"ICE AGE" TO THE DIGITAL AGE:
THE 3D ANIMATION ART OF BLUE SKY STUDIOS

AT THE KATONAH MUSEUM OF ART   SEPTEMBER 16, 2012 – JANUARY 20, 2013

Dear Teachers,

Animation art surrounds us. We see it in traditional children's films and TV programming, but we also see it in the action sequences of adult films, TV commercials, computer games, powerpoint presentations, and in a multitude of scientific research and modeling. Animation is everywhere. Join us as we explore the world of digital animation at *Blue Sky Studios*, one of today's biggest computer animation studios and a leader in the animation industry.

This exhibition presents original artwork from Blue Sky Studio's popular movies, *Rio, Robots*, and the *Ice Age* series. During your visit, students will learn how Blue Sky artists develop their irresistible characters, how they create fantastical yet believable environments, how storyboards illustrate pivotal moments in a story, and the process by which these hand-drawn sketches are transformed, through sophisticated technology, into the fast-moving, beloved movies we see today. In our Learning Center, students will try their hand at character development and basic stop-motion animation. Students will come away from their visit to the KMA with an appreciation of the many science, art, and math careers involved in the animation industry and an understanding of the "bones" of a good story.

Our tours are tailored to meet the needs of your group. **Please prepare your students** for their visit using the following materials. Please share the materials with all classroom teachers. They can also be downloaded from our website: www.katonahmuseum.org under "Teacher Resources."

- Text Panels from the exhibition
- Three images from our exhibition with questions to ask your students
- Three related activities on Character Development, Setting, and Storyboards
- Animation glossary
- Careers in animation
- Name Tag Sheet – Please have each student arrive wearing a name tag.

The KMA Education Department welcomes collaborative planning for class visits. Let us know how you will be using your visit so that we may best serve you. Please call 914-232-9555, ext. 2985 to discuss the specifics of your tour.

Look for this light bulb to indicate ideas for older students!

UPCOMING PROGRAMS TO NOTE ON YOUR CALENDAR:
- **Educators' Open House and Animation Workshop**   Thursday, September 27, 2012, 4 – 7pm
- **Family Animation Day at the KMA**   Sunday, October 14, 2012, 12 – 5pm
- **"In the Beginning" Gallery Talks** by Blue Sky Studios artists
   Sundays, Sept. 16, Oct. 14, Nov. 18, Dec. 2, Dec. 16, Jan. 13 at 1:30pm

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SELECTIONS FROM OUR TEXT PANELS

INTRODUCTORY PANEL

One thing is certain—computer technology has revolutionized the way we tell stories.
—Chris Wedge, Blue Sky Studios Founder and Director

Committed to technical and artistic innovation, and leaders in the field for almost twenty-five years, the artists of Blue Sky Studios specialize in photo-realistic, high resolution, computer generated animation and rendering that brings stunning richness and dimensionality to their work. We are honored to celebrate the accomplishments of these gifted visual storytellers, whose art reflects an unprecedented moment in a vibrant and ever-changing field.

SECTION PANELS

STORYBOARDS: ART IN SEQUENCE

After reading a movie script, storyboard artists draw the action and come up with new ideas and gags that enhance the narrative greatly.   —Bruce Anderson, Producer

Every Blue Sky film begins with a great script, but it is the Story Department that jump starts the process of visualizing the written word for the big screen. Members of the team immerse themselves in story passages to create hundreds of sequential drawings, or storyboards, that reveal the frame-by-frame progress of each scene in action. Wit, humor, and the characteristics of the film's stars are essential elements to be explored, and artworks can also suggest camera angles and guide the flow and pacing of the film.

When a storyboard sequence is completed, it is ready to be "pitched" or shown, with feeling, to the film's director. It would not be unusual to find an artist acting out a scene with attention-getting sound effects and facial expressions for emphasis. If the director and the rest of the team react favorably—and especially if a scenario gets a laugh—an artist's concept might just make it into the film. If not, it's back to the drawing board to dig a little deeper for fresh ideas.

CHARACTER DESIGN: IMAGINING THE STARS

Having a career in character design is almost unfair. I'm invited in when nothing is set—when there are no rules and when the characters have yet to be fully imagined   —Peter de Sève, Lead Character Designer, *Ice Age* Series

In animation, the stars and supporting actors of the big screen must be as compelling as those who appear in live action feature length films, from their appearance and demeanor, to their unique identifying characteristics. But how are beloved fictional characters like Rodney from *Robots*, Sid from *Ice Age*, and Blu from *Rio* actually developed?

In the art department at Blue Sky Studios, character designers draw inspiration from a movie's script, which illuminates story plot lines and the distinctive traits of its featured protagonists. Masterful visual storytellers, these artists also look to the world around them for ideas that will enhance both their concepts and the written word. Family, friends, and strangers, famous actors and comedians, and even inanimate objects, have been transformed in the hands of artists in pursuit of the perfect character.

Working in sketchbooks and drawing pads, and on digital tablets, artists refine their drawings and collaborate closely with the film's director and art director until each character rings true. Along the way, they must also ensure that

designs will transition smoothly into the 3D modeling process, which gives their characters full life and mobility.

SENSE OF PLACE: DESIGNING VIRTUAL WORLDS

We try to create a world that is not real, yet believable and somewhat familiar.
                              —Chris Wedge, Blue Sky Studios Founder and Director

From the gadgetry-inspired Robot City, to the dramatic *Ice Age* tundra, and the colorful, light-filled streets of *Rio*, Blue Sky artists create the spaces and places that their animated stars inhabit. The invention of a cohesive, compelling fantasy world is a feat undertaken by a gifted team of environmental, color, and layout artists who work with traditional art materials, and on the computer, to achieve awe-inspiring results.

After reading a film script, environmental designers gather information and visual reference from books, magazines, and the internet, and sometimes travel to far flung locales to capture each story's unique sense of place. Once the director and art director have approved initial concept sketches, drawings are sent on to the 3D layout department, where rough three-dimensional set designs are digitally established. These serve as a guide for the ongoing refinement of the virtual environment, from the shape of mountain peaks to the kinds of rocks and trees that will appear in a scene. Concept sketches, 3D layout files, and detailed set design drawings are then sent through the production pipeline to be modeled, textured, and lit. With artistry and sophistication, a subtle visual language linking each scene in the film emerges, making the impossible a reality.

THIRD DIMENSION: THE BLUE SKY SCULPTURE STUDIO

This glimpse into the Blue Sky Studios sculpture department invites you to explore an important stage in the production process—the creation of sculptural maquettes depicting characters that will appear in a film. Sculptors transform two-dimensional character drawings into volumetric designs that allow a movie's director, art director, and artists to view them from every angle, and consider how each might move through virtual space.

Sculptors employ traditional techniques by creating aluminum wire armatures on which they apply Super Sculpey, Magic-Smooth, and other additive materials. Their results are then translated into computer models using 3D scanning technology. With the aid of digital sculpting software, artists can also create virtual maquettes on pressure-sensitive computer tablets. These digital figures are realized through the use of 3D printers, which transform computerized file information into tangible sculptures composed of successive layers of plastic resin.

THE ANIMATION PROCESS: FLYING HIGH WITH *RIO*

There was a trust going into this project that I could do something unique, that I could do something for all audiences and for the world.   —Carlos Saldanha, Director of *Rio*

For the greater part of the twentieth century, animation artists relied on cels—transparent sheets on which imagery is drawn and painted—to create moving pictures. Today, this method has been surpassed by 3D digital animation, which Blue Sky Studios has long pioneered. Pushing the boundaries of possibility, and through the work of many professionals fluent in the realms of art and technology, computer animation brings even the most fantastic visions to life on screen. Though technology continues to advance, many time-honored elements of filmmaking remain unchanged. A compelling story, for instance, is at the heart of every great script. Directorial vision also continues to be important in framing the big picture and bringing animated projects to fruition, from first concept to fully-rendered film. Successful

animated films rely on the cohesive collaboration of many creative departments, and require an intensive commitment of several years to develop each feature-length project.

In this gallery, we'll take you through the intricate digital animation process with a behind-the-scenes look at a scene from *Rio*, Blue Sky's acclaimed production set in Rio de Janeiro, Brazil. The story focuses on Blu, a domesticated blue macaw, thought to be the last of his breed. Reluctantly, Blu travels from his home in snowy Minnesota to the warm coastal city of Rio, where an ornithologist awaits with Jewel, Blu's female counterpart. Captured by smugglers, Blu tries to outwit his captors and reunite with Linda, his beloved owner. Along the way, he makes new friends, discovers his roots, and learns to fly.

The scene at hand is director Carols Saldhana's favorite, and one of the first of *Rio* to be fully developed. It reflects each characters' emotional reaction to the spectacular beauty of Rio de Janiero, his native city, and the excitement of Blu's first flight.

IN THE BEGINNING: PRE-PRODUCTION ARTWORK

In one of the earliest stages of pre-production work for an animated film, character and set designers create countless conceptual artworks that help them to envision the script. This imagery is executed both in the digital realm, and with an array of traditional art media, from pencil and ink, to crayons and watercolors. Character and environmental designers work closely with Blue Sky's sculpture and modeling departments to capture the essence of characters and settings, and to ensure the cohesive look of their art throughout the film.

Style guides and call-out sheets establish an animated film's appearance. Developed by the art director and distributed to Blue Sky staff, they establish visual parameters relating to how characters and settings should appear. Color artists accentuate the action, heighten emotion, and create cinematic effects by composing palettes that relate each film sequence to the whole. "For *Rio*," said art director Thomas Cardone, "much inspiration was drawn from staff travels to Brazil, which brought artists face to face with the essence of their subject."

THE ART OF THE STORY

After reading a script, storyboard artists begin visualizing each of the film's narrative sequences. Infused with wit and humor, their gestural illustrations provide a sense of character placement, action, and framing for every shot in the movie.

Though some artists continue to capture their ideas with paper and pencil, most storyboard artists draw digitally using pressure-sensitive computer tablets. This adds speed to their process, as sequences can be pitched to directors on a digital projector, and are easily shared among other staff.

IN THE ROUND: SCULPTURE AND MODELING

In 3D animation, every character, prop, and set must be sculpted and modeled by artists who draw upon their experience in the fine and applied arts, from traditional sculpture to industrial design. A movie's main characters pose the greatest challenges, as they require a wide range of movement and significant detail. "Our job is to establish volumetric, proportionally correct characters that allow the director to interact with fully realized three dimensional figures," notes sculptor Alena Wooten. Using concept drawings as reference, sculptors create complex character maquettes in clay, or with digital sculpting software. Traditional clay maquettes are translated into the computer through the use of a 3D scanner.

RIGGING: BUILDING FROM WITHIN

Once a character model is completed and approved, the rigging department sets to work on determining how each character will move within a film. A rig for a character may be thought of as an internal skeleton with a set of controls similar to the strings of a puppet. The controls of a rig allow animators to bring a character to life for its onscreen performance. As it moves through time and space, each character must remain true to its design, and convey its unique appeal through every pose and facial expression.

ANIMATION: CHARACTERS COME TO LIFE

After a character has been through modeling and rigging, it moves on to the animation department where it is put into motion to act out its part. Involving highly technical work, animators use rigging controls to achieve every character expression and gesture. Storyboards are studied carefully to ensure that each animated sequence mimics earlier approved concepts. It is common for animators to film themselves acting out their assigned scenes, and to have mirrors close at hand to capture facial expressions, which helps them achieve realistic character movement. "We are the actors for the characters," says senior animator Chip Lotierzo, who with his colleagues makes the stars of the show "breathe, blink, have a thought process, and express emotion." Important principles of animation are also at the forefront of their thinking, from staging and timing to anticipation, and exaggeration.

MATERIALS: HAIR, FUR, AND FEATHERS

Everything has a surface, and every surface has a texture. The materials department is responsible for creating all of the fur, feathers, and surface textures within a film, creating characters and settings that are life-like and believable. Beginning with bare gray models that have been passed along from the modeling and rigging departments, the team applies singular hairs, feathers, blades of grass, and other facades to elements of a scene, carefully considering how lighting and movement will interact with the details of their work. The rust beneath Fender's bright red coat, the shine on Sid's nose, and the velvety wisps of Jewel's feathers are just some of the many details that add a top coat to everything that the audience sees. Even the unique characteristics of fur, such as length, density, and waviness can be accurately described through the materials department's meticulous work.

CAREERS IN ANIMATION

Many kinds of artists and technicians are needed to create a world-class animated movie. Teams work together, sharing ideas and practical advice. Here are a few of the jobs at Blue Sky Studios:

Director – the person in charge of the entire movie from storyline to visual presentation. A multi-tasker!

Art Director – oversees the look of the film, paying attention to both the big picture and the little details.

Scriptwriters – imagine the big idea, the drama, and the action. They write an exciting story script.

Storyboard Artists – illustrate moments of a script and "pitch" them to the Director. They are the first step in visualizing the written script into pictures. They have great drawing and storytelling skills.

Character Designer – creates the personality and quirks of each character in the movie. They understand the psychology of people and animals.

Set Designer – imagines the details of the world that the characters live in. They like imaginary worlds.

Color Artist – brings emotions and personality details to life through color. What emotion is the color red?

Modelers – create the characters and environments in three dimensions in the computer. They need to know math, physics, and computer technology.

Riggers – add a computer-generated skeleton and controls to a model so that an animator can manipulate and animate the character. They also need to know math, physics, and computer technology.

3D Layout – translates hand-drawn work into 3D computer animation.

Special Effects – Special effects artists create mechanical, optical, and computer generated illusions for animated movies. They understand math, physics, computers and the elements of high drama.

Computer Animator – Computer animators create moving images with the help of computers. They start with one picture, known as a frame. The next picture is changed just slightly. When all of the frames are flashed on a screen in rapid succession, they create the illusion of moving images. They are artists and technical wizards.

Lighting Specialist – designs systems that adjust lighting in a scene in order to make it more dramatic.

Sound Engineer – Sound engineers mix and edit tracks using sound mixing boards. They record sounds using recording equipment and adjust sound quality and volume using the soundboard.

Editor – Editors have many jobs when working on animated movies. They are detail-oriented people who go through all the parts of the animation to make sure that everything flows smoothly.

Renderer – finishes the animation process by putting all the computer-generated elements together. The renderer is a computer!

Voice actor – provides the voices for animated characters. They are able to manipulate the sound of their voice in unique ways.

Which job interests you most? Why?

ANIMATION GLOSSARY

The art of animation combines the art of drawing, the science of motion, and complex computer technology. Here are just a few important words you will encounter when you learn about animation.

Animation – The act of bringing to life, motion, or activity. Animated movies create the illusion of bringing still pictures to life.

Ambient Sound - Sounds natural to any film scene's environment, like the wind or the rain or traffic sounds. Listen to the ambient sounds in the next cartoon you see!

Background – The part of a scene that is farthest in the rear. The background is the artwork on which animation takes place.

Camera Angle – The point of view of the camera. Every animation is drawn from the point of view of an imaginary camera.

Character Design – Animators have to consider how a character looks, moves, feels, behaves, and sounds from head to toes.

Close-up - A detailed view of a person or object. A close-up of an actor usually includes only his or her head.

Color Design – The colors of every animated scene are carefully designed to give us feelings of excitement, happiness, fear or dread. The next time you see an animation, pay attention to what the colors tell you.

Composition – An important art term that refers to the arrangement of visual elements. In animation, the composition of every frame and every scene must move seamlessly together.

CGI – Computer generated imagery. Animated graphics produced by a computer.

Continuity – Action that seems to happen without any pauses. Live action scenes have natural continuity, but animating still pictures pose a special challenge.

Dialogue – The lines spoken by characters. Every good movie has great dialogue.

Digitization – the process of converting information into a digital format . Many studios now do animation digitally.

Foreground – The part of the scene that is nearest to the viewer. In animation, characters are often found in the foreground.

Frame – One of the many still images which compose the complete moving picture. Movies are projected at 24 frames per second.

Lip-Synching – Matching the words to the pictures so that a character looks like it is speaking.

Long Shot – A view of a scene that is shot from a considerable distance, so that people appear small.

Maquette - a small scale model or rough draft of an unfinished sculpture.

Medium Shot - A camera shot in which the subject is in the middle distance, so that some of the background can be seen. Often only part of the character is shown.

Model – A three-dimensional representation of a person or thing, usually built in the proper scale. Blue Sky animators build clay models of their characters and then create 3D computer models from their clay models.

Motion Capture – Film making process that records the actual movement of human actors to create animated characters that look realistic.

Pacing – The feeling of time in a film story, like tempo in music.

Persistence of Vision – A human reaction in which our eye and brain retain an image for a split-second after the image was actually seen, and creates the illusion of motion when we view images as a fluid motion, though what we are really seeing is quick slides of images!

Pixels – The smallest single component of a digital image.

Plot – The pattern of events that make up a story. The action of the story. Every story needs a great plot.

Pre-production to Post-production – The 3D animation process is very special with many steps. Pre-production planning includes: scripts, storyboarding, models, and "animatics" to give an idea of motion and timing. Production includes computer layouts, 3D modeling, textures, lighting, rigging (to make things move correctly), sound, and special effects. Post-production includes compositing (to put all the elements together), editing, and rendering (which takes all of our work thus far and calculates the individual pixels for each frame).

Protagonist – The main character in a drama. Try to identify the protagonist in the next cartoon you watch.

Rendering – The process of creating an image from a model by means of computer programs.

Rigging - This process involves turning creations from the modeling department into fully articulated, moving and breathing "digital puppets" to be posed out by a team of character animators.

Scale – Scale is important in drawing for animations. Scale refers to the proportion or ratio that defines size relationships. Models, architectural plans, maps and paintings/drawings all use scale to create the illusion of correct size relationships between objects and figures. Characters and settings in an animation must be drawn to right scale so that they are believable.

Scene - A series of shots joined so that they communicate a unified action taking place at one time and place.

Script – The written version of a story that includes dialogue and descriptions of characters and setting.

Shot - A segment of film produced by a single uninterrupted running of the camera.

Stop Motion – Type of animation in which real objects are filmed one frame at a time.

Storyboard – A group of rough sketches that illustrate the plot of an animation. Each drawing represents a moment in a scene. Artists use storyboards to "pitch" plot ideas to the director.

Texture Mapping – A method for adding detail, surface texture, or color to a 3D model.

3D – Three-dimensional: appearing to have height, width, and depth. 3D characters seem round, unlike 2D characters which seem flat. Clay animations are three-dimensional.

2D – Two-dimensional: with height and width. Early animations were drawn on paper and therefore two-dimensional.

Peter de Sève
Scrat Hanging, n.d.
Pencil on paper

Character Development

Character Designers develop unique, memorable characters for movies. They have to consider how a character looks, moves, feels, behaves, and sounds from head to toes**.**
How do they illustrate these characters?

Look carefully at the drawing *Scrat Hanging*

Use 3 words to describe the personality of this character.

Examine the characteristics shown in the drawing:

Look at the facial expression

Describe the character's gesture and movement

Try taking the same pose

If you were a **voice actor** for this character, what voice would you give him? Why?

Consider the artist: "My work as character designer is one of the earliest stages of visual development of a film," said Peter de Sève. "When a script lands on my desk, I begin doodling. A character may be described in a certain way, but through a series of drawings, it comes into its own. There is shorthand to our conversations at Blue Sky, and a flexibility that allows for creative back and forth."

How do the details in the drawing and the artist's notes further illustrate this character's personality? Evaluate the line quality, body language, proportions, and exaggerations.

Peter Clarke
Environmental Designs for Ice Age, n.d.
Pencil and white pencil on paper

Creating the Environment

Set Designers create the environment for a story. They imagine the details of the world that the characters live in.

Imagine you are looking at a window into another world.
> Describe what you see.

Now, take a step into this world. Where would you put yourself?
> What does it feel like where you are standing?
>
> What sounds do you hear?
>
> What do you smell?
>
> What does the weather feel like?

If you had the job of "**Color Artist**" what colors would you give this place?

Imagine a story that takes place here.

Consider the artist: An exquisite draughtsman and environmental designer, **Peter Clarke** fully imagined the settings for each of Blue Sky Studio's *Ice Age* films—from rugged glacial mountains to Sid's mud baths and a Lost World beneath the ice, replete with dinosaurs. His richly detailed drawings explored every aspect of a film's imaginary environs, establishing a fully-realized vision that guided the entire team.

What details in the illustration indicate the feelings, smells, and sounds you feel. What details and techniques has the artist used to make this place so believable?
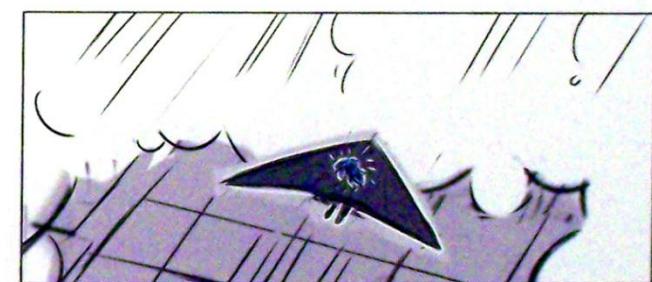
Jerod Chirico
Storyboard for Rio
Digital prints

Storyboard

A **Storyboard** is a group of rough sketches that represent the plot of an animation.   **Storyboard Artists** illustrate scenes from a script and then "pitch" it to the Director. They are the first step in visualizing (transforming) the written script into pictures.

Storyboard Artists use three framing techniques to help tell the story:

Close up (very close, shows details of the character.)

Medium shot (nearby, shows part of the character and background.)

Long shot (far away, shows the setting.)

Examine the 3-frame story board from *Rio*. Identify the 3 different shots.

What is happening in this scene?

How do the three frames tell different aspects of the story?

What might happen next in this story?

Consider the artist: Jerod Chirico created the storyboards for this pivotal scene in *Rio,* where the main character Blu, attempts to fly. He explained that the scene took three months to complete.

How did the artist indicate the mood and pace of this scene in his framing, drawing style, and technique?

ANIMATION: CHARACTER DEVELOPMENT

Blue Sky Studios has created some pretty funny and fabulous characters, like Scrat in *Ice Age* and Blu in *Rio.* Developing a unique character takes a lot of time and thought.

Here is a good way to start:

1) Think of an unusual character. What does it look like? Sketch it here:
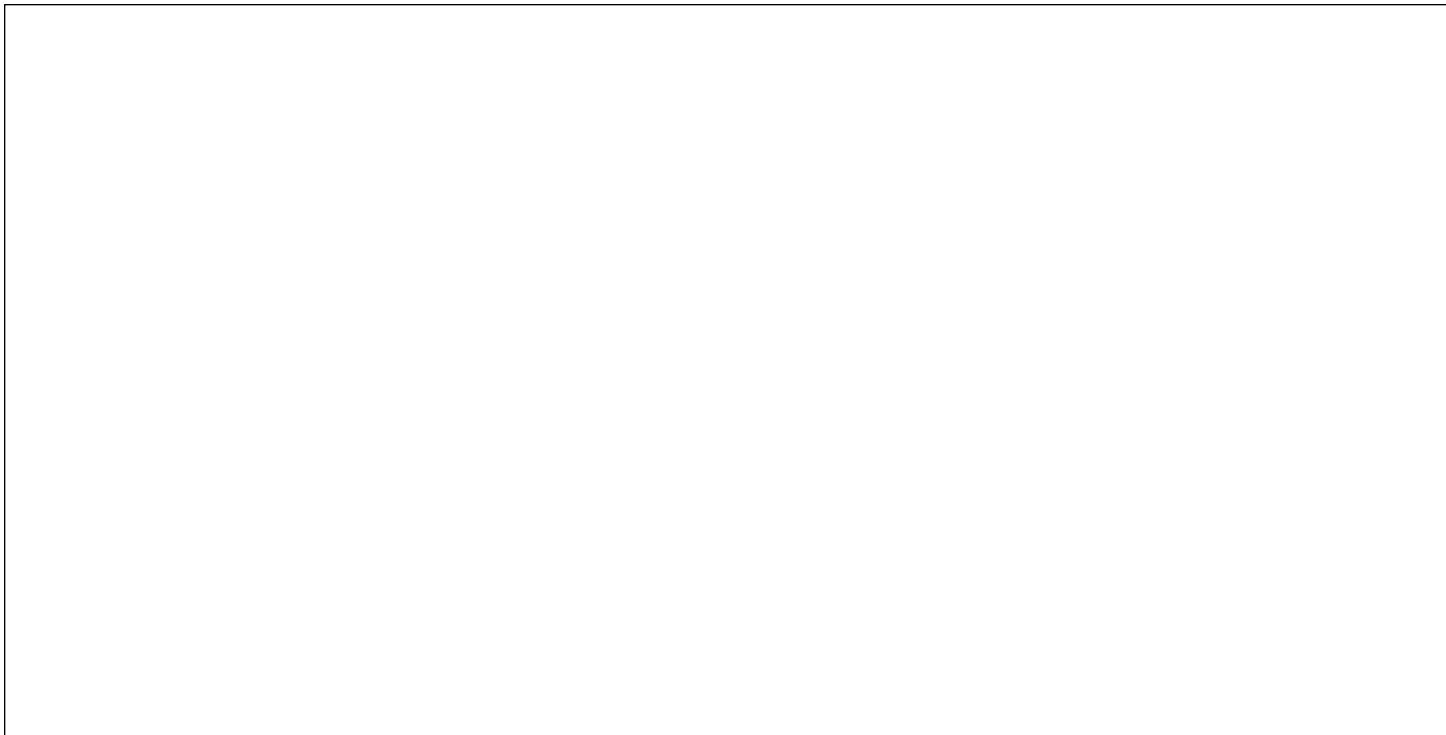
2) What does your character like to eat? _____ Add that to the picture.

3) Where does it live? _____ Add a little background to the picture.

4) What kind of personality does it have? _____

5) How does your character move? _____ How can you show that?

6) What does its voice sound like? _____

7) What is a possible name for your character? _____

8) On the back of the page, write about what happens to your character on its birthday

From 2D to 3D: Use clay or another modeling material to create this character in 3D. What is different about forming the character 3-dimensionally?

First.......

_____

_____

_____

_____

Then.......

_____

_____

_____

At the end ......

_____

_____

_____

ANIMATION: BACKGROUNDS

All good animated movies have great environments for their characters to live in. Can you create an environment for two of Blue Sky Studios' characters? Add details to make the place unique and believable. Cut out the characters below and put them in your background. On the back of the paper, try a different background for them.

**Lighting Effects**: Use tracing paper to make the same scene at night or dawn.
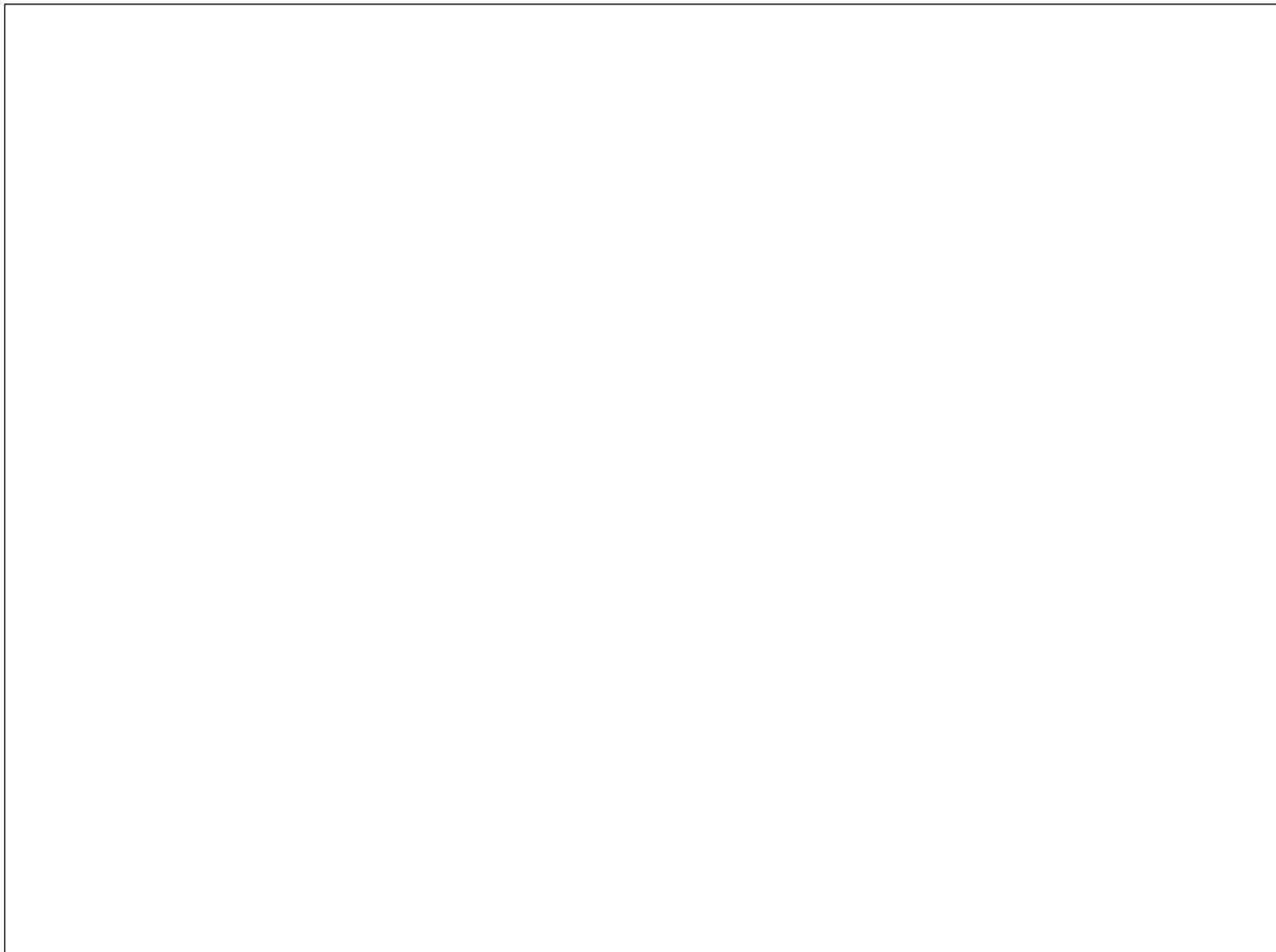
ANIMATION: STORYBOARDS

Every story has a beginning, middle, and end. Animators use storyboards to help visualize their stories.

Try making a storyboard with the scene to the right. Cut it out and glue it in one of the spaces below. Where does it belong – at the beginning, middle, or end? Draw what happens in the other two scenes. Write what happens in each scene in the lines below.
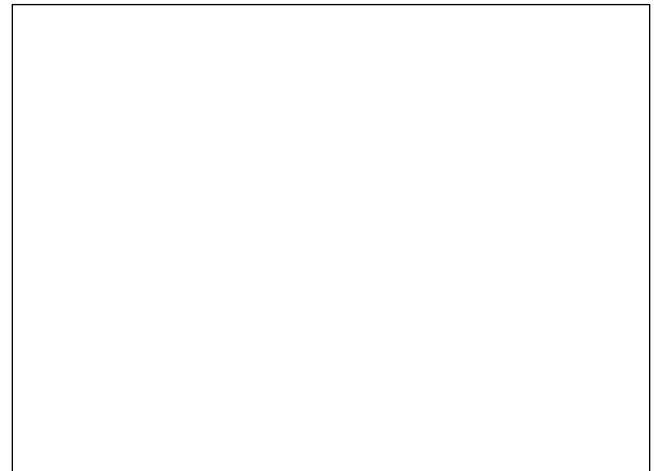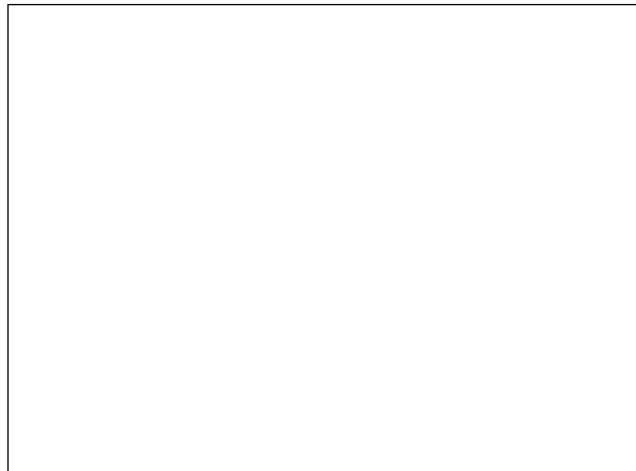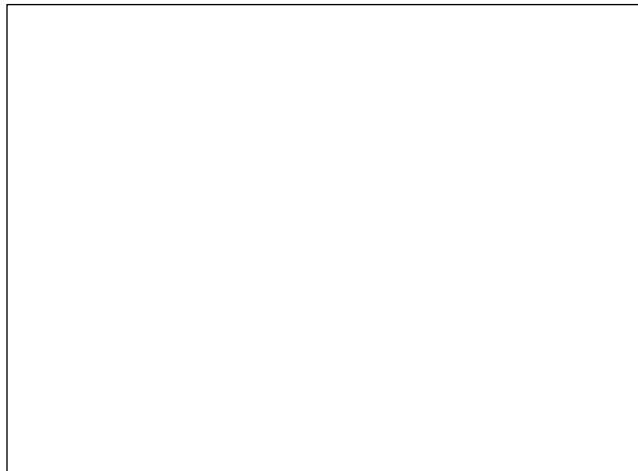
Framing a scene: Draw your viewer in by creating, short, middle, and long shots for this scene

Nametag Activity Sheet
"ICE AGE" TO THE DIGITAL AGE: THE 3D ANIMATION ART OF BLUE SKY STUDIOS

On your visit to the Katonah Museum of Art you will see amazing original artwork from the animation films, *Ice Age, Rio,* and *Robots.*

Use the space below to create a nametag to wear on your visit. Please make sure your name is clearly written.