



TEACHER RESOURCE GUIDE
FOR GRADES 2–12

LEARN ABOUT

**FUNDAMENTAL
PRINCIPLES IN
COMPUTER SCIENCE**
through the art of
MICHAEL SNOW

ART CANADA INSTITUTE | INSTITUT DE L'ART CANADIEN

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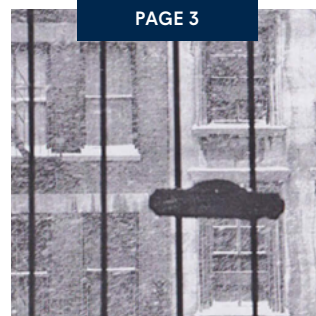
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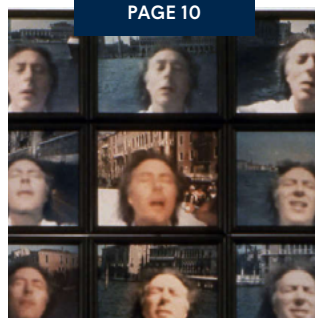
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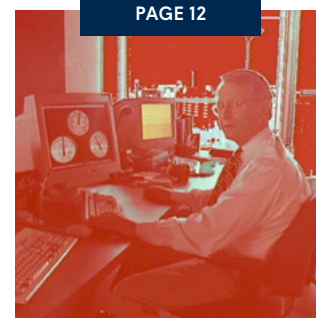
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ADDITIONAL RESOURCES

READ ONLINE



MICHAEL SNOW: LIFE & WORK BY MARTHA LANGFORD

DOWNLOAD



MICHAEL SNOW IMAGE FILE

RESOURCE OVERVIEW

This teacher resource guide has been designed to complement the Art Canada Institute online art book [Michael Snow: Life & Work](#) by Martha Langford. The artworks within this guide and images required for the learning activities and culminating task can be found in the [Michael Snow Image File](#) provided.

As a visual artist, experimental filmmaker, and musician, Michael Snow (b.1928) uses different technologies to create complex images and experiences. Through his work, he enables the viewers to see the world in new and revealing ways. Some of Snow's most compelling art involves simple ideas of repetition, creating tools or following instructions to create beauty and complexity. These concepts are fundamental to the study of computer science. By thinking about Snow's work and following his techniques, we can gain powerful insights into key concepts of computer programming. This guide is designed for teachers of computer science as well as visual and media art educators to introduce important principles of computer programming. It focuses on helping students build familiarity with specific terminology used in computer science, developing physical connections with the methods that go on within a computer program, and understanding how these relate to the artmaking of Michael Snow.

Curriculum Connections

- Grades 2–12 Visual Arts
- Grades 2–8 Technology
- Grades 9–12 Computer Science
- Grades 9–12 Media Arts

Themes

- Abstract art
- Programming

Teaching Exercises

The exercises in this guide explore works of art by Michael Snow as starting points for learning about concepts of computer science, and they can be used for a deeper investigation into programming or artmaking (or both).

- Learning Activity #1: Work with algorithms ([page 4](#))
- Learning Activity #2: Explore loops and repetition ([page 7](#))
- Culminating Task: Create art using functions, loops, and algorithms ([page 10](#))

A Note on Using This Guide

Currently within the fields of computer science and programming there is a lack of diversity, with women and people of colour being largely under-represented. While this guide highlights the work of Michael Snow in relation to computer science, it is hoped that it will also inspire all students, especially those who haven't considered pursuing computer science. Teachers are encouraged to present this field and all opportunities as inclusive and open to all learners, and to strive to be as all-encompassing as possible in the language and examples they use.



Fig 1. Still image from Michael Snow, **Corpus Callosum*, 2002. Snow created this video using a combination of live-action film and digital animation (he worked with an animation consultant to make his vision reality).

WHO IS MICHAEL SNOW?



Fig 2. Michael Snow in New York in 1964.

Michael Snow was born in 1928. His father was an engineer from Toronto, and his mother was from Quebec. Childhood experiences were critical to his later works: his mother's talents as a musician and his father's blindness (the result of an accident) became important sources of his artistic interests in sound and vision. Snow attended high school in Toronto, and when he graduated, he received the art prize.

Snow studied design, drawing, and painting at the Ontario College of Art (now OCAD University) in Toronto, and he worked as a musician—he had taught himself music, and he experimented with several forms, particularly jazz. Soon after he graduated, Snow travelled to Europe, visiting museums and galleries and performing with different bands. When Snow moved back to Toronto, he joined the animation firm Graphic Associates; he made his first short film while working there.

In the early 1960s Snow and his first wife, the artist Joyce Wieland (1930–1998), moved to New York City to be immersed in its experimental art scene. Snow's art became somewhat more conceptual, or “idea-based”: he was creating works in which a viewer's perception of the work of art is a key component of the art itself. For example, in the sculpture *Blind*, 1968, visitors walk between mesh screens that impair their vision. Snow also became interested in repetition and he experimented with manipulating subjects in different ways; the Walking Woman series (1961–67) includes dozens of variations of the same form, among them an iconic sculpture displayed at Expo 67.

Snow's experimental film *Wavelength*, 1966–67, was internationally celebrated as a radical achievement. The film prioritized the placement and position of the camera and coloration of the film strip itself over its action and narrative. Following this success, in 1970 Snow became the first Canadian artist to be honoured with a solo show at the Venice Biennale, one of the most prestigious international art exhibitions.

After returning to Canada in the early 1970s, Snow continued his experiments, working in painting, photography, sculpture, installations, holography, film, and other media; he is known as an artist, a filmmaker, and a musician. Snow's life and career have been recognized through several exhibitions, prizes, and lifetime achievement awards. He is married to writer and curator Peggy Gale, and he lives in Toronto and Newfoundland. His art continues to profoundly influence the arts in Canada.



Fig 3. Michael Snow, *Serve, Deserve*, 2009. In this video installation an image is projected onto a tabletop: as the viewer watches, a meal appears to be served—but then it disappears.



Fig 4. Still image from Michael Snow, *Wavelength*, 1966–67. A critical work in the history of contemporary art and film, *Wavelength* is one of Snow's most famous projects.



Fig 5. Michael Snow, *Lac Clair*, 1960. This work is an abstract painting, although its title refers to a lake.



Fig 6. Michael Snow, *Flight Stop*, 1979. *Flight Stop* is an installation that hangs in the Eaton Centre in Toronto; to create it, Snow used photographs of a Toronto Island goose.

NATIONAL & WORLD EVENTS

MICHAEL SNOW'S LIFE



Fig 7. Portrait of Alan Turing.

Alan Turing envisions the "Turing machine," an abstract computational model. Later he will crack German military codes during the Second World War.

ENIAC (Electrical Numerical Integrator And Computer), the first programmable digital computer, is declassified by the U.S. government.

Pioneering Canadian computer scientist Beatrice Helen Worsley receives her PhD; she is believed to be the first woman to write a doctoral dissertation on modern computing.

After years of work, John Backus and his team at IBM develop FORTRAN, a highly successful programming language.



Fig 8. Lisa desktop computer released by Apple in 1983.

Apple Computers, Inc. is founded.

British computer scientist Tim Berners-Lee develops the World Wide Web (WWW).

Alberta-born computer scientist James Gosling develops the popular programming language Java.



Fig 9. Google headquarters—the Googleplex—Mountain View, California, U.S.

Google Inc. is founded.

The Canadian Radio-television and Telecommunications Commission (CRTC) declares broadband internet a basic telecommunications service for all Canadians.

1928 Michael Snow is born in Toronto, Ontario.

1936

1946

1952

1956 . . .

1957

1960s . .

1961 . . .

1970

1976

1986 . . .

1989

1991

1994

1998

2000

2008

2016

Snow produces *A to Z*, his first short film.

In the early 1960s Snow and his first wife, Joyce Wieland (1930–1998), move to New York City.

Snow makes the first cut-out in what will become his *Walking Woman* series.

Snow is given a solo exhibition at the Canadian Pavilion for the prestigious Venice Biennale.

Snow presents the holographic exhibition *The Spectral Image* at Expo 86 in Vancouver, B.C.

The Michael Snow Project, a multi-venue retrospective of Snow's work, takes place in Toronto.

Snow develops an interest in digital media.

The Galerie Michael Snow opens at the artist-run centre Séquence in Chicoutimi, Quebec.



Fig 10. Michael Snow and Joyce Wieland in 1964.

Fig 11. Installation view of Michael Snow's *Walking Woman Works* exhibition in 1984.Fig 12. Michael Snow, *Still Life in 8 Calls* (detail), 1985. This work was part of *The Spectral Image*, Snow's exhibition at Expo 86 in Vancouver.

LEARNING ACTIVITY #1

WORK WITH ALGORITHMS

Michael Snow has often experimented with bringing his ideas to life by designing a regulated process to create an artwork. In 1961 he published a statement about his work that declares, “I make up the rules of the game, then I attempt to play it. If I seem to be losing I change the rules” (*The Collected Writings of Michael Snow*, 1994, 13). Thinking about rules, patterns, and instructions is key to many of Snow’s works—and it is critical to the concept of algorithms. An algorithm is a set of instructions that when followed precisely give a specific result. Every computer program, and everything a computer does, is controlled by algorithms; a programmer must turn their idea into an algorithm in order for the computer to understand it. In this activity, students will learn about algorithms and identify underlying instructions behind Snow’s works, and then develop their own algorithmic image manipulations inspired by Snow.

Big Idea

How algorithms guide us

Learning Goals

1. I can identify the process used in the creation of an artwork.
2. I can use the computer science concept of an algorithm and relate it to a physical process.
3. I can explain the intended effect of planned actions.
4. I can design sequential actions to accomplish a specific effect.
5. I can appreciate and describe abstraction and its place in artmaking.

Materials

- Chart paper and markers, or chalkboard and chalk
- Digital printer and camera and/or preprinted photos
- Glue
- [Michael Snow Image File](#)
- [Michael Snow: Life & Work](#)
- Photocopier
- Scissors

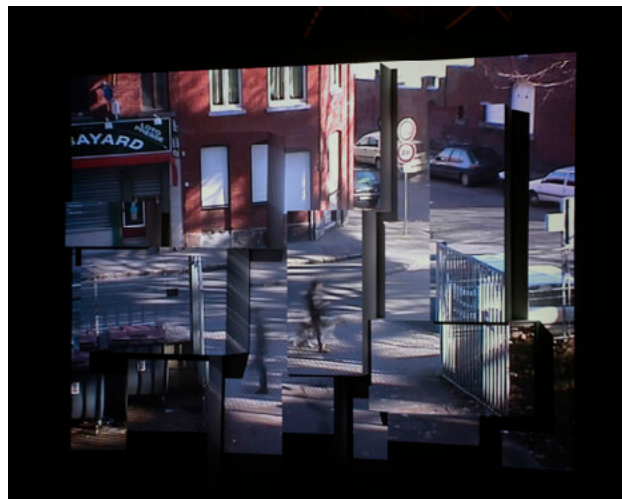


Fig 13. Installation view of Michael Snow, *The Corner of Braque and Picasso Streets*, 2009. The title of this work does not refer to specific streets, it refers to the artists Georges Braque and Pablo Picasso, artists whose experiments with Cubism transformed western art. Snow’s installation projects a live video feed onto plinths whose arrangement alludes to Cubism.

Learning Activity #1 Continued

Process

1. Ask students the following question and record their responses using chart paper: “Are there times in your life when you must follow specific instructions?”
2. Once you have generated a few examples, have students identify the outcome of each set of instructions and write these next to the examples. The table below shows some possible examples.

Following a set of instructions	Result
Cooking (using recipes)	A delicious meal
Sewing (following a pattern)	An amazing piece of clothing
Choreography	Great performance (music video, musical theatre, ballet, etc.)
Google Maps instructions	Getting from Point A to Point B without getting lost

Introduce the term “algorithm” and its definition (see above). Tell students that they will be looking at algorithms in art and creating their own algorithms.

3. Project Snow’s work *8 x 10*, 1969 (see the [Michael Snow Image File](#)), and share its description in the [Significance & Critical Issues](#) chapter of *Michael Snow: Life & Work*. For this work Snow made a specific plan (an algorithm) that is followed to create the final result. First, he took eighty photographs of the same subject, specifically a rectangle of black tape on a grey surface, and he organized the photographs into a grid. Every time *8 x 10* is placed on display, the photographs are rearranged (sometimes Snow does this work himself; sometimes he gives instructions as to how the photographs should be rearranged). As a result, the final work is created using “rules.”

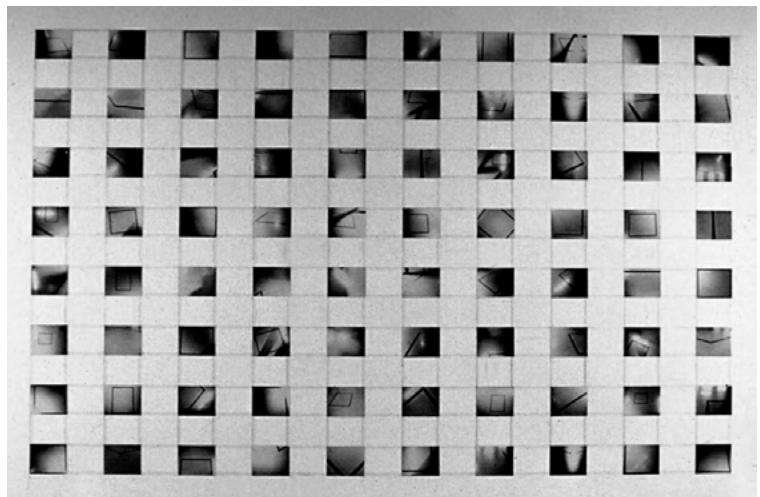


Fig 14. Michael Snow, *8 x 10*, 1969. In *8 x 10* framing is critical to how we view the eighty individual photographs that are the key constituent parts of the work.

4. Work as a class to decode the steps that Michael Snow took to create this piece of art. Write out the steps as a clearly worded list of instructions (an algorithm). For example:
 - a. Take a series of eighty abstract photos.
 - b. Print them out.
 - c. Shuffle the eighty photos.
 - d. Place the photos in a grid of 8 x 10 (8 tall, 10 wide), with equal space on all sides of each photo.

Learning Activity #1 Continued

5. Discuss as a class what makes a good algorithm (instructions that are clear, easy to follow, and concise, and which produce the wanted result).

6. Project Snow's *Authorization*, 1969 (see the [Michael Snow Image File](#)), or hand out copies of the work. This work also follows a very specific set of steps (an algorithm) to create the final image. Assign students to small groups and ask them to look carefully at the image and write an algorithm that would result in this final image. After students have worked on their algorithms, ask the groups to share their steps with the class. Guiding questions for discussion can include the following:

- Were the steps easy to read?
- Were they in a logical order?
- Was anything difficult to understand?
- Do you have any feedback for this group?

7. Using their understanding of algorithms, have students create their own works based on the Michael Snow examples. Students will carefully write an algorithm for a work of art that can be created using only simple physical tools (camera, printer, scissors, glue, photocopier). Students will then execute a piece of art according to their algorithm. The art and the algorithm will be displayed side by side for peer critique. Alternatively, students could try to implement each other's algorithms and comment on the clarity and outcomes of the algorithms they have written.



Fig 15. Michael Snow, *Authorization*, 1969. For this work Snow took a series of polaroid photographs, placing each one onto the mirror before taking the next one.

Computer Science Extension

By combining this algorithm activity with programming skills learned in class, students could create the image manipulations described in this activity using programming. An example program that creates a work inspired by Snow's *Authorization* written in Java using the processing environment can be found at the following link: <https://github.com/jbrlawrence/snow>.

LEARNING ACTIVITY #2

EXPLORE LOOPS AND REPETITION

Many of Michael Snow's artworks are built upon a simple image, idea, shape, or motion that is repeated over and over to create a more complex image or visual experience. In this activity Snow's artworks are taken as the starting point for exploring the concept of loops. When a computer is told to perform an action repeatedly it is called a loop; a computer cannot think in the way that people do, but computers excel when doing simple operations quickly. Doing anything complex with a computer often involves having the computer do something simple over and over again (making a loop) to create something more complex. Using the definition of a loop from programming, students will develop a clear set of instructions that can be used to analyze Snow's work. They will then write their own loops and create artworks that follow a repeated set of actions.

Big Idea

Complexity from repetition

Learning Goals

1. I can identify the concepts of repetition as used to create complexity in art.
2. I can use the computer science concept of looping and relate it to a physical process.
3. I can explain the intended effect of repeated or planned actions.
4. I can design repeated or sequential action to accomplish a specific effect.
5. I can appreciate and describe abstraction and its place in artmaking.

Materials

- Artmaking supplies
- Chart paper and markers, or chalkboard and chalk
- [Michael Snow Image File](#)
- [Michael Snow: Life & Work](#)
- Paper
- Pens, pencils, and markers

Process

1. Introduce the concept of a loop in computer programming. A loop is something that is repeated over and over again until you tell it to stop. It consists of three parts:
 - An action to repeat
 - A way to know when to stop
 - Changing something about the action each time

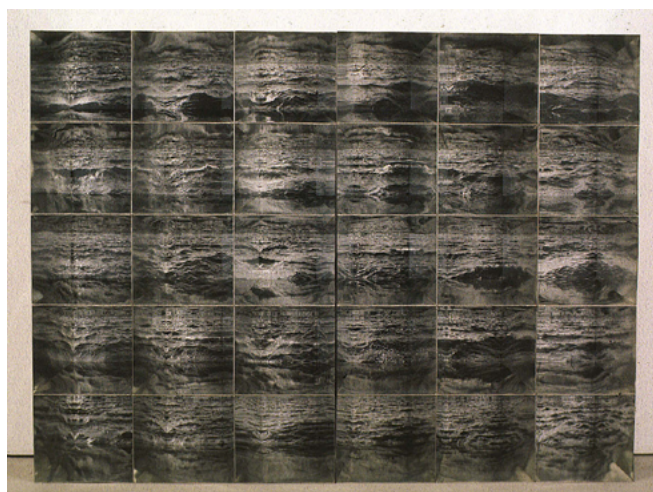


Fig 16. Michael Snow, *Atlantic*, 1967. In *Atlantic*, Snow brought together thirty photographs to create a single artwork; although all the images represent the sea, each one is slightly different. The camera angle was changed as the photographs were taken, and the waves themselves were always changing (as waves do)—so repetition and variety are both built into the system.

Learning Activity #2 Continued

2. Ask students to stand up and find a space in the classroom. Tell them they are going to perform a simple loop. Write on the board or chart paper instructions for students to perform the following loop:

- Do a jumping jack and say a letter of the alphabet.
- Repeat three times.
- Say a different letter of the alphabet each time you jump.

Introduce a second, more complex loop by changing one aspect of the loop (more complicated action, different number of repetitions, etc.).

3. Ask students to work with partners or in small groups and create their own physical body loops. Students can perform these for the class or ask another group to perform their loop.

4. Ask students to return to their seats. Project or print Michael Snow's *Venetian Blind*, 1970 (see the [Michael Snow Image File](#)), for the class to view. Ask students to look carefully at the work and think about the following questions:

- What is repeated?
- How many times is it repeated?
- What is changed each time?

5. Reintroduce the concept of a loop. Ask students to decode the steps for creating a loop for this artwork. The loop for *Venetian Blind* is:

- Take a selfie, reclining with eyes closed in front of a background of water and buildings.
- Repeat twenty-four times.
- Change the background of the picture each time (different water/buildings).



Fig 17. Michael Snow, *Venetian Blind*, 1970. Snow created this work by using a polaroid camera to take photographs of himself.

Learning Activity #2 Continued

6. Project the images of *Sink*, 1970. Explain to students that this work focuses on a sink in Snow's studio. It represents the sink through a single coloured photograph that is displayed alongside a projected image of the sink; using eighty different slides, Snow captured the sink in different lighting and, through the addition of coloured gels, different colours. Viewers looking at this work will see many different paired images of the sink—every time the slide changes, the projected image will be new. Ask students to think carefully about how repetition is important to this work, and, together as a class, define the three aspects of a loop that would create the repetition. Write these points out on the board or chart paper.

7. Have students create their own works based on a formal loop. Ask students to create a clear statement of the three parts of their loops (what to do, when to stop, how to change) and create an abstract work using materials easily available in class (some examples are listed below). If time permits, select one example and demonstrate it to the class.

- Dip a marble in ink and roll it down an inclined piece of paper.
 - Repeat ten times.
 - Move the marble's starting point each time.
- OR

- Using a marker, draw a circle on the left edge of a piece of paper.
- Repeat. Make new circles so that the left edge of each one just touches the right edge of the previous circle.
- Stop when your circles reach from one side of the paper to the other.

8. Have students display their works for a gallery walk and ask them to reflect on their learning. How is this process of clearly defining strict rules before making an artwork different or similar to the process another artist might use to create a work?

Computer Science Extension

The conceptual understanding of loops and planning covered in this activity could be combined with programming skills in class to create entirely digital works. An example of such an abstract work as written in Java using the processing environment can be found here: <https://github.com/jbrlawrence/snow>.



Fig 18. Michael Snow, *Sink* (details), 1970. Here we see an image of *Sink* that shows you the relationship between the photograph and the slide projector, and a series of details of some of the coloured slides that are projected.

CULMINATING TASK

CREATE ART USING FUNCTIONS, LOOPS, AND ALGORITHMS

In this activity, students will make connections between creating and using tools for artmaking and their relationship to computer science. Between 1961 and 1967 Michael Snow created a series of works that used a single stencil of a walking woman. This tool could be used over and over again in different ways, just as a function is used in a computer program. (A function is a piece of code that a programmer writes and can use again and again.) Snow's work shows how a single tool can be used in creative and interesting ways to build something that is more complex than itself. In this task, students will combine this concept of toolmaking with the previous learning of loops and algorithms to create an artwork.

Big Idea

Creating tools

Learning Goals

1. I can communicate my understanding of algorithms, functions, and loops in a visual form.
2. I can use my critical thinking and creative skills to make connections between Snow's artworks and my own.
3. I can explore artmaking as a mode of personal expression.

Success Criteria

To be added to, reduced, or changed in collaboration with students.

1. Artwork and sketches follow conventions and techniques learned in class.
2. Artwork and artist statement show critical thinking and a clear understanding of algorithms, functions, and loops.
3. Artist statement clearly communicates artistic decisions.
4. Written work is thoughtful, clear, and edited.

Materials

- Glue
- [Michael Snow Image File](#)
- Paint
- Paper
- Printmaking supplies
- Scissors

Process

1. Introduce the concept of a function in computer science. Its definition is different from that used in math; it simply means a code that a computer programmer creates to use as a tool over and over.
2. Project *Venus Simultaneous*, 1962 (see the [Michael Snow Image File](#)) and describe the work. Do not mention that it was made by a stencil—instead, ask students the following:

- How do you think this artwork was made?
- What is repeated?
- Could the artist have made a tool to help create this work?



Fig 19. Michael Snow, *Venus Simultaneous*, 1962. Here we can see both the cut-out form of the Walking Woman and its outline.

Culminating Task Continued

3. Show students *Four to Five*, 1962 (see the [Michael Snow Image File](#)), and explain that the artist made lots of Walking Woman works by first creating a Walking Woman stencil as shown in *Four to Five*. Show students *Four Grey Panels and Four Figures*, 1963, and ask them to look at the Walking Woman figures in this piece of art.



Fig 20. Michael Snow, *Four to Five*, 1962. For *Four to Five*, Snow photographed the Walking Woman in the streets of Toronto.



Fig 21. Michael Snow, *Four Grey Panels and Four Figures*, 1963. Snow created over two hundred individual works that use the Walking Woman form.

4. Link Snow's repeated use of the Walking Woman to the concept of functions: the stencil is a good analogue for the concept. Just as with using a stencil, there are two stages to using a function: first you create the tool, and then you use the tool in a specific way. Ask students to list other ways in which artists create and use tools in their artmaking (for example, printmaking).
5. Tell students that they will be creating artworks that use toolmaking (functions) along with the concepts of loops and algorithms.
6. Explain to students that the final project requires creating an artwork using printmaking techniques. The artwork should demonstrate students' depth of understanding of these three concepts: algorithms, functions, and loops. Students will also write an artist statement that includes a written explanation of these three concepts. Overall, the project should include the following elements:
 - A single piece of art that includes a series of prints
 - A photograph of the printmaking tool (the function)
 - A clear set of instructions for the repeated pattern (the loop)
 - Instructions on how the student used the tool and the loop (the full algorithm)
 - A rationale for the artistic decisions (colour choices, number of prints, design layout, etc.)
7. Provide students with printmaking materials. Ask students to plan out their designs, create their tools, and finalize their loops. Students can "think, pair, share" their designs with classmates.
8. Provide time for students to create their prints and write their artist statements. If time permits, ask students to follow one another's algorithms to try to create one another's artworks. Display the works along with the artist statements.

HOW MICHAEL SNOW MAKES ART: STYLE & TECHNIQUE

Here are a few of the important artistic concepts that characterize the art of Michael Snow. For more information see the [Style & Technique](#) chapter of *Michael Snow: Life & Work*.

REPETITION

Many of Michael Snow's artworks involve repetition. Sometimes this means using a single image or shape many times, like the silhouette of a female form that he used in his *Walking Woman* series. Other times there might be subtle changes in whatever is repeating—for example, by layering and multiplying images. Repetition in an artwork does not mean that the work is about sameness. Instead, Snow's works play with subtle changes and differences. By putting his *Walking Woman* silhouette in different situations, making it in different sizes, and using different materials, Snow multiplied the possibilities of this form.

PERCEPTION

How do space, light, and sound allow us to perceive our environment? These are important questions in Snow's art. Screens, windows, mirrors, and lenses affect our vision, while soundtracks can affect our perceptions of what we see. Snow sometimes uses transparencies, like those used to colour lights for theatre productions or photography, to change our perception of a scene by letting us see through a medium. His sculptures often ask a viewer to walk or move through a space in order to interact with and view a work from different positions. In his films, soundtracks that include ambient sounds, dialogue, and improvised and electronic music cannot be separated from the images on screen: they give viewers a sense of space beyond the frame and expand our sense of what is happening inside it. All these devices explore ways of seeing that we might otherwise take for granted.

EXPERIMENTAL FILM

Snow does not restrict himself to specific media or materials: over his long career he has made films, sound work, installations, sculptures, photographs, and paintings. However, film and video are central to his art. When Snow's films have narratives, they take place off screen or are episodic, coming in short scenes or interactions that aren't part of a traditional plot. Dialogue is often filled with puns, out-of-synch sound, and other language games. The way that Snow uses the camera—zooming in and out or mounting it on a machine that keeps it in motion, as he does in *La Région Centrale*, 1971—transports the scenes he captures into a world where they become art.



Fig 22. Michael Snow, *Snow Storm* (detail), 1967. Although a quick glance might suggest this is a single photograph, the work was created using multiple photographs.



Fig 23. Michael Snow, *Plus Tard* #20 (detail), 1977. To create *Plus Tard*, Snow photographed a display of paintings by Tom Thomson (1877–1917) and members of the Group of Seven at the National Gallery of Canada.



Fig 24. Still image from Michael Snow, *Two Sides to Every Story*, 1974. This work challenges viewers to try and watch films on two sides of a single screen.

ADDITIONAL RESOURCES

Supplementary Materials Provided by the Art Canada Institute

- The online art book *Michael Snow: Life & Work* by Martha Langford: <https://www.aci-iac.ca/art-books/michael-snow>
- [Michael Snow Image File](#) with artworks and images related to this lesson
- “Who Is Michael Snow?” biographic information sheet ([page 2](#))
- Timelines of national and world events and Michael Snow’s life ([page 3](#))
- “How Michael Snow Makes Art: Style & Technique” information sheet ([page 12](#))

GLOSSARY

Here is a list of terms that appear in this resource guide and are relevant to the learning activities and culminating task. For a comprehensive list of art-related terms, visit the Art Canada Institute’s ever-growing [Glossary of Canadian Art History](#).

abstract art

Visual art that uses form, colour, line, and gestural marks in compositions that do not attempt to represent images of real things. Abstract art may interpret reality in an altered form or depart from it entirely. Also called nonfigurative or nonrepresentational art.

Artist book

A work of art in book form, the artist or artist’s book uses the book as object as a medium for the expression of an artistic idea. While illustrated volumes have a long history, the concept of the book as a medium unto itself dates from the late nineteenth century. Whether as individual objects or editions, artist books have played a key role in the work of twentieth- and twenty-first-century artists, from Michael Snow’s *Cover to Cover* (1975) to Joyce Wieland’s *True Patriot Love* (1971), and Rodney Graham’s *Dr. No* (1991).

Conceptual art

Traced to the work of Marcel Duchamp but not codified until the 1960s, “conceptual art” is a general term for art that emphasizes ideas over form. The finished product may even be physically transient, as with land art or performance art.



Fig 25. Michael Snow, *Cover to Cover*, 1975. This book does not include text; instead, it presents a series of images, with alternate views on facing pages.

EXTERNAL RESOURCES

The following external resources can be used to augment the learning activities and materials provided by the Art Canada Institute. They are to be used at the teacher's own discretion.

Code BC: Coding Resources Connected to BC's Curriculum

This site provides resources and professional development for teachers.

<http://codebc.ca>

Canada Learning Code: A Resource for Empowerment and Change

Canada Learning Code designs, delivers, and partners on technology education for Canadians.

<https://www.canadalearningcode.ca/>

Code.org

This not-for-profit organization provides lessons and resources on Computer Science, and is dedicated to increasing participation by women and underrepresented minorities.

<https://www.code.org/>

"Why Kids Should Learn to Code (And How to Get Them Started)" from CBC Parents

<https://www.cbc.ca/parents/learning/view/why-kids-should-learn-to-code-and-how-to-get-them-started>

Crash Course Computer Science

A higher-level series on all aspects of Computer Science.

https://www.youtube.com/playlist?list=PLME-KWdxl8dcaHSzRsNuOLXtM2Ep_C7a



Fig 26. Michael Snow, *Carla Bley*, 1965. This work is part of Snow's Walking Woman series, but here we see a specific person, namely Carla Bley, a jazz musician and composer and friend of the artist.



Fig 27. Michael Snow, *Sleeve*, 1965. *Sleeve* brings together many different forms of the Walking Woman in a single installation.

FIGURE LIST

Every effort has been made to secure permissions for all copyrighted material. The Art Canada Institute will gladly correct any errors or omissions.

Cover Image: Michael Snow, *Four Grey Panels and Four Figures*, 1963, oil on canvas, each panel approx. 152.5 x 51 cm. Montreal Museum of Fine Arts, purchase, the Montreal Museum of Fine Arts' Volunteer Association Fund and Horsley and Annie Townsend Bequest (2005.97.1-4). Photograph by Brian Merrett.

Fig 1. Still image from Michael Snow, **Corpus Callosum*, 2002, digital video, colour, sound, 91 min. Collection of the artist.

Fig 2. Michael Snow in New York in 1964, photographed by John Reeves. Estate of John Reeves.

Fig 3. Michael Snow, *Serve, Deserve*, 2009, video installation, table projection, looped video, colour, silent, 13:30 min. Collection of the artist.

Fig 4. Still image from Michael Snow, *Wavelength*, 1966–67, 16mm film, colour, sound, 45 min. National Gallery of Canada, Ottawa, purchased 1970.

Fig 5. Michael Snow, *Lac Clair*, 1960, oil and paper adhesive tape on canvas, 178 x 178.3 x 3 cm. National Gallery of Canada, Ottawa, purchased 1967 (15317).

Fig 6. Michael Snow, *Flight Stop*, 1979, 60 suspended fibreglass Canada goose forms surfaced with tinted black and white photographs, 32 x 20 x 16 m. Toronto Eaton Centre. Cadillac Fairview Corporation Limited.

Fig 7. Elliott & Fry, *Alan Turing*, 1951, bromide print, 16.1 x 11.7 cm. National Portrait Gallery, London.

Fig 8. Apple Lisa computer. Courtesy Wikimedia Commons.

Fig 9. Photograph of Google headquarters. Courtesy Wikimedia Commons.

Fig 10. Michael Snow and Joyce Wieland in 1964, photographed by John Reeves. Estate of John Reeves.

Fig 11. Installation view of Michael Snow's *Walking Woman Works* exhibition, 1984, London Regional Art Gallery (now Museum London).

Fig 12. Michael Snow, *Still Life in 8 Calls* (detail), 1985, Installation: 8 rugs, wood table legs, 8 wood chairs, 8 transmission holograms in metal frames, white light illumination, approx. 1.52 m long; rugs: 259 x 182 cm; holograms: 71 x 61 cm. Montreal Museum of Fine Arts, gift of the family of Jean-Pierre and Johanne Pelletier (1996.26a-h).

Fig 13. Installation view of Michael Snow, *The Corner of Braque and Picasso Streets*, 2009, real-time video projection on white plinths, colour, silent, site specific. Collection of the artist.

Fig 14. Michael Snow, *8 x 10*, 1969, 80 laminated photographs applied to wall in a taped grid, each 15 x 19 cm. Art Gallery of Ontario, Toronto, and Museum of Modern Art Ludwig Foundation, Vienna.

Fig 15. Michael Snow, *Authorization*, 1969, black and white Polaroid photographs, adhesive cloth tape, metal frame, mirror, 54.5 x 44.5 cm. National Gallery of Canada, Ottawa (15830).

Fig 16. Michael Snow, *Atlantic*, 1967, metal, wood, 30 black and white photographs, and steel, 171 x 245 x 40 cm. Art Gallery of Ontario, Toronto.

Fig 17. Michael Snow, *Venetian Blind*, 1970, 24 Ektacolor prints, painted wood frames, 127 x 238 cm. Canada Council Art Bank, Ottawa. Courtesy of the artist.

Fig 18. Michael Snow, *Sink* (details), 1970, 80 projected slides and one mounted still photo, each 63 x 63 cm. Museum of Modern Art, New York. © Art Resource, NY.

Fig 19. Michael Snow, *Venus Simultaneous*, 1962, oil on canvas and wood construction, 200.7 x 299.7 x 15.2 cm. Collection of the Art Gallery of Ontario, Toronto, purchased, 1964 (63/47). © Michael Snow, Photo © Art Gallery of Ontario.

Fig 20. Michael Snow, *Four to Five*, 1962, 16 silver gelatin prints mounted on cardboard, framed, 68 x 83 cm. Collection of the Art Gallery of Ontario, Toronto, purchased with funds donated by AGO Members, 1991 (91/53). © Michael Snow, Photo © Art Gallery of Ontario.

Fig 21. Michael Snow, *Four Grey Panels and Four Figures*, 1963, oil on canvas, each panel approx. 152.5 x 51 cm. (See cover figure for details.)

Fig 22. Michael Snow, *Snow Storm* (detail), 1967, collage of photographs over enamel paint on Masonite, each 122.1 x 119.8 cm. National Gallery of Canada, Ottawa, purchased 1968 (15456.1-4).

Fig 23. Michael Snow, *Plus Tard #20* (detail), 1977, 1 of 25 framed dye coupler prints, each 86.4 x 107.2 cm. National Gallery of Canada, Ottawa, purchased 1977 (18842.1-25).

Fig 24. Still image from Michael Snow, *Two Sides to Every Story*, 1974, 16mm film loop, colour, sound, 11 min., two projectors, switching device, and aluminum screen; installation space approx. 3 x 6 x 12.5 m. National Gallery of Canada, Ottawa, purchased 1977 (18768).

Fig 25. Michael Snow, *Cover to Cover*, 1975, book, 23 x 18 cm. Published by the Press of Nova Scotia College of Art & Design, Halifax; and New York University Press, New York.

Fig 26. Michael Snow, *Carla Bley*, 1965, offset lithograph, rubber stamp, 66 x 51 cm. Art Gallery of Ontario, Toronto, gift of the Jerrold Morris International Gallery, 1966.

Fig 27. Michael Snow, *Sleeve*, 1965, oil, canvas, wood, 366 x 366 x 305 cm. Vancouver Art Gallery.