Yuko Nishimura, *Shine*, 2008, washi (kyokushi), photo courtesy of International Arts & Artists

On View through March 1, 2020
Introduction
This winter, three new exhibitions at the Woodson Art Museum—Above the Fold: New Expressions in Origami, FaunaFold, and Alchemy Unfolding—transform the galleries into immersive spaces, a dramatic metamorphosis not unlike those generated by origami artists who create captivating, multidimensional designs from squares of paper.

Artwork on view demonstrates the depth and diversity of origami, challenging conventional notions of folding paper to reveal an artform filled with aesthetic range, varied techniques, and real-world applications. From Robert J. Lang’s detailed, representational depictions of insects to Jiangmei Wu’s large scale, abstracted sculpture, Ruga Swan (pictured above), a visit to the Museum is sure to impress and inspire all.

Don't miss exhibition-related programs and upcoming residencies with exhibition artists Jiangmei Wu and Robert J. Lang; for more information see the end of these materials or visit the Museum’s website.

What Is Origami?
*Origami educational materials created from information provided by exhibition organizer, International Arts & Artists.

Origami translated from Japanese means “folding paper.” “Ori” means folding and “kami” (spoken “gami”) means paper. The crane is likely the most famous origami fold and has become a symbol of the global peace movement. Contemporary paper folding is a far cry from the popular folded animal forms. Today, origami inspires innovative concepts in math and design, and inventions in engineering, architecture, and technology.

Paper was introduced to Japan via China around the 6th century A.D. and Japanese paper folding is assumed to have begun shortly afterward. Rooted in the ceremonial world, most notably in the native Shinto tradition, priests performed purification rituals using zigzag strips of folded white papers known as “shide.”

Kevin Box and Michael G. LaFosse, Seed Sower, 2017, painted cast aluminum
Paper folding developed in the secular world of Japan amongst the upper classes. Gifts exchanged by royalty and the wealthy often were wrapped in decorative folded paper. Paper folding as a pastime arose under the Imperial Court of the Heian period (794-1185). A little-known European tradition of paper folding also existed, and after Japan adopted the German kindergarten system in the late 19th century, both Eastern and Western paper-folding techniques were incorporated into the Japanese curriculum as a method of developing children’s mathematical, artistic, and manual skills.

Akira Yoshizawa (1911-2005) (pictured at right) is credited with elevating origami to an art form. The first professional origami artist, Yoshizawa developed thousands of new designs and pioneered the art of wet folding, a technique that allows for the sculptural modeling of details. By the 1950s, his work was featured in numerous publications and in 1954 his book *Atarashii Origami Geijutsu* (*New Origami Art*), propelled him to fame. In this book, Yoshizawa introduced a system of notation for origami folds, which has since become the worldwide standard for paper-folding instruction. The same year, he founded the International Origami Center in Tokyo and began holding origami exhibitions overseas, serving as a cultural ambassador for Japan. Yoshizawa later wrote seventeen more books on origami, and in 1983, Emperor Hirohito awarded him the Order of the Rising Sun, a profound honor and a highly prestigious decoration.

Another famous figure in the history of origami is Sadako Sasaki (1943-1955). Sasaki was the catalyst for turning the most famous origami form — the crane — into a symbol of world peace. The crane has been popular with origami enthusiasts for more than 400 years. According to Japanese legend, those who fold over 1,000 cranes are granted one wish. In the 1950s, origami cranes were indelibly linked with the valiant struggle of Sadako, a young Hiroshima girl who was two years old when the atomic bomb was dropped.

Hospitalized at 12 years old with leukemia caused by the bomb’s radiation, Sadako began folding cranes in the hope that she would be granted her wish to live. Sadly, although she was able to fold all 1,000 cranes, she died in October 1955. A monument to her was erected in the Hiroshima Peace Park and is permanently embellished with garlands of colorful cranes folded in her memory by school children around the world.

Kevin Box and Robert J. Lang, *Flying Peace* (maquette), 2016, painted cast stainless steel on stone
Types of Origami

Origami exhibitions highlight different approaches to origami, which when executed in a variety of papers and materials, demonstrate the seemingly infinite possibilities of the practice.

Representational Origami: one or more sheets of paper folded into an animal, flower, or figure from the real or supernatural real. Robert J. Lang’s The Sentinel II (pictured at left) is an excellent example of the statuesque and sculptural potential of representational origami.

Geometric Origami: There are two main types of geometric origami — modular origami and origami tessellations.

Modular Origami: multiple sheets of paper are folded into individual units and then assembled into a larger, more complex geometric structure. These structures, created using mathematical calculations, are held together by friction or tension, such as that created by inserting flaps from one module into pockets of another. Robert J. Lang’s Pentasia (pictured at right and featured in Above the Fold: New Expressions in Origami) is an example of modular origami, folded from 500 uncut squares of paper.

Origami Tessellations: a pattern fills a plane with no overlaps or gaps, like decorative wall tiles, often created using pleats to connect elements such as twist folds in a repeating fashion. Many origami tessellations have the appearance of woven paper.

Above the Fold: New Expressions in Origami

Above the Fold demonstrates the extraordinary power and potential of contemporary origami. In the hands of nine international artists, what was once considered a children’s craft becomes a
sophisticated global art form. Paper is transformed into breathtaking sculpture, large-scale installations and conceptual works that express contemporary social, political, and aesthetic ideas.

Visionary master folders—such as Erik Demaine and Martin Demaine (Canada/USA), Vincent Floderer (France), Miri Golan (Israel), Paul Jackson (UK/Israel), Dr. Robert J. Lang (USA), Yuko Nishimura (Japan), Richard Sweeney (UK), and Jiangmei Wu (China/USA)—push the boundaries of paper as a medium to create bold, provocative works.

Each artist created artwork specifically for this tour—their collective works have never been seen before anywhere in the world.

These nine internationally celebrated folders comprise a cross-section of contemporary origami artists, ranging in age from 34 to 76, hailing from four different continents, and working in seven different countries. Their origami creations present original, “above the fold” commentaries on diverse aspects of modern life and art.

The exhibition celebrates these artists who are redefining a traditional Japanese craft as a modern global genre, inventing unexpected forms of artistic expression.

*Above the Fold*, the first traveling exhibition to bring origami installations from around the world to North American audiences, was curated by Meher McArthur; the tour was organized by International Arts & Artists, Washington, D.C.

**Artists Erik Demaine and Martin Demaine**
(b. 1981 and 1942, Canada/USA)

*Erik Demaine* completed his Bachelor of Science degree by age 14 and his Ph.D. by age 20. His dissertation, a seminal work in the field of computational origami, received national awards and won him a MacArthur Fellowship. Since joining the MIT faculty in 2001, he has been the leading theoretician in computational origami, the study of what can be done with a folded sheet of paper; he explores origami applications in architecture, robotics, and molecular biology. Artistically, he collaborates with his artist father, *Martin Demaine,*
to create *Curved-Crease Sculpture* and other unconventional origami works. Their *Curved-Crease Sculptures* were inspired by David Huffman, an electrical engineer and a pioneer in computational origami.

The Demaines’ works can be found in the permanent collections of the Smithsonian American Art Museum’s Renwick Gallery and the Museum of Modern Art, New York.

**Artist Vincent Floderer**

(b. 1961, France)

Vincent Floderer has moved away from conventional origami and is developing a whole new vocabulary of techniques, most famously crumpling. The inspiration for his crumpling came originally from English folder Paul Jackson, but he has developed Jackson’s ideas further and has evolved methods—including dampening and stretching—that have allowed him to create organic forms such as mushrooms and toadstools and multi-layered forms such as corals and sponges. Turning paper inside out has also resulted in organic abstract creations.

Vincent Floderer, *Unidentified Flying Origami*, 2002-14, crumpled brown wrapping papers and pigmented inks

**Artist Miri Golan**

(b. 1965, Israel)

Miri Golan is probably best known for the educational work she does in Israel, using origami to unite people of different religious and cultural backgrounds. Her students often create garlands of origami cranes as a wish or prayer for a more peaceful world. However, Golan, who is married to English origami artist Paul Jackson, also creates conceptual pieces, such as his artwork on the next page, in which she uses pages of sacred texts, the Torah and the Koran, to yield delicate works.

Artist Paul Jackson  
(b. 1956, UK/Israel)  
Paul Jackson’s childhood hobby was origami. After art school in London, he taught folding techniques, wrote books about paper art, and in the 1990s started exhibiting his origami. In 2000 he met Israeli artist Miri Golan and relocated to Israel, where he now teaches at art and design colleges. In contrast to the complex, detailed origami of many artists, Jackson’s paper sculptures aspire to be “simple, elegant in sequence and form, surprising in concept and even audacious.” He prefers forms that appear to have been “discovered” in the paper, rather than “contrived” from it.

Robert J. Lang, Vertical Pond II, 2014, custom-made Origamido paper

Artist Robert J. Lang  
(b. 1961, USA)  
After 30 years of studying origami as his passion, Robert J. Lang gave up his day job as a laser physicist to focus on both the art and science of origami. He is now one of the most respected origami artists in the world and uses his background in science and mathematics to design extremely complex forms from uncut squares of paper. Although Lang has developed software that can determine the creases necessary to fold a sheet of paper into a specific form, most of his creations are designed using pencil and paper. He has written many books on origami, given a TED Talk about origami, and has collaborated with other scientists, doctors, and engineers to apply his knowledge of complex folding to the design of airbag deployment software, space telescope lenses, and heart cradles.

Paul Jackson, Untitled, 2014, cut and folded digital prints, photo courtesy of the artist
Artist Yuko Nishimura
(b. 1978, Japan)
In 2001, Yuko Nishimura graduated from the Architectural Design program at Nihon University in Tokyo, and in 2006 she graduated from the Master’s Program in Design from the Department of Art at Tsukuba University in Ibaragi Prefecture. With her background in architecture and design, Nishimura transforms crisp, single white sheets of a special Japanese handmade paper into two-dimensional panels with complex geometrical patterns that allow light to play across the textured surfaces. She also creates three-dimensional works that intersect the worlds of architecture and fashion. Already in her short professional career, she has been awarded several prizes in notable competitions, including the 54th Modern Art Exhibition at Tokyo Metropolitan Art Museum in 2004 and 2005, and the Tsukuba University Art Award in 2006.

Artist Richard Sweeney (b.1984, UK)
Richard Sweeney studied sculpture and three-dimensional design at art school. As part of his study of three-dimensional design, he manipulated paper by hand to create 3-D design models, many of which ultimately developed into sculptures in their own right. Combining hand-craft with computer-aided design and CNC (computer numerical control) manufacturing techniques, Sweeney seeks to maintain an experimental, hands-on approach, utilizing the distinct properties of often mundane materials, such as paper, to discover unique sculptural forms.

Richard Sweeney, Air, 2014, paper, wood, metal fixings, and cotton cord
Origami Terms

Backcoating: a process in which two colored sheets of paper are glued together to create one two-toned sheet of paper.

Crane: in Japan, this bird is fabled to live for 1,000 years and is a symbol of longevity, fidelity, and peace. Legend has it that folding 1,000 cranes will grant you one wish.

Crease pattern: a map of the major folds in an origami design.

Computational origami: the study of what can be done with a folded sheet of paper.

Kaden: gift wrappers, which usually feature black strings and are given at funerals.

Kami: higher beings who control nature and can take up residence in trees, rocks, rivers, and mountains.

Knotology: a technique developed by Heinz Strobl (b. 1946, German) in which paper strips are knotted into flat pentagons layered on one another, and then woven and plaited to make models that, like his Snapology figures, are stable without the use of glue or tape.

Noshi: a small auspicious charm usually made of carefully folded red and white paper.

Papiroflexia: paper folding (Spanish), a term coined by Vicente Solórzano Sagredo (1883-1970), a physician with a passion for paper folding.

Orizuru: folded cranes.

Polyhedra: geometric solids in three dimensions with flat faces and straight edges, varying in complexity.

Renzuru or Roko-an: the technique of folding multiple cranes from a single sheet of paper.

Shinto: the indigenous religion of Japan.

Shugi: envelopes or gift wrappers which are usually tied with red and gold-wrapped paper strings and are given for celebrations such as weddings.

Snapology: a technique developed by Heinz Strobl (b. 1946, German) in which one set of paper strips is folded into triangular prisms (the units or modules) and a second set of strips is folded into snaps (connectors).

Tato: folded paper purses.

Tsutsumi: The tradition of paper gift-wrapping. It may have begun among the courtiers of the Heian period, but an 18th-century Japanese book about ceremonial paper folding called Tsutsumi-no Ki explains that this tradition was established in the Muromachi period (1333-1574), when the samurai class was ruling Japan from Kyoto. According to this text, samurai etiquette required warriors to fold wrapping paper in a certain way depending on the gift inside, and this gift-wrapping etiquette was passed down from generation to generation. At some point,
these folded gift wrappers were adorned with noshi.

*Wet folding*: a technique that allows for the sculptural modeling of details, pioneered by Akira Yoshizawa.

**Think Outside the Fold: Origami Applications**
The realms of math, science, and art lie between the folds of contemporary origami masterpieces. Origami is not only used today to explain and teach arithmetic and geometry, but computational origami employs algorithms and theory to solve complex problems. Airbag logistics, space telescope lenses, cell phone design, architectural design, and even heart stents have their basis in origami principles. Learn more about the interdisciplinary teaching opportunities of origami in *NOVA’s The Origami Revolution*.

For example, Dr. Robert J. Lang is a scientist and mathematician who formerly worked with NASA’s Jet Propulsion Laboratory at the California Institute of Technology. In 2000, Dr. Lang was approached by Lawrence Livermore National Laboratory to help develop their Eyeglass Telescope, which would be forty times larger than the Hubble telescope. Dr. Lang used computational origami to determine how to fold the lens so that it could be launched compactly and then re-opened in space. The resulting design used an origami structure he called the “Umbrella” after its resemblance in the furled state to a collapsible umbrella. Origami is an international fine art form that is also at the cutting edge of math, science, and design. The creative possibilities and practical applications of this art form are truly infinite.

**Additional Resources**

**Books about Sadako Sasaki:**

*By Eleanor Coerr*

*By Takayuki Ishii*
*One Thousand Paper Cranes: The Story of Sadako and the Children's Peace Statue*, Laurel Leaf, 2005

**Books about Origami, Mathematics, Science, and Technology:**

*By Erik D. Demaine and Joseph O’Rourke*

*By Thomas Hull*


*By Robert J. Lang*
By Patsy Wang-Iverson, Robert J. Lang and Mark Yim

Online Resources:

OrigamiUSA
OrigamiUSA is a national organization based in New York City. The website includes a calendar of origami events around the world and links to local and international origami societies.
http://origamiusa.org/

British Origami Society
This organization’s website features The Lister List, a collection of scholarly articles about origami by British origami historian, David Lister.
http://britishorigami.info/

Japan Origami Academic Society
Publisher of Origami Tanteidan Magazine, this group is one of two origami societies in Japan.
http://origami.gr.jp

Nippon Origami Association
The Nippon Origami Association is the other major origami association in Japan.
http://origami-noa.com/

Origami Database
An online database of over 40,000 entries, showing where models are diagrammed, which models are included in various books, pictures of folded models, and links to many origami websites.
http://origamidatabase.com/

Origami Resource Center
A curated reference that provides information about the art of paper folding, links to diagrams, databases, book reviews, and ways to be a part of the paper-folding community.
http://www.origami-resource-center.com/

Documentary/Video:

Directed by Vanessa Gould
- Between the Folds, Green Fuse Films, NYC, 2010 (available through http://www.PBS.org)

Written, Produced, And Directed By Sarah Holt
- The Origami Revolution, For Fact+Film and NOVA, 2017 (available through: https://www.pbs.org/video/nova-origami-revolution-episode/)

Beginning Origami Guides:

By Nick Robinson
Absolute Beginner’s Origami, New York: Potter Craft, 2006
World’s Best Origami, Alpha, 2010
**Before Your Visit**

**Invite students to try some basic origami folds.**

- **The Coaster:** Modular origami is multiple pieces of paper folded in the same way and joined together repetitively to make two-or three-dimensional units without glue or tape.

1. To make a unit for your coaster, fold a square sheet of paper in half on the diagonal and crease. Fold this in half once more so you have a right angle.

2. Repeat this until you have four sheets of paper all folded the same way.

3. Insert the two points of one unit into the two pockets of a second unit as shown.

4. Repeat this by inserting the points of the second unit into a third unit.

5. Repeat once again by inserting the points of the third unit into fourth unit.

6. Insert the two points of the fourth unit into the first unit.
7. Squeeze all four pieces together so they are tight and make a coaster.

- **The Origami Fortune Teller**

1. Begin with the plain side up. Fold the paper in half along each diagonal and unfold.

2. Fold the four corners in to the center of the square.

3. Turn the paper over.
4. Fold the four corners in to the center again.

5. Fold the bottom edge up to meet the top edge.

6. Fold the lower left corner up in front. Fold the
lower right corner behind.

7. Open out the large pocket in the center top and squeeze the sides toward each other.

8. Adjust the position of the four flaps so that they all stand straight out from each other.
9. Pull out the four colored flaps.

10. Now you have a finished fortune teller.

- **Crease Patterns & Origami Math**
  Crease patterns are a map of the major folds in an origami design. Sometimes these patterns are just as interesting as what is made by folding paper!

- First, you’ll need to make some creases:
  - Start by making an origami fortune teller by following the instructions provided.
  - Next, unfold the fortune teller.

Now that you have crease patterns, here are two different activities you can do.

- Make a work of art by coloring in the geometric shapes that have been created by the creases. How many triangles can you find? How many squares?

- Don’t feel like coloring? Try testing this simple and fun math law called Euler’s Theorem, where x=1:

\[ V - E + F = 1 \]

- How many points are there where lines come together? These are called vertices. This number is “V.”
- How many edges (line segments) are there? This number is “E.”
- How many faces (polygons) are there? This number is “F.”

\[ V - E + F \] should equal the number 1. Did it work?
@ the Woodson
During a docent-led experience of the origami exhibitions, students will observe art on view, share their impressions during guided conversation, and explore hands-on objects and art materials designed to illustrate and illuminate exhibition artwork.

Following their time in the galleries, students third grade and up will experiment with paper folding techniques such as scoring, pleating, and dampening, getting a taste of the dynamic ways in which paper can be transformed.

Activity Guides
Each student receives an Activity Guide to extend learning in the classroom and at home. When students leave the Museum with an Activity Guide in hand, they are able to share their Museum visit with friends and family outside the gallery walls, along with their newfound expertise and enthusiasm.

Audio Tour App
Share the Woodson Art Museum’s audio tour app and learn exhibition insights from Above the Fold curator Meher McArthur recorded audio tracks – one for each of the nine exhibition artists as well as an exhibition introduction – and Museum educator Catie Anderson added images to help illustrate the stories behind artworks on view. Check out the videos via the app or the Above the Fold: New Expressions in Origami video playlist on the Museum’s YouTube channel.

Schedule Your Visit
Schedule a docent-led Origami visit for your class, by connecting with Museum program support specialist Tina Meverden via email, scheduling@lywam.org, or by phone, 715.845.7010.

Woodson Art Museum Information
Please encourage your students to visit the Museum.
700 N. 12th St. Wausau, WI 54403

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Closed Monday and holidays, including Christmas Eve, Christmas Day, and New Year’s Day.

Contact
Call the Woodson Art Museum or visit the website for more information:
715.845.7010; https://www.lywam.org
Origami Illuminations
Jiangmei Wu Artist Residency
Saturday & Sunday, January 18 & 19

Above the Fold artist Jiangmei Wu’s large-scale, origami-inspired artworks are informed by the artist’s research in engineering, mathematics, technology, and the arts. Jiangmei shares her enthusiasm for spatial design in her role as assistant professor of Interior Design at the Eskenazi School of Art, Architecture + Design at Indiana University, Bloomington. During her visit, Jiangmei leads a studio workshop for teens and adults and a public presentation on her areas of creative, interdisciplinary research.

January 18  Saturday  10 am – Noon & January 19  Sunday  10 am – 4 pm

Folded Light Sculpture
Teen & Adult Workshop
During this two-part workshop, artist and founder of Folded Light Art + Design Jiangmei Wu guides teens and adults through the process of folding repeated paper patterns to create structural forms that will serve as hanging light pendants. Total fee: $85 for members; $120 for non-members; includes all materials and Sunday lunch.

January 18  Saturday  1 – 2 pm

Guest Artist Presentation
Above the Fold artist and Indiana University Interior Design assistant professor Jiangmei Wu’s interdisciplinary approach to art making incorporates geometry, digital design, and sustainable materials to create striking forms in three-dimensional space. Learn how Jiangmei uses math and foldable origami techniques to transform flat sheets of paper into sculptural pendant lights and how she interprets crease patterns to create elegantly engineered public art installations and architectural structures.

Call 715.845.7010 to register
Scholarships available thanks to the Wisconsin Valley Art Association; call the Museum to inquire.

A grant from the B.A. & Esther Greenheck Foundation supports the Jiangmei Wu artist residency.

Leigh Yawkey Woodson Art Museum
Franklin & 12th St.
Wausau, WI 54403
715.845.7010
www.lywam.org
Always FREE Admission
Focus on Origami

Return to the Fold
Robert J. Lang Artist Residency
Saturday & Sunday, February 22 & 23

Master origami artist Robert J. Lang merges mathematics with aesthetics to create mesmerizing forms – both of realistic creatures and modular, geometric forms. Lang, who set aside his day job as a laser physicist to focus on both the art and science of origami, became a pioneer of the cross-disciplinary marriage of origami with mathematics, developing some of the most complex origami designs ever created.

Lang’s origami artwork, featured in FaunaFold and included in Above the Fold, exemplifies how applying math and computer programming to origami revolutionized this ancient art form.

February 22 Saturday 1–2 pm
From Paper to Steel:
Origami in Other Media
Artist Robert J. Lang describes his experiences, both technological and artistic, producing origami forms in diverse materials and scales – both on his own and in collaboration with sculptor Kevin Box – from the world’s smallest flapping bird to a 21-foot-tall steel Pegasus.

February 22 Saturday 2:30–3:30 pm
Origami Gallery Walk
Join origami master Robert J. Lang for a visit to the Above the Fold and FaunaFold galleries for his impressions and insights into artwork on view.

February 23 Sunday 10 am – 1 pm
Artistic Folding Techniques
Teen & Adult Workshop
Robert J. Lang guides participating teens and adults through “wet-folding” techniques used to add dimension and definition to origami subjects. Origami experience is helpful, but not required. Fee: $35 for members; $50 for non-members; includes all materials.

February 23 Sunday 2–5 pm
Modular Origami
Family Workshop
Explore modular origami with Robert J. Lang. Participants will fold and interlock multiple pieces of paper to create a three-dimensional polyhedra, a solid geometric figure consisting of multiple flat planes. Origami experience is helpful, but not required. Participants younger than age 12 must be accompanied by an adult. Fee: $35 for members and adult/child pairs; $50 for non-members and adult/child pairs; includes all materials.

Call 715.845.7010 to register
Scholarships available thanks to the Wisconsin Valley Art Association; call the Museum to inquire.

A grant from the B.A. & Esther Greenheck Foundation supports the Robert J. Lang artist residency. Support for Return to the Fold is provided by a grant from the National Endowment for the Arts.

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