

A place to call home: Creating imagined animals

GRADE LEVEL K - 3rd

SUBJECTS Life Sciences, Art Integration, Patterns

DURATION Prep time: 20 minutes; Activity time: 30 minutes (Part 1), 1.5 hours (Parts 2, 3)

SETTING Classroom

OBJECTIVES

In this lesson, students will:

1. learn how certain animals' patterns help them to hide, confuse, attract, or warn other animals in their environment; and
2. each create their own imagined animal with a pattern that is suited for an environment depicted in a landscape painting.

BACKGROUND FOR EDUCATORS

Patterns are all around us. Humans are inherently skilled at recognizing patterns from our observations of the world. Patterns can be found in the phases of the moon, in the symmetry of tree rings, or in the footprints of an animal's tracks (see *A Framework for K-12 Education*, 2011). Patterns are an important tool that can help us organize our observations and make predictions about why or how things are as we observe them.

In nature, many animals have patterns on their bodies. These patterns can be grouped into broad categories, based on the perceived functions of the patterns, which are inextricably linked to the animals' environments. Some of the primary categories of animal patterns related to function are:

- » **Hiding:** These patterns help animals match and blend in to their environment so they can't be seen. They might hide from predators or from their prey.
- » **Confusing:** These patterns make it hard to pick one animal out of a crowd, because it interferes with the perception of the animal's body shape.
- » **Finding a Partner:** These patterns make animals stand out so that they can attract mates.
- » **Warning:** These patterns say, "I'm dangerous. Back off!"

Many works of art depict animals, whether real or imagined, with elaborate and colorful body patterns. Based on what the artist chose to represent in the piece, viewers can infer the real or imagined environment by looking at the animal's body pattern.

This activity aims to blend science and artistic perception skills to gain a deeper understanding of the functions of

MATERIALS

- Animal patterns categories and pictures (1 classroom set)
- Copies of landscape paintings from the de Young collection, or color photos of different landscapes or environments
- Watercolor paper
- Sharpies
- Sketching pencils
- Erasers
- Watercolor pencils
- Paintbrushes
- Water cups
- Glue sticks
- Scissors
- Color photos of animals for collage (you can use magazines or old calendars)

VOCABULARY

- » **Patterns:** any natural or manmade form or event that exists or occurs in a repeating and predictable way
- » **Environment:** the area in which something lives



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patterns within an animal's environment, while also helping students to explore and communicate creativity. Students will be **interpreting** the significance of patterns and **predicting** patterns that will be useful in different environments.

TEACHER PREP

1. Print the animal patterns categories and images. If you have four or fewer groups of students, print one copy of each image; for five to eight groups, print two copies.
2. Group example animals with their pattern category.
 - **Hiding:** Sumatran tiger, Amazon leaf fish, leaf-tailed gecko, pygmy sea horse
 - **Confusing:** zebra, Moorish idol, leopard, anemone shrimp
 - **Finding a Partner:** peacock, bird of paradise, peacock spider
 - **Warning:** nudibranch, poison-dart frog, blue-ring octopus, lionfish
3. Make copies of the landscape paintings or color photos of different environments or landscapes.
4. Gather art supplies.

INTRODUCTION

Begin by having students brainstorm examples of animals that they think have patterns. If there is any confusion, clarify the definition of a pattern. Tell students that in this activity they will answer the question, "What are the different ways a pattern can help an animal live in its environment?"

PROCEDURE

Part 1: Introduction to animal patterns

1. Divide students into groups of three or four.
2. Give each group one pattern category, including the images of different animal examples.
3. Ask students to look carefully at each animal's pattern. Ask them to record what they notice and wonder about it. Have them describe the animal's pattern and explain how each example represents its pattern category. If your students are readers, have them read the information about how that pattern helps it live in that environment.
4. Briefly explain the four different patterns categories (see

Teacher Background).

5. Within each group's patterns category, have each student select one animal example.
6. For each individual animal example, ask each student to brainstorm answers to the following questions:
 - What do you think the animal's environment looks like?
 - How might the animal's pattern help it live in its environment? Why do you think so?
7. Alternatively, you can have students use the following sentence frame to organize their thinking:
 - The _____'s (describe pattern) helps it (hide from / confuse / attract / warn) other animals in its environment because _____.
 - Example answer: The Sumatran tiger's stripes help it blend into the shadowy jungle.
8. Once students have prepared their answers, have them move around the classroom to find someone with another animal example within a different patterns category. Have students compare their animals and discuss.
9. As a class, have students share what they learned from their comparisons.

Part 2: Exploration of landscapes and brainstorming of imagined animals

1. Tell students that they will be designing imaginary animals with patterns that match a particular environment.
2. Put copies of the different landscape paintings from the de Young collection (or other images of landscapes or environments) around the classroom, and have students select the landscape they would like to create an animal for. Their animal can be constructed from a combination of real animal parts, or it can be completely fictional, but students should provide reasoning for why certain patterns or body parts would be useful to the animal in that environment.
3. Give students time to observe their chosen landscapes and to begin designing their animal with the goal being that it is well suited for that environment. To guide their thinking, have them answer the following questions:
 - What type of imagined animal might live in this environment? Why?



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- What is day-to-day life like in this environment? What types of weather might your animal experience in its environment?
 - What type of pattern (hiding, confusing, finding a partner, warning) would help your animal to live and survive in this environment? Why does it need this particular pattern?
 - What environment does your imaginary animal live in (mountains, forest, jungle, water, underground)? Why does it live there? What does it eat?
4. Once students have answered those questions, they will be ready to begin making their imaginary animals.

Teacher Tip: Please note that it is important to provide students with class time to experiment with materials and get to know the materials' range of possibilities. Students should have approximately one hour to create their art.

Part 3: Creating an imagined animal for a landscape

Planning phase

1. Instruct students to begin by selecting one detail of interest from an animal image, such as eyes, nose, or horns, for the imaginary animal's head. Beginning with the head, prompt your artists to think about what characteristics they will include, such as type of mouth and eyes, and the presence or absence of horns, ears, antlers, antennas, etc. By using these details as their starting point, students will be encouraged to refer to their landscape and to think about what other animal parts they might add to their collages.
2. Next, have students move on to the body, and prompt them again to think about the characteristics they will include (existence and number of legs, fins, tails, arms, shells, claws, paws, etc.). Students can use multiple collage pieces to create their animals.
3. Encourage students to choose the orientation of their paper to be either vertical or horizontal, depending on the size and placement of their collage pieces and sketching.

Construction phase

4. Using sketch pencils, have students begin to draw in outline the different parts of their animals. Remind students to wait to glue their collage pieces down until they have drawn the entirety of their creatures, as this will allow them to make any changes they need as they move through their sketching.
5. Once students have completed sketching their animals, have them go over their sketches with black Sharpies. Ensure that they go over all the lines they have sketched, as the watercolor pencils will cover any lines that are not reinforced with Sharpie.
6. As students move into using their watercolor pencils, remind them to refer back to their landscapes and think about what patterns they will include on their creatures, and why. Encourage students to try using their materials in different ways: drawing with watercolor pencils directly onto the paper and then add water; dipping watercolor pencils in water and drawing on paper; wetting brushes and using watercolor pencils to saturate the brush with color, and then painting directly on paper.
7. Once students are done creating their patterns with the watercolor pencils, allow their artwork to dry.
8. Once students have finished making their imaginary animals, have them tape their art on the wall next to the landscape paintings that inspired them.
9. Do a class gallery walk of the imaginary animals. Encourage discussion about their creatures in conjunction with the landscapes, giving examples of what environmental elements inspired the characteristics or patterns of their imaginary creatures.

WRAP UP

Discuss with your students what the different categories of animal patterns are. Can they think of any other examples of real animals that have hiding, confusing, attracting, or warning patterns? Which type of patterns did they use for their imaginary animals? Why? How was each type of pattern suited for each particular landscape?



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EXTENSIONS

Part 3 can be split into two sessions. The first session may be dedicated to exploring the materials, sketching, and collaging, and the second dedicated to applying the watercolor pencils and completing the artworks.

For younger artists (pre-K or kindergarten), consider having them focus just on the heads of their imagined animals, rather than on entire bodies.

A variation of this project can be done by dividing students into groups and having these groups work from the same landscape. Students within each group can discuss the landscape or environment together, but group members should create their own imaginary animals individually. Afterwards students may compare and contrast the creatures they have made to see what is similar and different.

After creating imaginary animals, students also can write a short paragraph each describing the animal and the environment it lives in. Students will be encouraged to explain the patterns and parts of the animal, and how they are suited to the particular landscape each student worked from for inspiration.

REFERENCES

Achieve Inc. Next Generation Science Standards (2013). www.nextgenscience.org/next-generation-science-standards.

Achieve Inc. "Appendix G: Crosscutting Concepts," Next Generation Science Standards (2013). [http://www.nextgenscience.org/sites/ngss/files/Appendix G - Crosscutting Concepts FINAL edited 4.10.13.pdf](http://www.nextgenscience.org/sites/ngss/files/Appendix%20G%20-%20Crosscutting%20Concepts%20FINAL%20edited%204.10.13.pdf)

National Research Council. A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas. Washington, DC: The National Academies Press, 2012.



Patterns in Art and Science

The *Framework for K-12 Science Education* identifies **patterns** as one of the seven cross-cutting concepts of the Next Generation Science Standards. These concepts are described as bridging disciplinary boundaries and holding value across all the sciences as well as in engineering. Meanwhile, **patterns** are also a key concept across the spheres of art education, appearing in California's *Visual and Performing Arts Content Standards* in the contexts of visual arts, dance, and music.

Whether patterns are encountered in art, science, math, history, or everyday life, we can approach them with a few consistent processes. These steps can help students understand and give meaning to patterns of any kind.

recognize	students can: <ul style="list-style-type: none">• recognize simple patterns found in the environment and works of art;• identify patterns in the natural and designed worlds
describe	students can: <ul style="list-style-type: none">• describe repeated patterns in nature, in the environment, and in works of art;• use observations to describe patterns
interpret	students can: <ul style="list-style-type: none">• interpret rhythm and movement in works of art and the environment;• use similarities and differences in patterns to sort, classify, and analyze natural phenomena
predict	students can: <ul style="list-style-type: none">• formulate questions and predict reasonable outcomes based on patterns

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STANDARDS ADDRESSED

Next Generation Science Standards

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
This activity does not address any Science and Engineering Practices.	LS1.A: Structure and Function All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.	Patterns K-2: Patterns in the natural world can be observed, used to describe phenomena, and use as evidence. 3-5: Patterns of change can be used to make predictions. Patterns can be used as evidence to support an explanation.

Common Core State Standards

Reading Standards for Literature

Kindergarten

7. With prompting and support, describe the relationship between illustrations and the story in which they appear (e.g., what moment in a story an illustration depicts).

Grade 2

7. Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.

Writing Standards

Kindergarten

2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

Grade 1

2. Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.



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8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

Grade 3

3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

Speaking and Listening Standards

Kindergarten, Grades 1, 2, and 3

1. Participate in collaborative conversations with diverse partners about kindergarten/grade 1/grade 2/grade 3 topics and texts with peers and adults in small and larger groups.

Kindergarten

5. Add drawings or other visual displays to descriptions as desired to provide additional detail.

Grade 1

5. Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings

Grade 2

5. Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Visual and Performing Arts Content Standards

Kindergarten

Creating

Cr1.1.Ka Engage in exploration and imaginative play with materials.

Cr2.3.Ka Create art that represents natural and constructed environments.

Responding

Re7.2.Ka Describe what an image represents.

Re8.1.Ka Interpret art by identifying subject matter and describing relevant details.

Grade 1

Creating

Cr1.2.1a Use observation and investigation in preparation for making a work of art.

Cr2.1.1a Explore uses of materials and tools to create works of art or design.

Responding

Re8.1a Interpret art by categorizing subject matter and identifying the characteristics of form.



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Grade 2

Creating

Cr1.2.2a Make art or design with various materials and tools to explore personal interests, questions, and curiosity.

Cr3.1.2a Discuss and reflect with peers about choices made in creating artwork.

Responding

Re7.1.2a Perceive and describe aesthetic characteristics of one's natural world and constructed environments.

Grade 3

Creating

Cr1.1.3a Elaborate on an imaginative idea.

Cr2.2.3a Create personally stratifying artwork using a variety of artistic processes and materials.

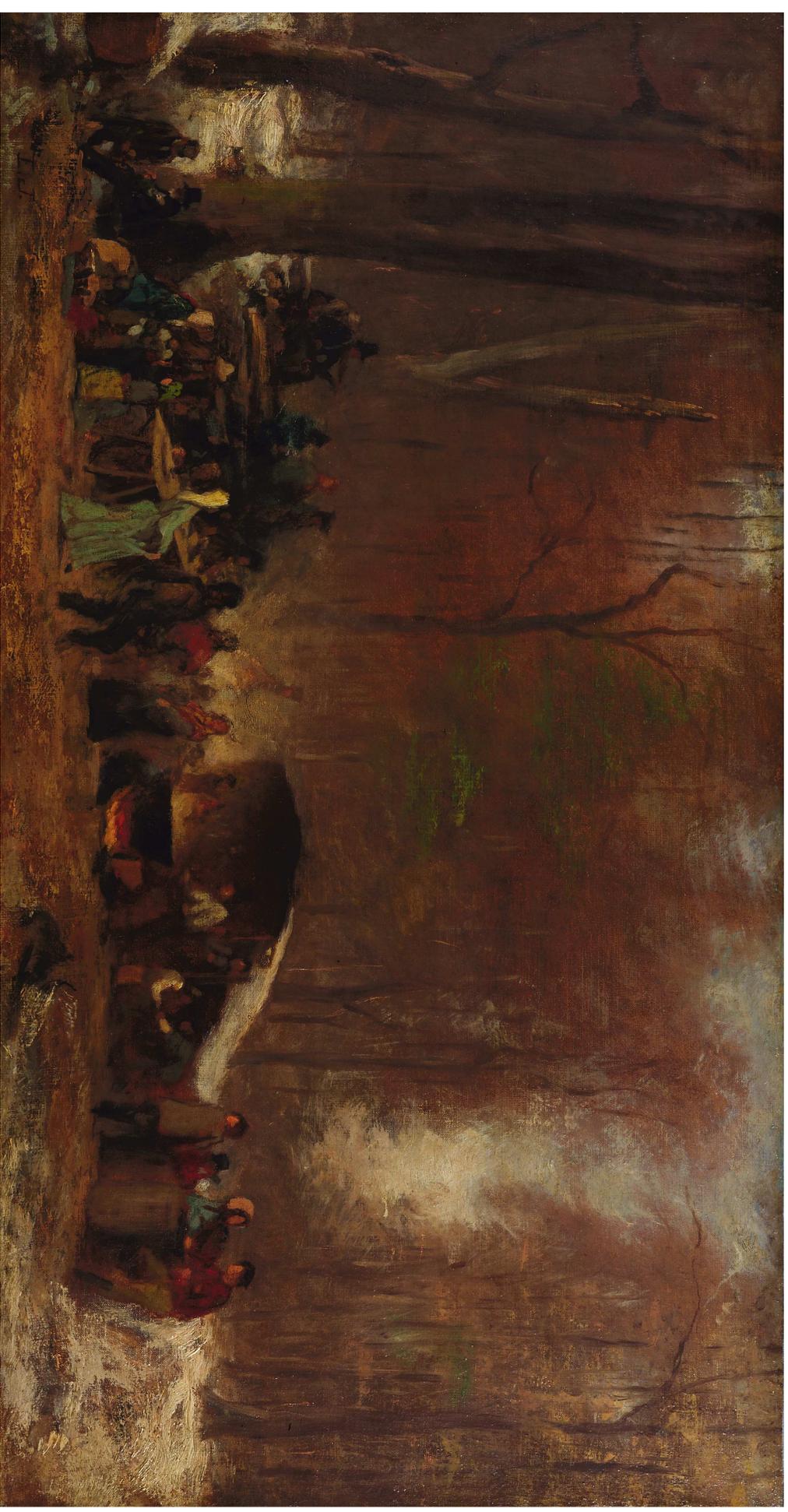
Responding

Re7.2.3a Determine messages communicated by an image.

Connecting

Cn10.1.3a Develop a work of art based on observations of surroundings.





FINE ARTS MUSEUMS of SAN FRANCISCO ©

Eastman Johnson (1824–1906) 1979.7.63 A Different Sugaring Off, ca. 1865



FINE ARTS MUSEUMS of SAN FRANCISCO ©

Worthington Whittredge (1820–1910) 1989.8 From the Harz Mountains (Riders in the Harz Mountains), 1853



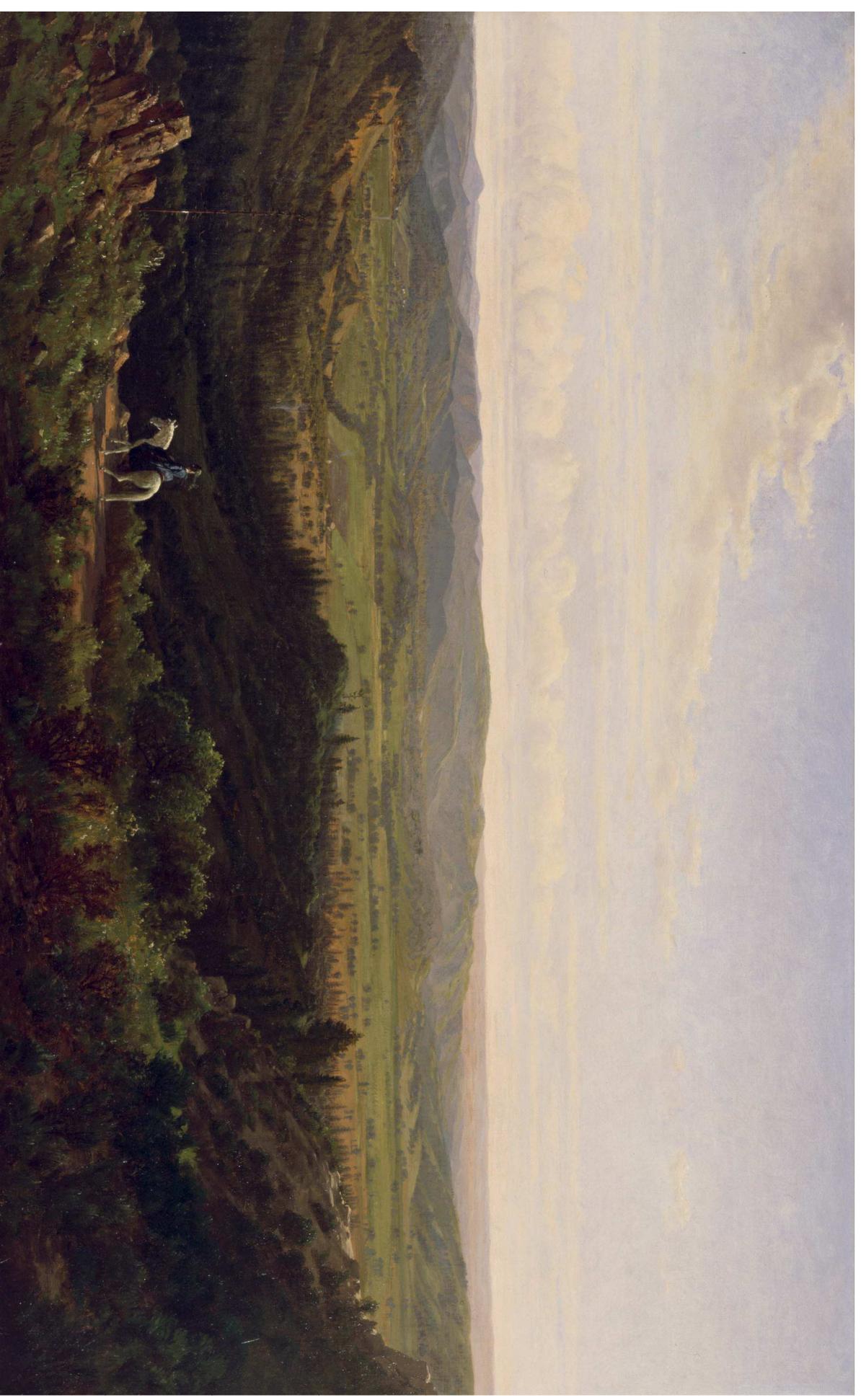
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Thomas Moran (1837–1926) 1981.89 Grand Canyon with Rainbow, 1912



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Gustav Grunewald (1805–1878) 1996.52.2 Horseshoe Falls from below the High Bank, ca. 1832



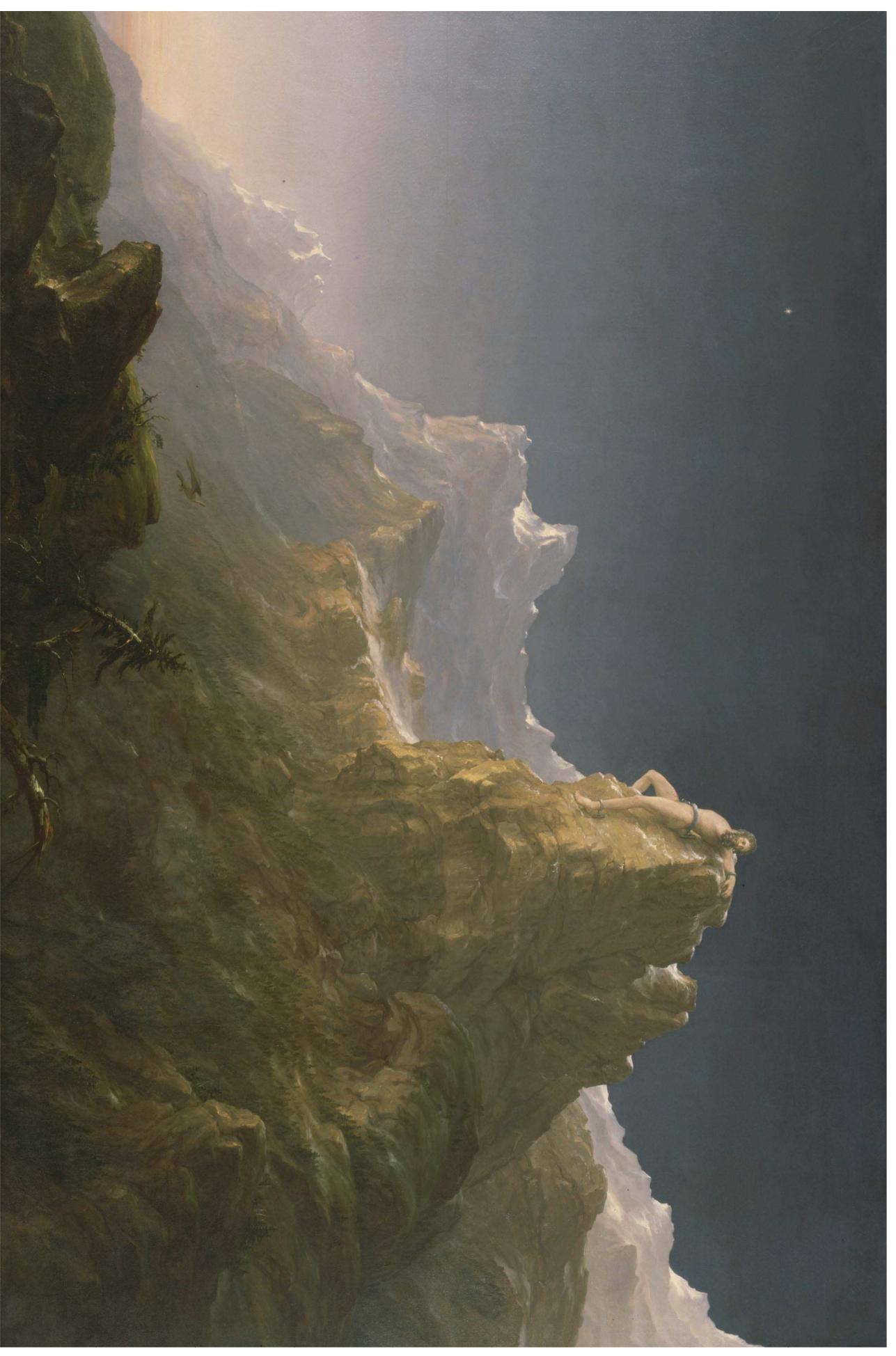
FINE ARTS MUSEUMS of SAN FRANCISCO ©

Virgil Williams (1830–1886) 1997.29 Knights' Valley from the Slopes of Mount St. Helena, 1873



FINE ARTS MUSEUMS of SAN FRANCISCO ©

Chiura Obata (1885–1975) 2000.71.1 Lake Basin in the High Sierra, ca. 1930



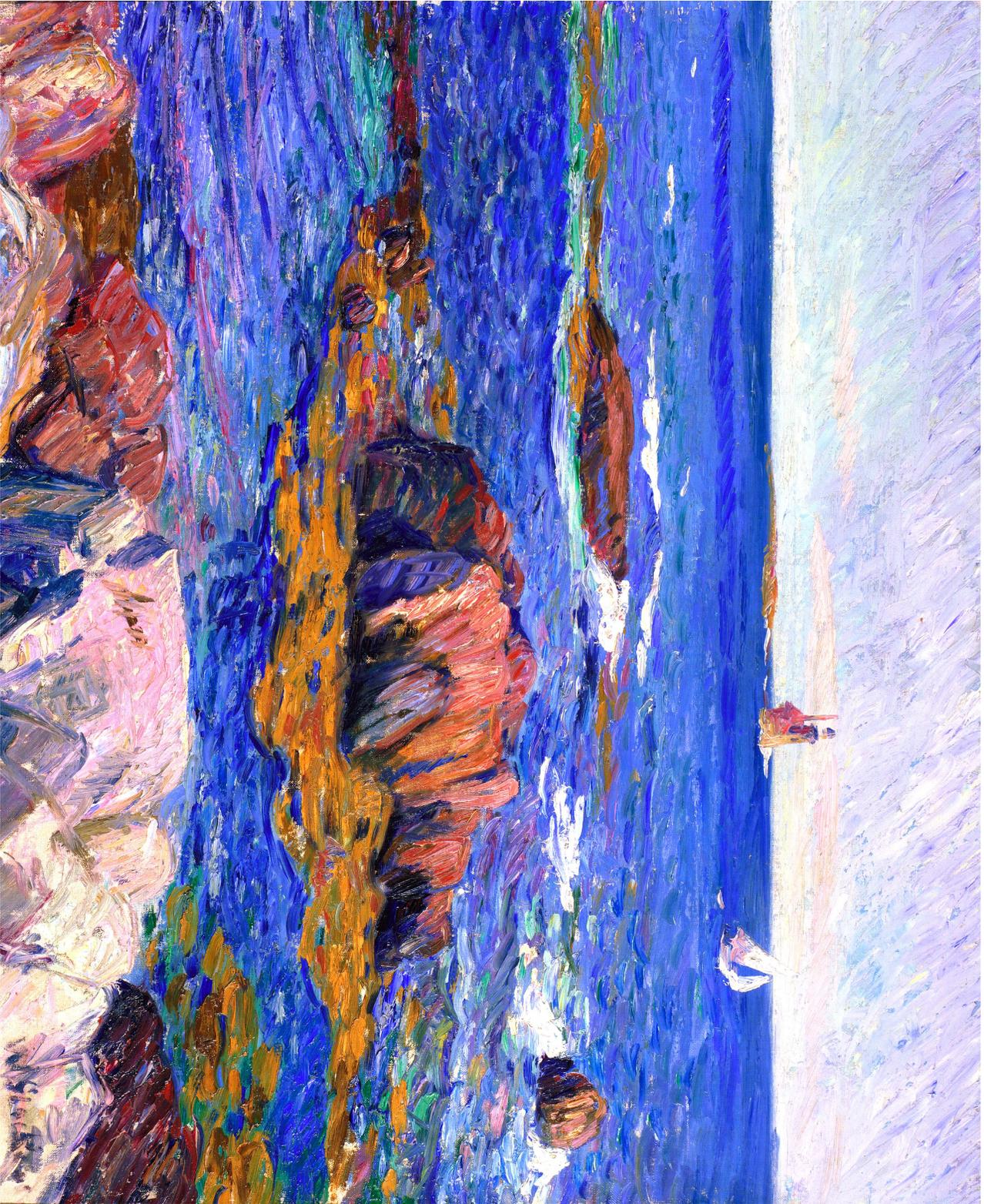
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Thomas Cole (1801–1848) 1997.28 Prometheus Bound, 1847



FINE ARTS MUSEUMS of SAN FRANCISCO ©

Richard Mayhew (b. 1924) 2010.2 Rhapsody, 2002



FINE ARTS MUSEUMS of SAN FRANCISCO ©

William James Glackens (1870–1938) 1979.7.45 Rocks and Lighthouse, ca. 1908



FINE ARTS MUSEUMS of SAN FRANCISCO ©

William Bradford (1823–1892) 1991.39 Scene in the Arctic, ca. 1880



FINE ARTS MUSEUMS of SAN FRANCISCO ©
1999.42 Stela with Queen Ix Mutal Ahaw, 761 AD



FINE ARTS MUSEUMS of SAN FRANCISCO ©

Gustav Grunewald (1805–1878) 1996.52.1 The Niagara River at the Cataract, ca. 1832



FINE ARTS MUSEUMS of SAN FRANCISCO ©

Albert Bierstadt (1830–1902) 1984.54 View of Donner Lake, California, 1871–1872