



Frame-by-Frame Stop Motion

The Guide to Non-Puppet Photographic
Animation Techniques

Pixilation – Timelapse – Downshooting

Second Edition

TOM GASEK

 **CRC Press**
Taylor & Francis Group

A FOCAL PRESS BOOK

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**THE GUIDE TO NON-PUPPET PHOTOGRAPHIC
ANIMATION TECHNIQUES**



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Dedication

I would like to dedicate this edition to all the filmmakers who dug in and tried these techniques with the guide of *Frame-by-Frame Stop Motion*. A lot of this kind of animation can be logical and intuitive, but knowing where to start can be challenging. If you are in film school, then you have a “leg up.” It certainly is not necessary to have this kind of advantage, as is evident by the many online Lego animations that are out there on the web. There is no reason to reinvent the wheel, so this book is designed to act as a map to this world, with no limitations on where you can go. Having a crew and/or friends is very helpful for exchanging ideas and experiences and sharing the practical responsibilities of filmmaking. When I started the first edition of this book, I turned to a couple of my old colleagues and friends, Bryan Papciak and Jeff Sias, who I worked with in stop motion more than 20 years ago in Boston. We share a love for this kind of work, which has allowed each of us to go deeper into stop motion in preproduction, production, and postproduction. It is hard and challenging work—if you don’t love some aspect of it, whether it be the process, the animated results, or the response of an appreciative audience, then you shouldn’t practice these techniques. However, since Bryan, Jeff, and I share this love and interest, it makes it easy to communicate and share our knowledge with each other and others. Once again, I leaned on Bryan to help review my new additions and I am most thankful for his insights. As I continue to observe the growing number of artists using these techniques, I have been very impressed with the range and variety of approaches. Many artists have extended these techniques with postproduction enhancements as I have done in my own filmmaking. Yet, this direction is not necessary for a successful film. So I want to dedicate this second edition to the mature artists and practitioners of these photographic animation techniques along with the countless neophytes stepping into this world. In the end, it is all about ideas, experiences, imagination, and communication that can come in any form.



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The critical elements to this text are the many contemporary artists and filmmakers who contributed comments and images to this study of alternative stop-motion photographic techniques. These include Terry Gilliam, Jan Svankmajer, PES, Blu, William Kentridge, Dave Borthwick, Nick Upton, Dave Sproxton, Heather Wright and Aardman Animations, Jan Kounen, Carolyn Leaf, Evan Spiridellis, Jim Blashfield, Joan Gratz, Joanna Priestley, Ken Murphy, Miki Cash, Eric Hanson, Tom Lowe, Yuval and Merav Nathan, Chris Church, Geoff Tompkinson, Keith Loutit, Victoria Mather, Julian Tryba, Corrie Parks, Juan Pablo Zaramella, Bryan Papciak, Daniel Sousa, Eugene Mamut, Joe Lewis, Jamie and Dyami Caliri, Adam Fisher, Monica Garrison, J.P. Crangle, The National Film Board of Canada, Lindsay Berkebile, Jordan Greenhalgh, Jason McLagan, Rachel Fisher, Marlee Coulter, Stevie Ward, Knhik Haefner, Linda Grossman, and the School of Film and Animation at the Rochester Institute of Technology. There are many more artists and filmmakers who are practicing these techniques than I was able to cite or interview. These frame-by-frame techniques are as varied as the artists who practice them, and I was only able to touch on a few approaches. I did try to incorporate principles and practices that are common to most of these techniques, but I am sure that I have left out a few. My aim is to open up the door a bit wider to hand-made photographic animation approaches. These approaches have been evolving as technology has continued to expand, and this makes these techniques as viable as ever. All you have to do is scan the web and see what is out there, and suddenly you will realize that this is a vast and potentially exciting area of filmmaking. The old saying “what is old is new” applies to this book, but again technology has made these approaches to single-frame photographic filmmaking much more accessible. I hope many new filmmakers from all backgrounds are able to explore this area of animation.

This book can serve as a guide. So I acknowledge all the new filmmakers and established filmmakers who want to expand their means of expression through frame-by-frame photographic animation.

Drawn illustrations by Brian Larson.

Photographic illustrations by Tom Gasek and artists cited in each chapter.

Author

Tom Gasek has more than 30 years of award-winning professional stop-motion animation experience as an animator and director. He has worked with directors Will Vinton, Art Clokey, and Henry Selick. At Aardman Animations, he contributed animation to Nick Park's Wallace and Gromit short film *The Wrong Trousers* and the Peter Lord/Nick Park feature film *Chicken Run*. Tom codirected and animated the *Inside-Out Boy* for Nickelodeon, which is a part of the permanent collection at the Museum of Modern Art in New York. Tom maintained two small stop-motion studios, Sculptoons in San Francisco and OOH, Inc., in Massachusetts. Most recently, Tom contributed animation to Aardman's *Creature Comforts America*, Sony Bravia's *Play-Doh*, Laika Entertainment's *Coraline*, and a series of Amazon Prime spots for Hornet Inc. 2016, and he continues to direct and animate commercials and independent films. In the past several years, Tom has produced, directed, and animated two award-winning short independent stop-motion films, *Off-Line* and *Ain't No Fish*. This book is the second edition of his 2011 book *Frame-by-Frame Stop Motion* (Focal Press), which is the only complete resource of its kind on photographic non-puppet stop-motion techniques. He has trained animators at Se-ma-for Studios in Lodz, Poland, and given workshops, based on his book, in Lima, Peru (on a Fulbright grant), at the New Orleans International Children's Film Festival, and the National Museum of Play in Rochester, New York. Tom teaches stop-motion animation, acting for animation, and the business of animation in the School of Film and Animation at Rochester Institute of Technology (RIT). His work can be viewed at www.tdgasek.com as well as on <https://vimeo.com/user3424683>.



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Introduction

A Second Look

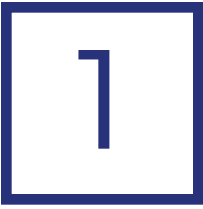
I was taken by surprise when Focal/CRC Press contacted me and asked if I would consider a second edition of the book *Frame-By-Frame Stop Motion*. The first thing I did was to go back and review the original book and see if there were things that were missing. I found the original manuscript quite thorough but considered a few things I and others have been doing with these non-puppet stop-motion techniques. Naturally, I always have an eye to the Internet and other venues to see what various artists have been doing with these approaches, and soon some new ideas started to appear. My original premise that non-animators from live-action production and photography would continue to have an interest in this area continues to ring true. In the class I created, based around these techniques, I keep finding a larger number of young artists from various disciplines who like these techniques because they are accessible and they utilize equipment that is familiar. Ultimately, the DSLR camera is one of the core pieces of equipment utilized in stop motion. Cameras of all kinds are combined with capture software, editing programs, and often composite programs to define this look. I actually consider stop motion to be a “photograph art” or “photo animation.” By “non-puppet” I mean animated objects that were not made to be animated. They already exist and have been manufactured for something else. This includes furniture, vegetables, sand, photographs, buttons, pool balls, automobiles, and even humans! The list is endless. Many of these non-puppet techniques come very close to puppet or prefabricated model approaches. The bonding elements are the principles of animation.

We continue to love photographic images, which give a nice contrast to computer-generated images. We know the world around us and how it looks, but starting to manipulate that world through time lapse and dynamic

frame-by-frame animation of objects, people, or places makes our “real” world a little different. It allows us to view the world from another perspective. The amazing world of artists like Keith Loutit and Geoff Tompkinson reveal photographic images that show great imagination by the manipulation of time-lapse photography. We examined Ken Murphy’s *A History of the Sky* time lapse off the roof of the Exploratorium in San Francisco in the first edition, but many artists are expanding this one area of non-puppet frame-by-frame photographic stop-motion animation. Other artists are exploring pixilation of objects and people, and some artists are screening their work in art galleries, on the Internet, in commercial venues, and independent films. I wanted to explore this continued development in this second edition by highlighting several artist-practitioners in the “PRO-file” sections.

After so many years as a commercial puppet stop-motion animator with scores of commercials, TV series work (*Pee-wee’s Playhouse*), feature work (*Chicken Run* and *Coraline*), and independent film work (*The Wrong Trousers* and my own *Off-Line* and *Ain’t No Fish*), I decided to try a series of pixilated films myself. Performance has always been a big part of my puppet work, and crafting characters makes the animation interesting and challenging. I love this work, and trying to apply this to some pixilated films created some ideas. I once led an independent study with a former student and now professional animator, Lindsay Berkebile, based on acting for pixilation. Applying acting principles to pixilation became a new obstacle for us during this study, but we learned a lot about the most effective expressions and stylization that suits pixilation. How do you elicit emotion from a vibrating, active human or object? I decided to produce a short series of pixilated self-portraits, which would allow me to not only animate but also to be the animated subject. I am applying acting principles along with animation principles in my performances and experiment with subjects that are reflective of my life. Walking, trains, drums, and water are subjects I am tackling that have meaning in my life and will allow me to make this series and experiment with photographic pixilated animation in short films. Since I am halfway through this project, I can share my thoughts and experiences in this second edition book, which will hopefully add depth to the original subject.

Since the first edition of this book, I have created and led workshops for children in New Orleans, for advanced graduate students at Fabbrica in Treviso, Italy, and for media professionals in Lima, Peru. There continues to be excitement at all levels about how movement works and the various emotions it can elicit. We are talking about animation, which is my love. I believe that it is movement that draws out emotion and empathy. What is the body rhythm of an individual, what are the gestures that give the director what she or he is looking for, and how can you stylize movement so it has more punch and effect? These are the areas that this second edition will cover in conjunction with these non-puppet stop-motion photographic animation techniques. So let’s dive in and see what various artists are creating and what possibilities there are for you, no matter what background or skills you bring to this discipline.



What Are the Possibilities?



Norman McLaren from the NFBC. (Courtesy of Evelyn Lambart, National Film Board of Canada, 1952.)

Creating Magic
Silent Films and Beyond
Stop Motion and Its Various Faces

Creating Magic

The history of these animation art forms has not changed since the first edition of this book. History is written in stone, depending a little on the perspective

from which it is told, but the present and the future are always organic and fluid. It does not make sense to try to parse out individuals and examples of work that were not as significant as the examples cited in the previous volume, but there have been some significant iterations of these techniques in the last 5 years. I will be citing several of these new and individual approaches to demonstrate the infinite possibilities that continue to unfold in photographic frame-by-frame non-puppet stop motion.

Humans are social creatures that have an innate need to share experiences and stories. Ever since humankind started communicating, stories that are real and unreal have been shared around the communal circle. The tribe was gathered together and a tale was told that revealed information, lessons, provocative thought, and emotional empathy. Often the more fantastic the story the more entranced the audience became and the stronger the message. This might have been the job of the shaman or chief, but soon everyone had stories and experiences to relate. Eventually stories became enhanced from the oral tradition through props and other means of visual storytelling. In just over the last hundred years, filmmaking has become a powerful vehicle to relate stories and to capture an audience's imagination. Sight and sound are our most primal senses and filmmaking taps into these receptors. Soon after its introduction, filmmaking started to expand its repertoire and the "fantastic" became a possibility in storytelling.

Single-frame filmmaking has been around as long as film itself. The idea of fooling or tricking the eye has always been fascinating to people and the manipulation of live-action filming was the origin of this technique. Imagine the early days of filmmaking when audiences were seeing projected images on a screen, images that appeared to be alive and real for the first time. That was magic in itself. When filmmakers became a bit more sophisticated by stopping the camera in midshoot, removing an object from in front of the camera, and then continuing to film, the results were genuinely magic. As film started to mature, artists and practitioners began to see the endless possibilities that this new medium offered. This stopping the motion of filming and adjusting images, cameras, and events was the predecessor to special effects and animation.

We are talking about stop-motion photography, which has evolved into many variations. The most common form of stop motion that is recognized today is model or puppet stop motion. This is when figurative models are fabricated and animated frame by frame to create a narrative or experimental approach. Examples of this form are seen in films and on television. Feature films like Jiri Trnka's *A Midsummer Night's Dream*, Nick Park and Peter Lord's *Chicken Run*, and *Coraline*, directed by Henry Selick, all exemplify this popular approach to figurative puppet stop motion. Television has also laid claim to this form of animation with popular programs like *Pingu*, *Gumby*, the Rankin/Bass Christmas special *Rudolph the Red-Nosed Reindeer*, and *Robot Chicken*. These, among other titles in this genre, are well loved and are considered more in the realm of traditional stop-motion puppet animation. *Robot Chicken*, created by Seth Green and Matthew Senreich, occasionally uses existing objects or models,

but the fabricators adapt these objects or models to work for animation so they are a crossbreed of puppet and non-puppet/object animation. The work of PES is also a great example of an artist who crosses the gap between puppet and non-puppet stop-motion work.

The nontraditional or alternative use of stop motion utilizes people, objects, various materials like sand, clay, and paper, and often a mixture of these and other elements as the objects to be animated. The most common of the non-traditional alternative stop-motion techniques is known as “pixilation.” This term is attributed to the Canadian animator Grant Munro, who worked at the National Film Board of Canada with Norman McLaren in the 1940s, 1950s, and 1960s. Both McLaren and Munro were major contributors to this art form. In pixilation, usually a person is animated like a puppet or model. There is a limited amount of registration in this approach to stop motion so the result is a rather kinetic, bewitched, fragmentary movement that appears pixilated or broken up. It has nothing to do with the modern-day term related to low-resolution digital images. Time-lapse photography and “downshooting” (animation on a custom animation stand), also known as “multiplane animation,” are two other forms of nontraditional alternative stop-motion photographic animation. We will explore each of these approaches and more in the following chapters.

Silent Films and Beyond

This interest in the manipulation of filming and single-frame adjustment started as soon as film arrived on the scene in the late nineteenth and early twentieth centuries. The Lumière brothers are considered to have been the first to successfully shoot and project films for audiences (Figure 1.1).



Figure 1.1

Auguste and Louis Lumière, circa 1895. (From Auguste and Louis Lumière, https://en.wikipedia.org/wiki/Auguste_and_Louis_Lumi%C3%A8re.)

Their work was amazing to the French and, ultimately, international audiences of the late 1890s. Everyday scenes of that era are well recorded and documented in the factories and streets of Lyon, France. Once audiences became accustomed to the novelty of moving images, then the experimentation began. There were several artists who took the filmmaking technique much farther than Auguste and Louis Lumière, but the most significant artist was Georges Méliès (Figure 1.2).

The Parisian-born Méliès was often referred to as the “cinemagician.” His work with film was influenced by his experience

as a stage magician. Melies learned how to use multiple exposures, dissolves, time-lapse photography, editing techniques, and substitution photography where the camera was stopped and the subject was changed to create a magical effect. These silent films created in the late nineteenth and early twentieth century were like magic shows that featured special effects. This kind of filmmaking was the precursor to several different branches in the tree of stop motion, including modern-day special effects, puppet or model stop motion, and pixilation and its various forms. Melies' *The Conjuror*, filmed in 1899, is a clear example of the relationship that he made between magic and his filmmaking (Figure 1.3).



[Figure 1.2](#)

Georges Méliès, circa 1890. (From Georges Méliès, https://en.wikipedia.org/wiki/Georges_M%C3%A9li%C3%A8s.)

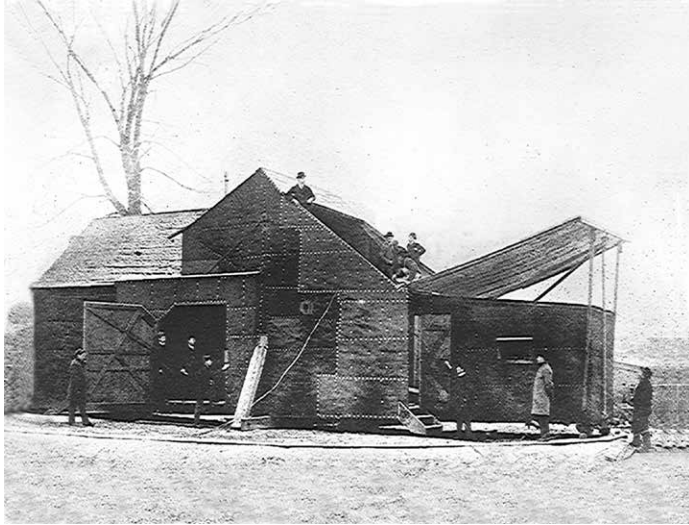
In the film, he covers a woman with a cloth and pulls it off, revealing that the woman has disappeared and reappeared on an adjacent table. He then, through what appears to be magic, continuously switches positions with the woman using smoke and confetti to enhance the effect. This is most likely attained by editing the film and reenacting the action with different elements. The camera must be locked down in one position in order for this to work. The continuous movement of the actors helps create a smooth transition from one person or object to the next. The editing process was the first technique used in the manipulation of imagery, but before too long frame-by-frame manipulations shot in the camera became the most effective way to have ultimate control over the film's outcome.

Another French contributor to stop motion and pixilation was Emil Cohl. His 1911 film *Jobard ne peut pas voir les femmes travailler* (Sucker Cannot See the Women Working) utilized real people and is one of the earliest pixilated films known. Unfortunately, many of Cohl's films have been lost due to fire and neglect.



[Figure 1.3](#)

The Conjuror, 1899. (From *The Conjuror*, 1899, <https://www.youtube.com/watch?v=zs5BBaNJ6mg>.)



[Figure 1.4](#)

Black Maria studio, circa 1893. (Courtesy of the Black Maria Film Festival, Jersey City, NJ.)

The Edison Company, founded by Thomas Edison, created some of the first motion pictures in the United States in his infamous Black Maria studio in West Orange, New Jersey, in 1893 (Figure 1.4).

Similar to the Lumière brothers, Edison's first films reflected everyday life and activities. Edison also attracted audiences and talent like the first established American stop-motion animators, James Blackton and Willis O'Brien. Both artists favored model or puppet animation. O'Brien produced special effects films like the 1915 *The Dinosaur and the Missing Link: A Prehistoric Tragedy* and the eventual 1933 *King Kong*. Artists were moving away from the obvious tricks of dissolves, position replacements, and editing techniques to techniques that were the beginnings of special effects and model animation. Pixilation took a back seat. Even artists like Charley Bowers favored models, as was illustrated in his 1930 film *It's a Bird*, where Bowers has a bird eating metal materials and a car appears to be destroyed frame by frame as the film is run in reverse. This gives the appearance of the car assembling itself totally unassisted (Figure 1.5).

It is worth noting the Russian-born Polish animator Ladislav Starevich, who in 1910 was creating documentary films for the Museum of Natural History in Kovno, Lithuania. The final film in a series was focused on a fight between two stag beetles. Because these beetles would become dormant when the movie lights were on, Starevich decided to use dead beetles and, in place of their legs, to attach wire to their thoraxes with sealing wax. This innovative thinking started a whole new approach to stop motion, which ultimately led to much more developed model animation.

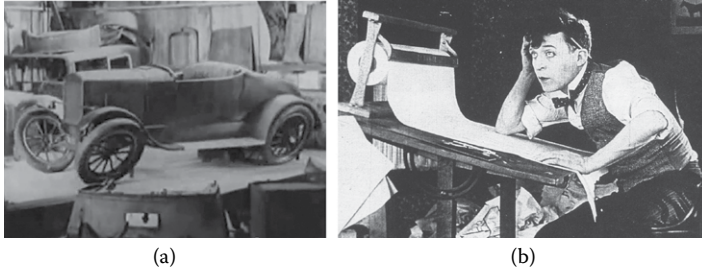


Figure 1.5

(a) Car assemblage from *It's a Bird* by (b) Charley Bowers, circa 1935. ((a) From YouTube, *It's A Bird* (1930), <https://www.youtube.com/watch?v=Z4I15-7L0ss>; (b) from Wikipedia, Charles_Bowers, https://en.wikipedia.org/wiki/Charles_Bowers#/media/File:Charley_Bowers.jpg.)

In 1929, Russian director Dziga Vertov created a silent documentary film called *Man with a Movie Camera*. In this film, Vertov documents the lives of urban citizens in Odessa. The film, which was edited by his wife and partner, Elizaveta Svilova, features many of the techniques that we will discover in the following chapters. Not only does Vertov use freeze frames, double exposures, reverse playback, fast and slow motion, dynamic camera angles, and editing techniques, but he also uses stop-motion approaches to reveal a rather frenetic and modern existence. It is worth viewing this wonderful documentary film for its historical and aesthetic approach.

Stop Motion and Its Various Faces

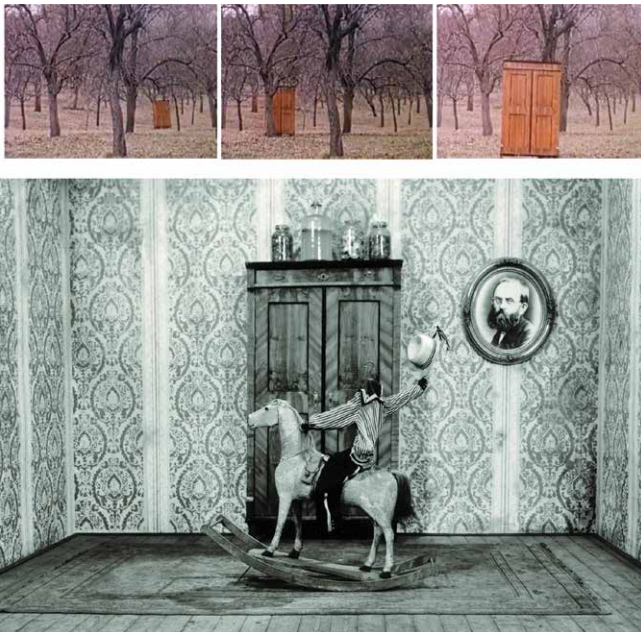
It wasn't until 1952 that the technique of pixilation became utilized in a film that struck an international chord. It was Norman McLaren's Academy Award-winning *Neighbours*, which featured Grant Monroe, mentioned earlier as the person who coined the term "pixilation" that put this technique back in the public eye (Figure 1.6).

McLaren's use of animated people and objects, dramatic action, and art direction made the technique perfect for this film. The battle between neighbours, conducted in an extremely territorial fashion, has great humor but also a dark tone that delivers a message in an effective manner. Pixilation continued to grow after McLaren's continued use of this technique. One of the most notable and inspirational masters of this technique is the Czech surrealist Jan Svankmajer. Although Svankmajer used puppets on occasion, he also used everything from humans to meat to household furniture as animated objects. His concentration on textural imagery and suggestive conceptual filmmaking made him stand out from all other filmmakers. His 1971 film *Jabberwocky*, based on a poem by Lewis Carroll, features a cabinet running through a forest, dancing clothes, maggot-ridden apples, distraught dolls, and flipping puzzle parts (Figure 1.7).



[Figure 1.6](#)

Neighbours by Norman McLaren (1952). (Courtesy of National Film Board of Canada, Montreal, Quebec, Canada. Photo credit: Evelyn Lambert.)



[Figure 1.7](#)

Jabberwocky cabinet in woods, Jan Svankmajer (1971). (Courtesy of Jan Svankmajer. Photos © Athanor Ltd Film Production Company, Jaromir Kallista and Jan Svankmajer.)



Figure 1.8

Still from *Gisele Kerozene* by Jan Kounen. (Courtesy of Tawak Pictures, Paris, France, © 1989.)

Although Svankmajer uses puppets, he mixes his animated subject matter so wildly that the photographic, textural, fast-paced editing leaves the audience feeling rather assaulted. Animators like the American Mike Jittlov, with his pixilated 1979 film *The Wizard of Speed and Time*, and French-born Jan Kounen continued using the pixilation technique with obvious influence from their predecessor, Norman McLaren. In Kounen's 1989 *Gisele Kerozene*, the use of dramatic facial makeup and costuming remind us of the faces of McLaren's two neighbours as they start to get deeply into their fight (Figure 1.8).

Kounen even uses classic Warner Brothers cartoon animated motion when his animated people smash into walls. Wide-angle lenses are used for exaggerated effect. Pixilation is starting to mature. The technique is no longer just a humorous or gimmicky style but a technique that can be chosen as a cinematic device. Dave Borthwick's 1995 feature film *The Secret Adventures of Tom Thumb* is a fascinating and dark film that expands the pixilation technique with a very distinctive story. Nick Upton is Tom Thumb's father and he plays this role with a McLaren sense of exaggeration. This English actor holds his jaw out to maintain a particular look and refines the element of acting associated with this physically challenging technique. Controlling involuntary facial and bodily actions requires extreme control and awareness, often for hours and hours of shooting time and Upton does this quite well (Figure 1.9).

Finally, it is worth noting the Peter Gabriel music video *Sledgehammer*. This 1986 groundbreaking animated short was produced by Limelight London and directed by Stephen R. Johnson, featuring the work of Aardman Animations and the Brothers Quay. It mixed mediums and featured Peter Gabriel lip-syncing or mimicking the words to this wonderful piece of music frame by frame and interacting with everything from fish to fruit to people to clothes and the woodwork itself. Most of these examples, including *Sledgehammer*, were produced and shot directly in the camera. There were very few postproduction effects added, which points out the clever and innovative approach these filmmakers used. This direct application of effects shows a resourcefulness that offers a unique look and cost-saving production (Figure 1.10).

Pixilation has become quite popular in film and animation programs across the country and the world. The technique is relatively inexpensive to produce