed aperture) and it is precisely because the phenomenon was observed and described by Roget, that animation exists at all. Apparent movement is an essential property of all time-based media, including live-action film and video, and digital re-creations:

Animation property #10: For a thing to be animation, it must display properties of ‘short range apparent motion’.

There is something more, however, to be mentioned about the human perception of movement (or change) from the display of successive still images. In the 1960s and 1970s, some terms were widely

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used among the youth 'counter culture' to describe the visual blur that is seen when an object rapidly moves from one position to another. I remember the words 'trails' and 'tracers' used to describe the observations. Please pardon the obvious reference to lysergic acid diethylamide (LSD) that was used among many young people during that time period (I did grow up in northern California, quite near San Francisco during that turbulent, overly permissive, wildly creative and expressive time). I can positively assure you that I did not inhale it ! Daffy yells indignantly, 'Are you going thomewhere with thith?'

In the interest of academic inquiry, let us try a little experiment. Hold your arm out in front of you, placing your hand at arm's length (I chuckle because your hand is always at arm's length), and spread your fingers wide. Look at your hand and move it rapidly in a left-right motion while holding your head (and eyes) completely still in relation to the moving hand. Do you see the 'motion blur' of your hand? Amazing! It works even better at night when the air is denser and your pupils are dilated (to let more light in).

Let us try this experiment another way. Do the same thing again, moving your hand rapidly from left to right again, but this time turn your head and eyes from left to right rapidly along with your hand precisely matching its movement. The blur of your hand is significantly less, but now the background behind your hand is very blurry!

Yes, I have considered the possibility that this is my own special and unique visual perception, but I suspect this visual phenomenon might also have inspired Norman McLaren's film *Pas de Deux* (Canada, 1967).

What I observe from this is that *there are no distinctly discernable, static images seen in the side-to-side motion of my hand!* The whole movement appears to be comprised of a single fluid motion, represented by what appears to be *one single blurred image*. This observation about visual perception is not new. It has been used for decades by animators, and was duplicated in early two-dimensional, hand-drawn, cel animation with a technique called 'dry brushing'. Similar techniques such as 'smear' drawings, 'ghost images' and 'multiple appendages' were later used to their logical extremes (earlier than McLaren), pioneered by Tex Avery, and used by animators like Chuck Jones in *The Dover Boys from Pimento University* (Charles M. Jones, USA, 1942), Walter Lantz in *Chew Chew Baby* (Walter Lantz, USA, 1945), and Bob Clampett in *The Great Piggy Bank Robbery* (Robert Clampett, USA, 1946) and later, expertly, by John Kricfalusi in many of his films such as *Boo Boo Runs Wild* (John Kricfalusi, USA, 1999) to name just a few.

The point to this discussion is that even though most animation is comprised of single, static, still images, displayed in succession using discrete units of time called frames, these 'frames' are only facsimiles or rough representations of the motions and changes of time and space they are attempting to describe. As such, animation is a technical process that results in the sequential manipulation of static images that attempt to portray or caricature the movement

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and change that we see in everyday life. Unfortunately, animation's somewhat oversimplified portrayal of what we perceive as the movement and changes is rather poor. Animation production and funding practices attempt to duplicate our perception of very fluid and blurry movements with a series of static images displayed in rapid succession. The resulting animated movements are adequate; sufficiently portraying movement and change, but are also ultimately incomplete. Even the very best animated movement almost always feels a little disjointed, somewhat staccato.

Nevertheless, I think I have come to the part in the discussion where I can gather my assertions:

1. Animation is a visual form of communication.
2. For a thing to be animation, it must appear to physically move or change.
3. For a thing to be animation, it must move or change over a perceptible and discernable period of time, comprised of two or more discrete units of time. These discrete units of time are known in animation as 'frames'.
4. For a thing to be animation, it must be, or have been, *intended* to display the physical properties of movement or change.
5. For a thing to be animation, it must move or change in relation to the viewer, aided by some form of external action or force such as mechanical work or technical process.
6. An animated performance must remain absolutely consistent, exactly as its creator committed to creating it, throughout all viewings and screenings. If the animated performance changes in any way, from how it was initially created, the artistic integrity of the animated performance is lost, and the animation has the potential to be interpreted very differently than how its creator(s) intended.
7. Animation is comprised of a sequential set of still images, each recorded for a discrete unit of time, and these discrete units of time are displayed in relatively rapid succession in order to achieve the illusion of lifelike movement or change.
8. For something to be animation, it must have been recorded, and it must exist in a recorded state of being.
9. Animation should feel as though it possesses certain qualities that have an appeal of 'aliveness'; a particular life force or vitality.
10. For a thing to be animation, it must display properties of 'Short Range Apparent Motion'.

These properties, considered together, prompted me to formally adopt a succinct definition of animation, first developed and described to me by Dan McLaughlin, Professor Emeritus of the UCLA Animation Workshop, and amended to include the word 'change', by Jean Detheux, an animation artist in Belgium: *'Movement, or change, of the created image in recorded time'*.

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What could be the potential benefits of a formal definition of animation? I can think of three specific cases:

Case 1: Animation expert testifies at trial

Suppose that a legal case were presented, where a court ruling must be made as to whether the media type in question is animation or not, and that the case involves a significant amount of money. Suppose that the entire case of who owns the content would come down to legally determining if the type of media was animation or some other type of media?

Further suppose that each of the opposing sides of the case need to hire an 'expert witness' to testify on what animation is. Does it seem reasonable that these experts could both be found in the same international organization of academic and professional animation scholars and practitioners? If asked about the definition of animation (for the purposes of the trial), would both experts (members of the same organization of international experts) be able to recite, and help a jury understand, both *different* definitions of animation? Would two different animation experts, who are members of the same international animation society define animation significantly differently for a trial? What definitions of animation would these two scholarly experts recite for the purpose of this trial? Would this scenario increase or decrease the credibility of the international organization of animation 'experts'? Is a definition of animation truly that subjective?

Case 2: Judging a juried film festival

Suppose, as an animation scholar, you were asked to judge a highly respected film festival. Further suppose that there was one, or more than one, entry in the festival that seems to have been submitted to the 'experimental' category, and the judges of that category have sent the film over to the 'animation' category because they feel that this film might be 'animation'. What criteria would you as a judge use to determine if the film is correctly categorized?

There could be a great deal at stake for the film's creators, and perhaps for the festival too. An incorrect categorization of the film could potentially cause the film to either not be selected for the festival, or if selected, to not win an award. This could potentially have devastating results for the film-maker's career and livelihood. Additionally, if the film were to be incorrectly categorized by the judges, the credibility of the festival could be questioned. In addition, if an 'animation expert' were to incorrectly categorize the film, what would become of this scholar's reputation, or the reputation of the international organization of animation experts to which s/he belongs?

There are, it seems, reasons why a supported, formal definition of animation could be of profound benefit to some of our colleagues, and that not having a definition of animation could present potentially damaging consequences. Should the scholarly animation community be prepared to assist our colleagues by addressing this glaring omission? Would it lend credibility to our animation community if we attempt to develop a definition of animation that is more widely accepted?

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Case 3: Correctly positioning animation within academia

I have often heard it said that 'Animation', as an academic discipline, is not respected in higher education. I have personally experienced the biases of some in higher education towards our field. I once fell victim (I actually resigned a tenure track position) to a mass communication department chair who told me, 'Animation will not be taught in our department because it is not academically rigorous.' All absurdity of this assertion aside, I had to ask myself, 'How can people in academic leadership positions make such reckless statements if they have no idea what "animation" is? There are at least four answers that address this question:

1. These people do not know what animation is.
2. These positions do not require wisdom as a personality trait.
3. These people have an agenda that does not include animation.
4. This needs somehow to be addressed.

One of the reasons, I think, that animation is not respected is because it is (erroneously) understood by many as being nothing more than children's fantasy media that sells sugar-soaked breakfast cereal, or it is pop-cultural pablum that includes butt-slap jokes. Even though I happen to like both of those things, most academics, and some adults, do not. These same adults apparently have not had the opportunity to see Frederic Back's masterpiece, *Crac* (Canada, 1980) and felt the strong sense of history and tradition that can be powerfully communicated through an amazingly well-made animated film. How is it possible that anyone could not appreciate the genius of an animated film like that?

Another reason I think that academics do not respect animation is precisely what I was told: it does not appear to them as being a serious academic discipline. Perhaps this is due to the fact that, to them, there is no 'academic inquiry'. These academics have, quite mistakenly, not taken the time to try and understand the subtext and meaning of a Jan Svankmajer film, or the profound humanism expressed in a Caroline Leaf film. Sure, they will read a Franz Kafka novel, but how can they so easily dismiss the experience of seeing it animated?

Because of the perception of animation apparently held by many in the academy, I am terrified by the proposed separation of animation practice and theory in academic departments. A programme that teaches animation practice relies heavily on those who teach animation theory, for legitimacy in academe. The notion that 'there is no theory without practice, no practice without theory, no progress without history' (see Wells and Hardstaff 2008: 20) is both a practical statement and a political one. Without the academic legitimacy that animation theory and history bring, animation educational programmes that emphasize the *practice* of animation (training and educating animators and animation film-makers), may be intellectually perceived by staunch academic idealists and

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traditionalists as occupying a lower tier of rigour and inquiry, resulting in being considered to be of lower value within academe and perhaps by society.

In my opinion, creating a formal definition of animation legitimizes the field as an academic discipline proper. It says to all of academia, 'The animation community is organized, and its status as a legitimate academic discipline must not be disputed or undervalued.' Additionally a formal definition of animation also creates opportunities for more rigorous quantitative research methods, thereby allowing the animation community to participate in the more traditional research methodologies that traditional academics respect and value. Further discussion of this idea, however, is a topic for a later discussion.

Epilogue (or should that be Prologue ?)

It is easy for me to understand why the scholarly animation community is hesitant to adopt a formal definition (what senior animation scholar Professor Paul Wells has referred to as the 'Holy Grail' of animation). Can I get a witness! The definition above is predicated upon suppositions that are, at best, rationalizations for my beliefs, even if many of the ideas were created and asserted by many others before me. That said, I challenge the animation community of practitioners, historians and theorists to consider for whom we are creating a body of knowledge about animation: for ourselves, or for posterity? Surely, future animators and students of animation criticism, theory and history will benefit from the decidedly difficult work we do today in trying to help the world to understand the medium we have so fully dedicated our lives to understanding, practising and documenting. We owe them no less than our very best efforts to create a 'frame of reference' for further thought, inquiry and exploration.

It is not intended that these musings alienate anyone who is interested in animation, even if this definition seems to leave their particular subfield out in the (non-animated) cold. I am not attempting to quell the inquisitive, experimental or innovative minds that push boundaries and test limits (remember, my generation was quite good at that !!). I am just trying to create a little bit of a standardized framework in a world gone mad with blurring lines between feelings and thoughts, between subjective and objective, and between positivism, constructivism, postmodernism, neo-postmodernism and every other hare-brained intellectual faction and sub-faction that seems to muddy the waters of intellectual inquiry. It is just animation, and we academics are sometimes too quick to forget that there is very little at stake, in most cases, for most people.

Lastly, I welcome any and all criticism of my assertions, assumptions and presuppositions. After all, 'It's not about me, it is about the work.'

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