

Journal of NATURAL SCIENCE ILLUSTRATION

GUILD OF NATURAL SCIENCE ILLUSTRATORS



A Note From...

Gail Guth, GNSI Journal Co-Editor-In-Chief

Clara and I kept handing this section off to one another like the proverbial hot potato ("I can do it if you don't want to"). Our hesitation is undoubtedly based on the fact that we usually end up saying the same thing: **we need articles!** But the fact remains — *we do!* So, once again we will plead for your support: Write something! You are all creative and are doing wonderful things with your art, so *share your story with us!* Your writing doesn't have to be polished, we can help with that. Send us your abstract (150-200 words) and we'll be happy to take a look at your ideas.

Next, we heartily thank the authors featured in this issue for their articles, and send big thank you's to Sarah McNaboe for her layout skills (and her patience, since we keep tinkering endlessly with what she sends us — that's just us, Sarah, we can't leave a good thing alone, and that includes our own layouts!) and Britt Griswold for his support, ideas, color-correcting skills, editing skills, and opinions. This is, like nearly everything GNSI, basically a volunteer enterprise all around, and we can't produce this publication without their efforts.

And lastly, we have included information and a bit of a pep talk for the GNSI Annual Conference, which will be in Glenside, PA, July 5-11. For those of you who are new to the GNSI (*Welcome!*) and those of you who have never attended a conference, or haven't in some time, please check out the Conference Overview on page 22. We have summarized the main reasons to come to a GNSI conference, and they are really good ones. *Yes, it's worth it!* Please join us, it will be another excellent week and you won't be disappointed! Whether you can come or not, please consider donating to the GNSI Auction (see page 23): this event is a big fundraiser for us, with proceeds divided equally between our General Fund and our Education Fund. We take darn near anything, from your lovely artwork to supplies to silly stuff, so clear out those closets!

I hope to see you all in July!

Gail Guth
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Cover: *Odontochelys semitestacea*, Marlene Hill Donnelly; Carbon dust and digital, 2009.
Courtesy Olivier Reippel, The Field Museum. *Odontochelys* is a turtle ancestor from the Jurassic having developed a fairly complete plastron with just the beginnings of a carapace.

GUILD OF
NATURAL
SCIENCE
ILLUSTRATORS



The Guild of Natural Science Illustrators is a non-profit organization devoted to providing information about and encouraging high standards of competence in the field of natural science illustration. The Guild offers membership to those employed or genuinely interested in natural scientific illustration.

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EDITORIAL ^{Scientific} ILLUSTRATION:

...a little bit of explanation, with a little bit of commentary

Introduction

Our Annual Members' Exhibit showcases stunning examples of our best work. However, to those of us who primarily do editorial-style illustration, it often seems that our exhibits, and the GNSI's focus, lean more heavily in favor of the strictly scientific, more technical pieces. Editorial illustration is a style practiced by a fair number of our members, and therefore worthy of equal celebration. We all create "art in the service of science"; a well-planned, well-executed, and scientifically accurate image for a third-grader's story book is as much in tune with that motto as any crisp image of neurons or a highly technical geological cutaway diagram.

The GNSI is a wonderful umbrella organization, encompassing a dizzying assortment of disciplines, styles and tastes. We all share many commonalities: love of nature, love of science, love of beautiful art, and a love of the process of combining all of these into elegant and functional works. If you asked members of the general public what comes to mind when they think of "scientific" or "natural science" illustration, you would of course get mostly blank stares; but perhaps your inquiry would conjure up images of microscopes and calipers, and indeed that is an apt vision of how many of our members work.

Many others, however, produce work that never (or rarely) requires a microscope or calipers. "Editorial" illustrators create art that is just as scientifically accurate but far less technical — for want of a better description, often more "painterly" — and definitely aimed more at the general population of art consumers. Interpretive exhibit pieces, murals, textbooks, natural history storybook illustrations, and even commercial works such as seed packets, wine labels, or insect control products are examples of projects that require this style of natural science art.

The editorial artist must create images that follow the same rigor that more technical illustrations follow: the bird, for example, must be represented correctly in all aspects of coloration, anatomy, habitat, and behavior. However, the job may not

require delineating every single feather, or every scale on its legs. Illustrations created for an elementary-level textbook may not require painstaking renderings of every detail. An interpretive graphic for a zoo may require a much more liberal and graphic approach to the image (noticeable outlines, highlights, etc.) to grab viewers' attention and get the message across in the mere 3 seconds you have to do so (see sidebar: The 3-30-3 Rule).

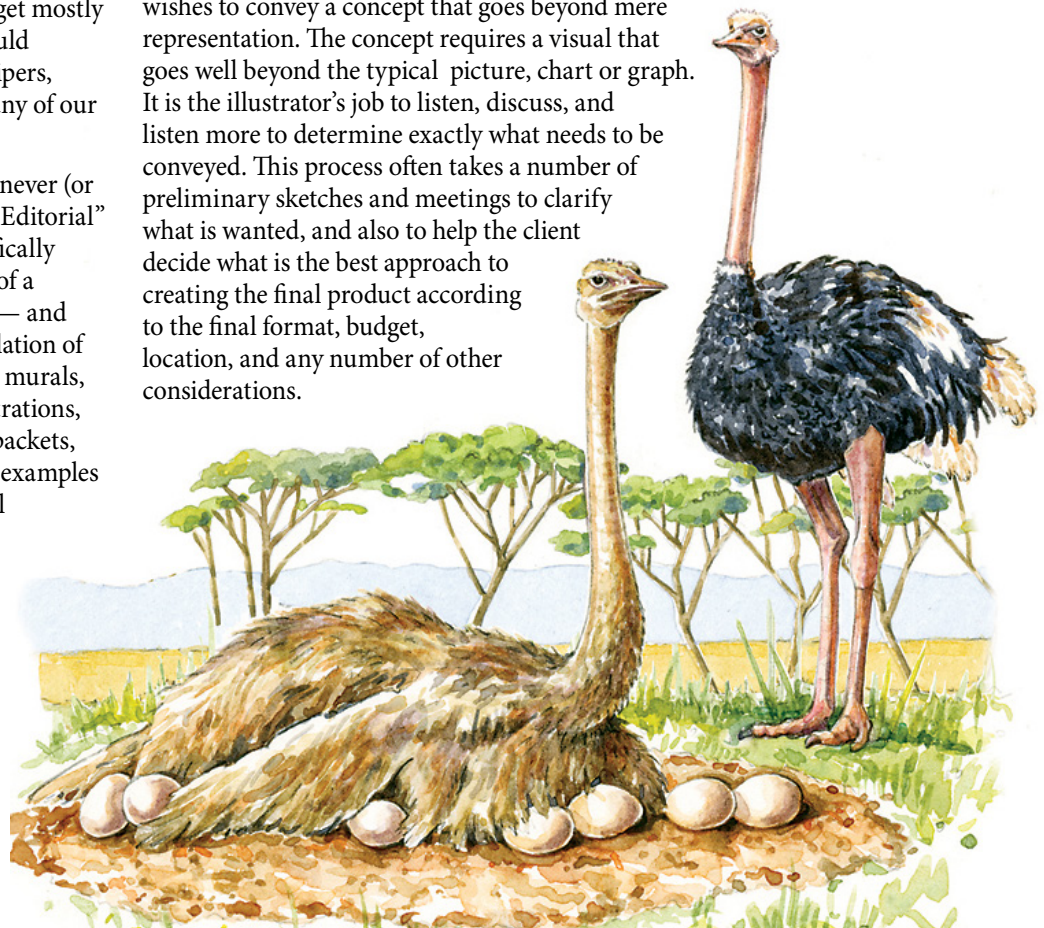
Textbook illustrations and natural history books are being written and updated constantly. Although the authors are often non-scientists, and may not be as conscientious at times about the scientific accuracy of the art, they appreciate our special knowledge and are happy to have finished work that looks good and is accurate to boot.

THE CHALLENGES

One of the biggest challenges for the editorial illustrator often comes in initial client meetings and discussions. Many pieces are straightforward images of a bird or a tree or a simple nature scene depicting common elements. But often, the client wishes to convey a concept that goes beyond mere representation. The concept requires a visual that goes well beyond the typical picture, chart or graph. It is the illustrator's job to listen, discuss, and listen more to determine exactly what needs to be conveyed. This process often takes a number of preliminary sketches and meetings to clarify what is wanted, and also to help the client decide what is the best approach to creating the final product according to the final format, budget, location, and any number of other considerations.

THE 3-30-3 RULE

1. You have 3 seconds to grab your reader's/viewer's attention.
2. You have 30 seconds to engage your reader/viewer.
3. You have 3 minutes for your prospect to read your material. No matter how amazing your content is, people are busy and tend to skim. Don't make the content too dense. It is better to simplify and offer additional information elsewhere, than to include too much information in one panel.



Female and male ostriches © Marjorie Leggitt, 2014. Watercolor illustration created for an elementary school level "story" about large birds.

Bald Eagle with Fish and Great Horned Owl, © Gail Guth; scratchboard. Art created for identification signage at Binder Park Zoo, Battle Creek, MI, designed to show an aspect of anatomy or behavior that the public might not otherwise see (“hooding” behavior in eagles to protect their prey from other raptors; and the owl’s huge talons, which are seldom seen, as owls generally roost during normal visitor hours.).



QUESTIONS, QUESTIONS

When taking on a project, such as an interpretive panel for a zoo exhibit, gather as much information about the project from the client before starting the job. Here is a sampling of questions:

- Indoors or out? Wet environment or dry? (Will mice and insects be able to nest inside the panel’s covers?)
- How big do you want this to be?
- Where will this go? (Will it be within reach of your visitors or back behind the rails?)
- How far away from the viewers? (What size type, and how much, will be appropriate?)
- How will it be constructed (and who is doing the construction)?
- What is the target age level of the reader or viewer?
- Will it need to be interactive or static?
- What is the time line?
- What is your budget?
- Who will be making the decisions on this project? (one person, a few, or the entire staff?)

Life on the Peruvian Rainforest Floor, © Marjorie Leggitt, 2013. Photoshop. This illustration, created for Denver Botanic Gardens, is the top half of a nutrient cycle interpretive panel. This half indicates several examples of invertebrates and fungi that live on the rainforest floor. The lower half emphasizes decomposing leaf litter and the oxisol soil where dense networks of hyphae and rhizomorphs tangle around and infiltrate feeder roots with endotrophic mycorrhizae.



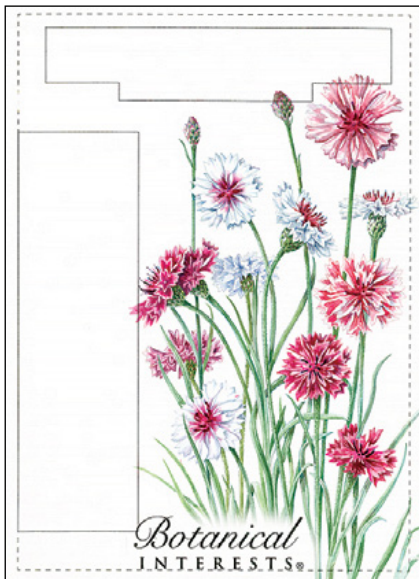
– And of course there are also the usual questions about payment, copyright ownership, etc.

RIVERS OF INFORMATION

Generally, clients want to put far too much on a graphic or a page. You need to help them strike a balance between not enough and too much information, between clarity and confusion (see the 3-30-3 Rule sidebar!). Solid graphic design and editorial writing skills are a plus!

FACT-CHECKING

Although the content is ultimately the client’s responsibility, it is certainly helpful to recognize and bring attention to any discrepancies or errors in what he or she is requesting. A client wants a set of drawings for an elementary-level reading text about setting up a small aquarium. The fish requested look good together but you know that they would never exist harmoniously in an aquarium. Educating the client about this type of scientific knowledge not only creates a more accurate picture but reinforces the importance of hiring a scientific illustrator!



OUR OPINION

Editorial illustrations should not be dismissed as mere “pretty pictures”. Although they may be noticed — and admired — more for painterly rendition than technical skill, a well-executed editorial image can be every bit as demanding and challenging to create.

There are limited numbers of jobs and opportunities that call for scientific art; it’s in the best interest of many aspiring and even seasoned veteran artists to look beyond strictly scientific projects and look to editorial illustration for added revenue and increased job security.

If the GNSI wants to benefit and support the greatest possible number of members and attract a larger pool of potential members, we need to embrace and promote all of the varying skills and illustration styles that fit well under our big umbrella.

We certainly can and should maintain our standards of excellence; we certainly can be inclusive while doing so.

Watercolor illustrations for Botanical Interests® seed packets, © Marjorie Leggitt, 2014-2015.

“Kupe” snorkeling near his home in Moorea, © Marjorie Leggitt, 2014. Watercolor illustration for *Kupe and the Corals* by Jacqueline Padilla-Gamino, a LTER (Long Term Ecological Research) children’s book.



(More art on the next page!)

It is a hot day in **SUMMER**. Aurora and Orion have planned to go to a cool hemlock forest by the Hubbard Brook. A professor named Tim needs help collecting soil samples near spots with mushrooms. He is interested in how the tree roots and mushrooms help each other.

"The mushrooms help tree roots gather water and nutrients from the soil, and the roots feed the mushrooms," he explains. "There are lots of mushrooms on the other side, so let's cross the brook. I also know a very large hemlock tree on the other side that I'd like to show you."

Orion and Aurora wonder if it might be a wolf tree.



Aurora and Orion collect soil samples and mushrooms in the Hubbard Brook Experimental Forest. © Marjorie Leggitt, 2015. Watercolor illustration for *Seeking the Wolf Tree* by Natalie Cleavitt, a LTER children's natural history "discover" book.

Aurora and Orion discover animal tracks as they look for the "wolf tree". © Marjorie Leggitt, 2015. Watercolor illustration for *Seeking the Wolf Tree* by Natalie Cleavitt, a LTER children's natural history "discover" book.

It's **SUMMER** vacation. During their quest for a wolf tree, Orion and Aurora have come to love the forest and want to return. Today, they accompany Lynn and John, two researchers who study how moose affect forest structure.

"Will we see a moose today?" Orion asks Lynn.

Lynn points out the animal tracks along the way. In the soft mud of the trail, they spot tracks and signs of moose, coyote, squirrels, and mice.

As the four climb, Lynn points to a clump of fir trees that have been nibbled.

"Who would eat sticky fir trees?"

Orion asks. "That would be worse than a day-old peanut butter sandwich."

"Firs are the main winter food of the moose," Lynn explains.



Do Viewers Understand Our Illustrations?

—Jennifer Landin

Many of us create illustrations for outreach, figures for textbooks, or art for articles. We assume that viewers understand our work. But do they? Research on textbook figures indicates problems. When students are asked to interpret a figure, comprehension rates range from ~25% to 75% (depending on complexity of the topic). Graphs are worse.

WHAT'S THE PROBLEM?

There seem to be two main issues: 1) viewers don't follow basic diagram conventions like reading labels or titles or following arrows, and 2) viewers with little background knowledge pay attention to unimportant details and ignore important ones. If students do observe the important details, they often don't translate that information into comprehension of the topic.

So the idea is... if we can teach students to follow diagram conventions AND if we can graphically direct attention to important details and explain how they are important, then understanding should increase.

INSTRUCTION ON CONVENTIONS

How do you teach students about reading images? One group of researchers developed an instruction booklet and semester's worth of diagram practice. They expected students to greatly improve their

interpretation of figures. However, students showed only a very slight increase. *Personally, I'd be interested in seeing a study that required students to **create** diagrams in order to learn conventions. But that's a topic for another article.*

GRAPHICALLY DIRECTING VIEWERS

Perhaps the key to improving diagram comprehension is graphic design. Designers and illustrators can use elements and text to direct viewers and explain concepts or processes. Let's start with text – how should it be laid out? Which text format works best?

WHERE'S THE TEXT?

The one outcome that appears to be universal is that images should be near the appropriate text. Duh, right? But then there's a question of how close. You could have:

- text on one page and image on the next (not good),
- text and image on the same page (Fig.1),
- text incorporated into the image: “spatial integration”(Fig.2).

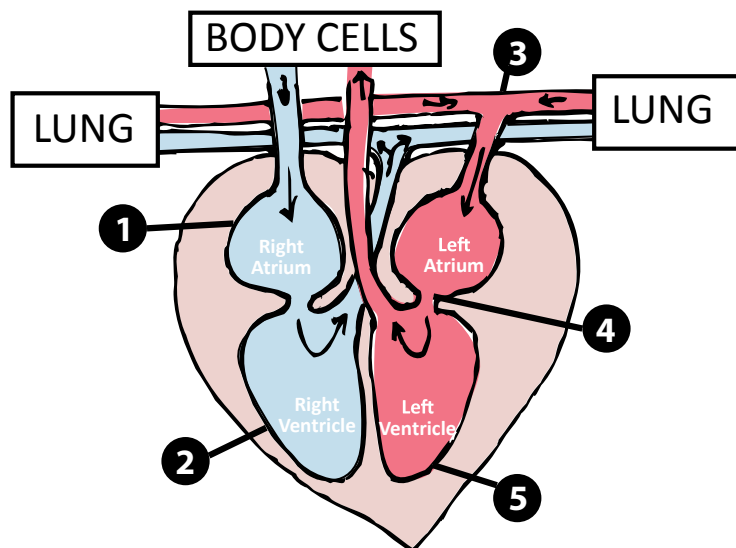
While some researchers indicate that spatial integration is best, others have shown that this approach may ‘dumb down’ the image so that viewers don't pay as close attention.

Figure 1: Example of Whole Text layout

Circulation through the Heart

Blood enters the Right Atrium of the heart from the body, having depleted its oxygen (1). The heart doesn't supply any oxygen to the blood, but can pump the blood out to the lungs. When the heart squeezes, blood leaves the Right Ventricle (2) and travels through the Pulmonary Arteries out to the Lungs.

Having picked up oxygen at the lungs, the blood returns to the heart through the Pulmonary Veins (3). Blood enters the Left Atrium and travels down to the Left Ventricle (4). This time when the heart squeezes, blood is pushed out through the Aorta to supply all the cells of the body with oxygen (5).



Circulation through the Heart

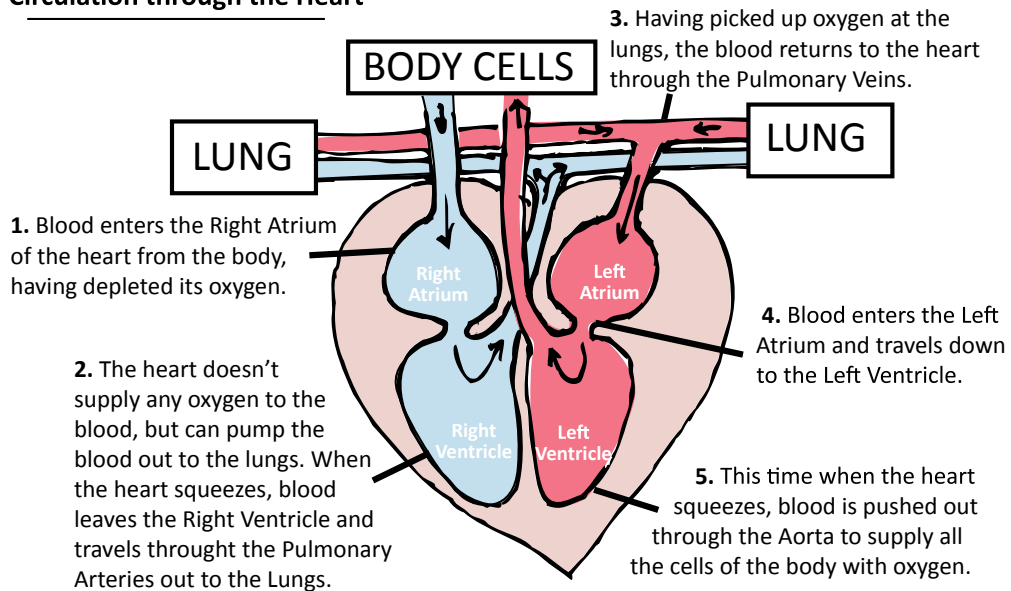


Figure 2: Example of Segmented Text layout

The next question is whether the text should be segmented or whole. Most research indicates that segmented text works best for comprehension. And while “spatial integration” requires text to be segmented, this design approach can often look overwhelming or cluttered. Another issue, of course, is that “spatial integration” often requires the artist and writer to work closely together (or be the same person).

GRAPHIC ELEMENTS AS SIGNALS

“Signals” include directional techniques like arrows, colors or highlighting that direct the viewer to important aspects of the image. Segmented text and labels can also function as a “signaling technique”. But use caution. Multiple studies have shown that, when used in more complex graphics, comprehension levels drop. Researchers suggest only including the most relevant, required visual information.

TYPE OF IMAGE

More realistic, concrete objects are easier for viewers to comprehend. Abstract images require more explanation. However, few studies acknowledge that these images often match their messages.

Concepts which can be photographed or drawn realistically, such as anatomy, are usually simpler (e.g. skeletal or flower structures). Comprehension of these topics involves only identification, visual comparison, and an understanding of basic function.

More complex topics, like processes (e.g. action

potentials in neurons or geological subduction), must be drawn. These concepts require identification of novel structures, functions on very large or very small physical scales or timescales, and a thorough understanding of more general structures.

Graphs can be included in the complex drawing category since they show summaries, patterns, and ranges of outcomes under various conditions. These diagrams are extremely complex and abstract, requiring not just comprehension but interpretation and translation as well.

VIEWER INVOLVEMENT

The most interesting research I read describes viewer involvement. In one study, text segments were available but out of order (Fig. 3). Viewers had to match the text to the appropriate locations of the graphic. The data looked promising compared to other treatments, but average comprehension still remained in the 50% range. Another study left parts of an image out, requesting students fill in the missing labels, descriptions or structures. Again, the results from this activity indicate that students comprehend more information from these graphics.

A WORD OF CAUTION

In all these studies, the averages are used to make conclusions. Makes sense, of course... BUT in looking at the statistical variation, there are HUGE ranges of those averages. And all the ranges overlap. Statistically speaking, none of these techniques seem to make a substantial difference. Maybe something interesting to think about though.

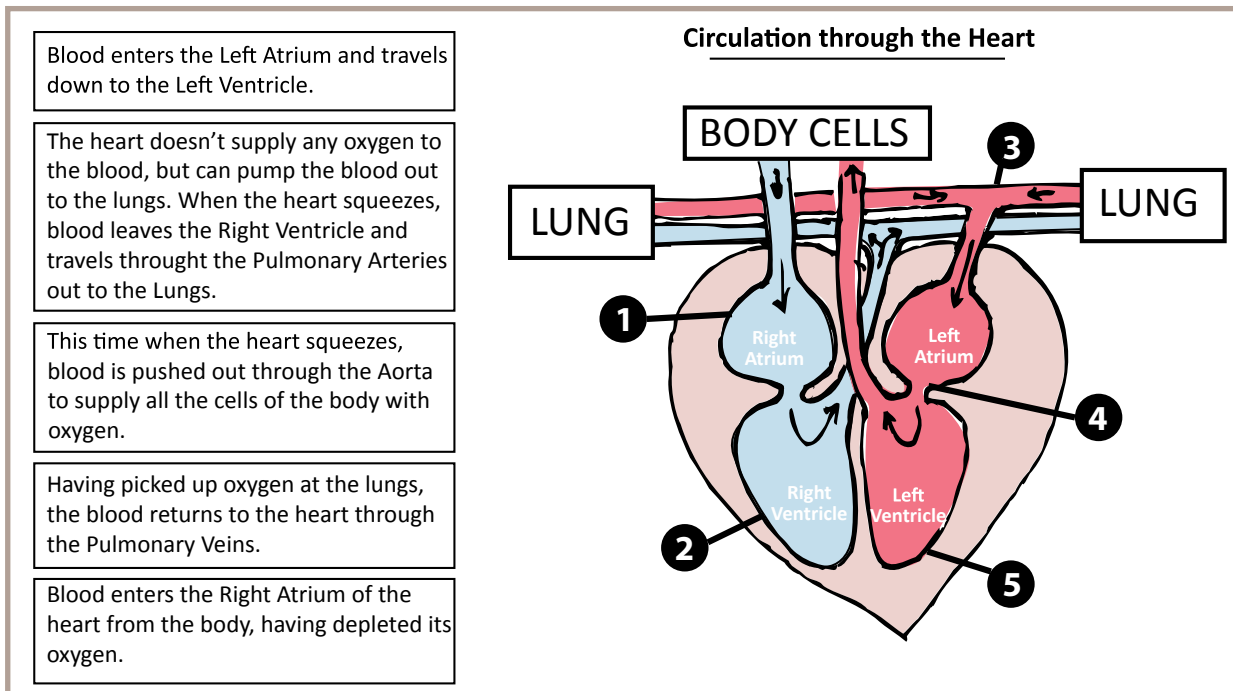


Figure 3: Example of Interactive Text layout

Postscript: I ran my own mini-experiment using the three images shown in this article. Contrary to the data presented in other research papers, students who received the "Whole Text" graphic performed best (~63%) on a follow-up test. The "Interactive Text" scored the lowest on average (~53%).

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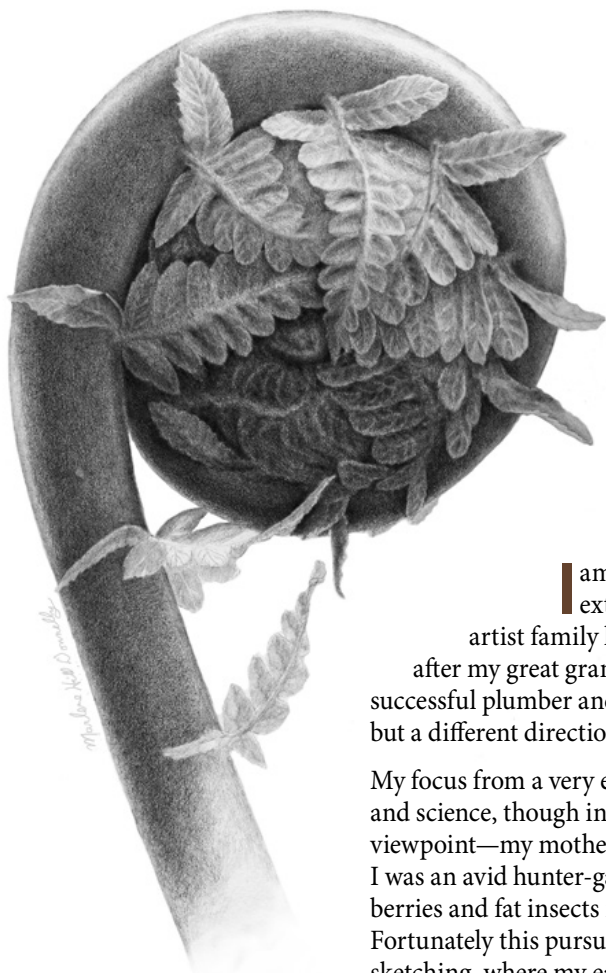
ABOUT THE AUTHOR

Jennifer Landin is a biologist, illustrator and science educator. As Assistant Professor in the Department of Biological Sciences at North Carolina State University, Jennifer teaches biology to non-scientists and biological illustration to non-artists. Her focus is on increasing awareness of biodiversity and sharing an appreciation for nature through visual arts.

Check out Jennifer's blog (rednewtgallery.wordpress.com) and NCSU website (<http://www4.ncsu.edu/~jmlandin/>) for more information.

Member Spotlight

Marlene Hill Donnelly



Cladophlebis crozier
graphite and carbon dust
© 2009 Marlene Hill Donnelly

Marlene Hill Donnelly



I am not a plumber. My extended professional artist family hoped I would take after my great grandfather, become a successful plumber and make a great living, but a different direction called.

My focus from a very early age was nature and science, though initially from a culinary viewpoint—my mother said that as a toddler I was an avid hunter-gatherer, focused on berries and fat insects in our wild back yard. Fortunately this pursuit soon gave way to sketching, where my early hunting skills still came in handy.

My first childhood house was large and old, with a dark root cellar accessed down ancient stairs from the outside. Huge bins of my parents' modeling clay loomed in this earthy smelling cave, sheltering a variety of creatures. Spiders, insects, pill bugs and field mice scurried in the shadows, and I tiptoed over garter snakes basking on the stairs in the summer sun. I spent many hours in that deep quiet refuge, modeling my animal companions in clay.

Travel has always been a powerful entity in my life. My intrepid grandmother and great grandmother drove to Alaska in the early 1920s amidst many a flat

tire and a strong prejudice against women traveling without men. My own travel bug gene switched on at a very early age as we crisscrossed the country on small roads, experiencing everything from Death Valley, pre-air conditioning, to roadside stands selling skulls. Canoe camping in the remote north woods with my wilderness-savvy grandfather taught survival skills along with a realistic view of nature, far removed from the Disney nature movies that I loved as well.

Travel led to scuba diving, nothing short of a revelation to the world-class sinker that I was in high school. Suddenly my negative buoyancy was an asset and I felt enormous freedom under water. From Cocos Island's vast schools of benevolent hammerheads, large extended eyes locking with mine from inches away, to shimmering Australian cuttlefish extending two tiny tentacles in unfathomable communication, here was an alien and endlessly fascinating world that of course melded deeply into my artwork. For many years I bought Pthalo and Ultramarine Blue liquid acrylic in half-gallon bottles, to be airbrushed onto huge canvases. Using underwater sketching, color swatches and photography, I did my best to invoke that amazing world. I have used this experience to bring life to my reconstructions of ancient marine reptiles.

My Zoology major (Botany minor) at Colorado State University and University of Illinois provided much opportunity for scientific drawing, but it wasn't until I worked in a veterinary pharmacology lab following graduation that I met my first real scientific illustrator, and my path became clear. Three years at the American Academy of Art in Chicago followed, where my benighted instructors and classmates thought that my goal of scientific illustration was bizarre and I would soon die of boredom. They were wrong.

I stitched the two rather wildly disparate aspects of education together at my first job: illustrating wolf behavior at the Brookfield Zoo. The wonderful nuances of interaction and expression felt entirely natural to one raised with a pack of dogs as siblings. Have I mentioned the dogs? At the zoo, I was a family portrait painter.



After that wonderful project ended in two years, I had the great good fortune to join the Field Museum as one of three staff scientific illustrators. I have worked there for 35 years. During the first 16 years I illustrated equally for the departments of Botany, Zoology and Geology, having fun and gaining a solid foundation. The Guild was an invaluable resource of knowledge and support.

When the Museum reverted to the old system of one illustrator per department I moved to Geology, where I have worked ever since. My concerns about losing the wonderful variety of work were unfounded, as in Geology I worked with specialists in paleobotany and fossil mammals, reptiles and fish.

I constructed paper models for botanical illustration (despite limited origami skills), but now I expanded considerably. I had grown up creating innumerable clay models, and the Guild's Gloria Nusse introduced me to the wonderful world of aluminum wire, foil tape and plaster. Models proved essential for reconstructions.

Life reconstructions opened an amazing new door. The journey began with an extinct Miocene raccoon relative. I began from the ground up with a road-kill raccoon specimen (from our Mammals department) that resided in our home freezer for some months while I dissected, carefully studying it to build muscles on a wire skeleton reconstructed from fossils. The tiny, newly-skinned, pointy-clawed hands resembling bits of Rosemary's Baby floated in an alcohol jar on a refrigerator shelf the night I first met my new stepchildren, one of whom I physically

tackled as he reached for the refrigerator door. And people think that scientific illustration is dull!

Teamwork with paleobotanists and sedimentologists led me to wonderfully complex landscape reconstructions. Watching the ancient environment emerge from a jumble of fossils, models and data, taking on a life of its own, engrossed us all. The scientists used these visuals as part of their thinking process; watching often surprising developments triggered new theories.

Field sketching is crucial to this work, and may be my favorite activity in the world. Sitting and fully absorbing a place, all senses open, is the best meditation. Interweaving sketching and writing

Triassic-Jurassic boundary, Greenland

© Marlene Hill Donnelly
Carbon dust, watercolor, digital, 2006; courtesy Jennifer McElwain, The Field Museum



Night Vision Dimetrodon,
© Marlene Hill Donnelly
Carbon dust, digital, 2014; courtesy Ken Angielczyk, The Field Museum.

The discovery of *Dimetrodon* fossils with large sclerotic rings implies that this early reptile was nocturnal; to make the point immediate the reconstruction is presented as if through a night vision device.

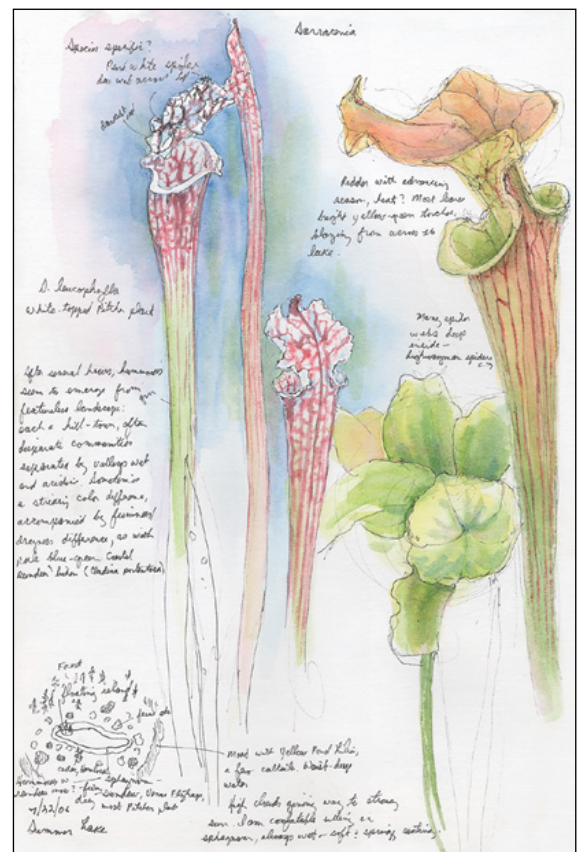


Above: Juvenile Hyena, carbon dust © 2002 Marlene Hill Donnelly

Right) Summer Lake, Washington, Pen and ink, watercolor field sketches © 2006 Marlene Hill Donnelly

engages the whole brain. Landscape reconstructions begin with a geological setting; I locate a setting similar to the ancient place, and sit. This is the discovery phase. A local newly-flooded forest taught the difference between temporary and permanent water: dark rings emerge on tree trunks as the water swiftly drops, and a cloud of soft popping noise envelopes all as tiny air bubbles escape from the saturating earth. Field sketching combines beautifully with travel and is essential for reconstructions; the Hawaiian rain forest, Washington braided rivers and the Okefenokee swamp have all contributed.

I would like to say that my teaching career began twenty years ago with an altruistic yearning to “give back”, but the truth is that my boss told me I had too. However, I soon found teaching to be a highly rewarding art form unto itself. My classes at the Chicago Botanic Garden, the Morton Arboretum, and the Field Museum provide a source of endless learning (and challenge) from my many wonderful students. I am grateful to all of them.



A New Flowering:

Botany Illustration Books Reviewed

— Kathleen Garness

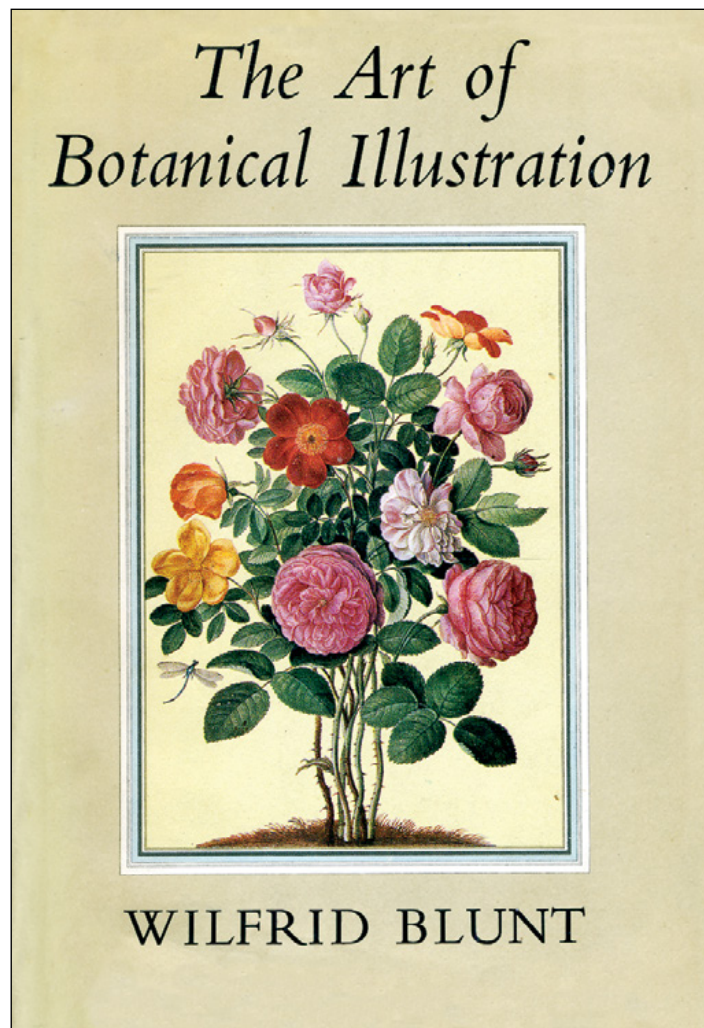
Introduction

*Like many of you, I am curious when a book asserts itself as an authoritative survey of a favorite subject. Charged by Gail Guth with reviewing Martyn Rix's *The Golden Age of Botanical Art*, I chose four other titles for comparison and will present summaries of each in chronological order of publication. The Martin Rix book is number four.*

The earliest of the series discussed here is *The Art of Botanical Illustration* by Wilfrid Blunt (with the assistance of William T. Stearn), my volume published by Collins, London, 2nd ed., 1967 (1st edit. 1950). Compared to the quantity of images in the other books, this one has a modest 46 color plates; 32 black and white plates; 61 illustrations; and 18 figures to amplify the text. Having the 3 appendices and a comprehensive index contributes significant value to this volume. The 2015 reprint of the 2001 edition of the book has a steep list price of almost \$70 but includes many more illustrations than the original. Of the four volumes considered here this one is the one most clearly directed towards educating the aspiring or even professional botanical artist in technique as well as offering an appreciation of the field's history. It is also the most historically comprehensive (even trumping Rix with a photo of a Paleolithic plant carving). William Stearn is the notable author of *Botanical Latin*, so you can be sure this book brings both the expertise of the trained botanist as well as that of the professional artist. It's important to remember that Blunt was born in 1901 and writes much in the insightful, detailed style of that day. Of all of them, it's probably the most helpful to the intermediate and advanced botanical artist and teacher because of its comprehensiveness.

The Art of Botanical Illustration – a History of the Classic Illustrators and Their Achievements, by Lys de Bray (Quantum Books, 1989, 2nd ed. 2005).

A talented botanical artist and prolific author, de Bray was unknown to me before this project. The only one to cite the 1500 BCE Temple of Thutmose III at Karnak and its visual representations of 275 species — 'all the plants that grow' — de Bray earns my respect because most resources omit this significant ancient artwork. Full-page illustrations



The Art of Botanical Illustration
by Wilfrid Blunt

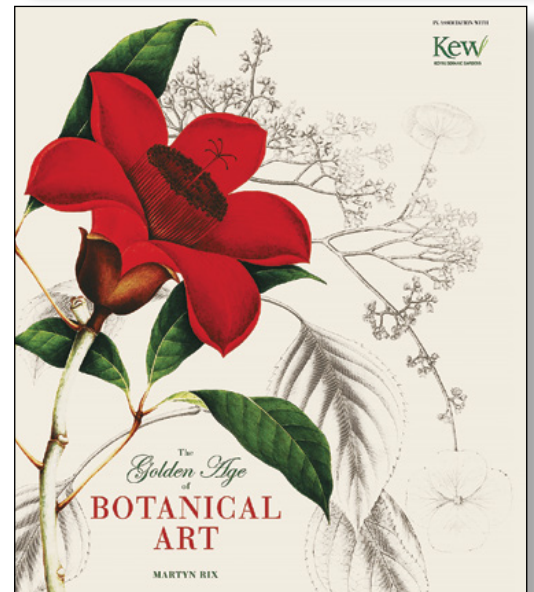
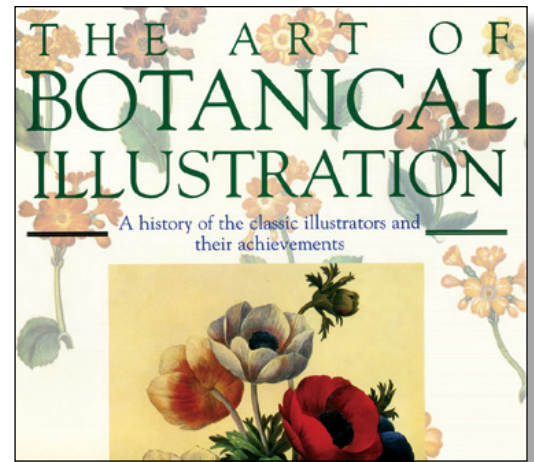
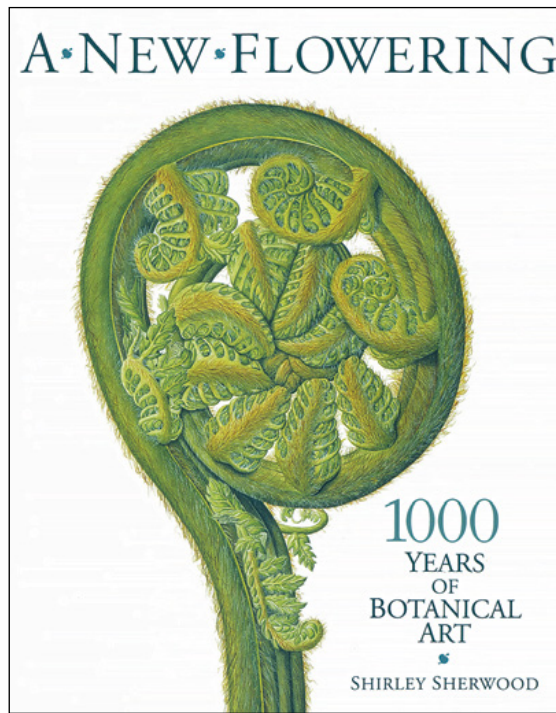
of some of the earliest works, including *Rubus fruticosus* from the Codex Vindobonensis are notably included. Her comment "The Tradescants were veritable magpies, collecting all kinds of curiosities in the course of their travels. Their collection eventually formed the nucleus of the Ashmolean Museum's collection at Oxford" seems warmly characteristic of the broad-brush but very knowledgeable humor that makes this book such a fast and pleasant read. Newer readers in this genre will especially appreciate how she sets the development of botanical illustration into a much wider historical context with her easy, entertaining style.

(Continued on page 14)

Left: *A New Flowering: 1000 Years of Botanical Art* by Dr. Shirley Sherwood

Right, above: *The Art of Botanical Illustration - a History of the Classic Illustrators and Their Achievements*, by Lys de Bray

Right, below: *The Golden Age of Botanical Art* by Martyn Rix



A New Flowering: 1000 Years of Botanical Art by Dr. Shirley Sherwood (Ashmolean Museum, 2005)

Dr. Sherwood pairs illustrations spanning the Middle Ages through the Scientific Revolution with mirroring pieces by contemporary artists. In the introductory essays, she outlines the influence of British artists Margaret Mee and Rory McEwen as having special influence in this new renaissance of interest in the natural world. Prof. Lucia Tongiorgi Tomasi's essay is a delightful entry into this volume, sharing valuable historical detail about each artist and the driving forces behind their work. With excellent production values and easy-to-read text, its antique/modern parallel format shows beyond all doubt how botanical art has thrived in the last century. (Of course, the development of highly permanent pigments has helped modern artists' cause too!) Essays at the end of the book cover contemporary artists' biographies, the scientific context of botanical illustration and some techniques of botanical illustration.

The Golden Age of Botanical Art by Martyn Rix, (University of Chicago Press, 2013)

Martyn Rix is editor of *Curtis's Botanical Magazine* and author of numerous books, notably *The Genus Lachenalaia* and *Rory McEwen: The Colours of Reality*. With full-page, full-color illustrations on almost all of its high-quality glossy pages, this book is serious eye candy for the botanical artist

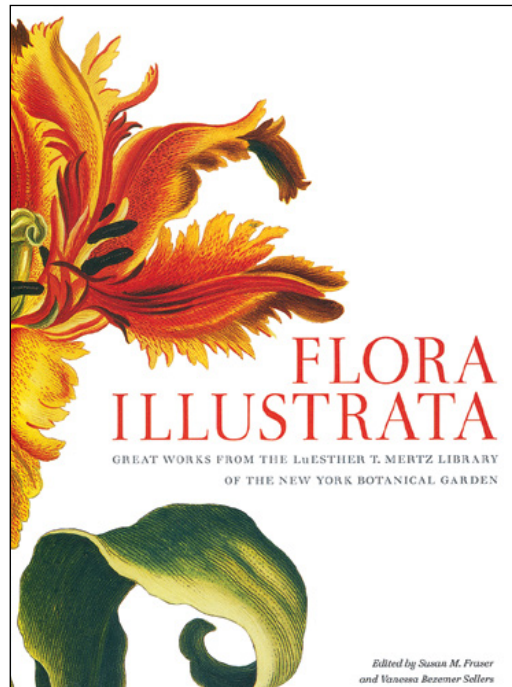
and historian. The bibliography has an inexcusably unreadable small font and too much white space between lines, but the rest of the publication is quite readable. The book features work spanning the late 17th through the mid 18th century but also includes early Mediterranean frescos and pages from the *Codex Vindobonensis*. Rix echoes a deep mixed concern of mine: "Though we have fewer botanists we have more botanical artists than ever before". We definitely need more of both to help others conserve our precious natural heritage. He attributes the earliest surviving botanical art to the Cretans and eastern Mediterranean ca. 300 C.E., also mentioning Theophrastus' herbal of ~ ca. 300 BCE. This and the Blunt/Stearns volume are the only ones to cover even a brief history of botanical art in the Far East, a notable omission in the others, especially considering that the Chinese have venerated and painted flowers for over a millennium. I enjoyed reading the many detailed accounts of early botanical explorers and artists.

Flora Illustrata: Great Works from the LuEsther T. Mertz Library of the New York Botanical Garden, (Yale University Press/New York Botanical Garden 2014 published by donor subscription)

This book combines patient scholarship, a beautiful balance of images on the page, much lesser-known information on the history of botanical art, and a fascinating history of the New York Botanical Garden's (NYBG) comprehensive library. It also underlines the importance of the role of philanthropy in the realm of scholarship. What I was missing in Lys de Bray's book were endnotes or footnotes. This volume gives ample references in that regard, making it valuable for the serious researcher. Each chapter is written by a specialist in that field. For example, the author of chapter two, on European Medieval and Renaissance Herbals, is Professor Tomasi, Distinguished Delegate to the Chancellor of Culture and Honorary President of the Museum of Graphic Arts at the University of Pisa. Other chapter authors include Therese O'Malley, Ph.D., Associate Dean at the Center for Advanced Study in the Visual Arts at the National Gallery of Art in Washington, D.C. and Vanessa Bezemer Sellers, newly appointed director of NYBG's Institute for the Humanities and co-editor of the volume. Gina Douglas, editor of the Linnean Society Newsletter, contributed a chapter on Linnaeus and the Foundations of Modern Botany. The chapter on the exploration of Brazil is written by eminent Austrian scientist and historian Dr. H. Walter Lack. Dr. Judith K Major, University of Kansas, has published extensively on the history and theory of landscape architecture, as has Elizabeth Barlow Rogers, who contributed the closing chapter of the book, titled 'An American Kew'.

Among all these notable volumes, it's so hard to choose just one, or even two, for our collections. There are other scholarly and artistic overviews of the history of botanical art, with both general and specific focus, but for this review, it seemed wise to focus only on this select few. Gill Saunders' *Picturing Plants: An Analytical History of Botanical Illustration*, and Celia Fisher's *The Golden Age of Flowers* are worth checking out at your local library, but if I were to choose just one or two historical compendiums for my collection, it would be from among these five reviewed. Good luck choosing!

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Flora Illustrata: Great Works from the LuEsther T. Mertz Library of the New York Botanical Garden

ABOUT THE AUTHOR

Kathy divides her time between trying to produce natural history art, writing, teaching, natural areas stewardship and sleep. Her recent award by the Chicago Audubon Society for her environmental leadership and botanical illustration was a surprise. Recipient of two other awards: a 2008 Chicago Wilderness Grassroots Conservation Leadership Award and a Chicago Botanic Garden Plants of Concern Citizen Science Award, she isn't sure who nominated her for them but secretly thinks they must have had too much time on their hands.

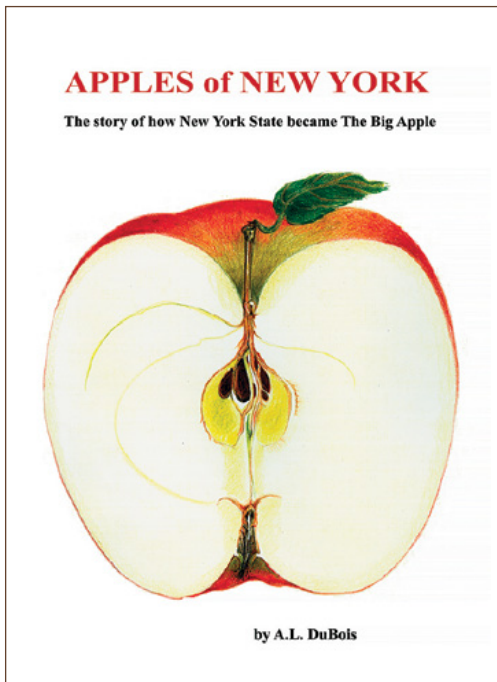
Book signing coordinator for the biennial Wild Things conference, sponsored by Chicago Wilderness, she gets to read

advance copies of a lot of neat natural history items but has a secret love for Botanical Illustration books. She has found that she learns more from studying the plants than any books, however!

She is thrilled that one of her paintings made it into the international Kew Gardens' and Smithsonian exhibit, 'Losing Paradise? Endangered Plants Here and Around the World'. Kathy prefers studying and illustrating native flora, especially orchids, to just about everything else except teaching and playing with her grandson, Liam.

Adventures in Self-Publishing

— Ann DuBois



Front book cover for
Apples of New York
www.applesofnewyork.com

All artwork © Ann L. DuBois

Like many novice writers, I found getting a publisher to be a full-time job, involving a lot of frustration. In my search to publish *Apples of New York*, an agriculture history book, I gathered much knowledge, and some shocking information. In this journey I've become aware that I'm not alone. That fact is what has inspired this article.

First I tried the usual route of sending each publisher the required materials for submission. I researched which publishers had already published works that related to my book. Many of them had, but few would accept a submission from an unknown author. After

many mailings, I was accepted by History Press, a publisher specializing in history topics. I was ecstatic! I invited some friends, who do freelance editing for publishers, to dinner. They advised me on the contract, which they told me was standard for the industry. It provided 10% royalty and after one thousand in sales, 12% royalty. The royalty was to be from the initial price and not from a sale price.

As the work relationship developed, the History Press editor and her committee proposed a number of changes. I was fine with most of these requests, but they also wanted to remove information on apple cider. I told the editor about the strong historic and recent resurgence in apple cider; they wouldn't budge. They also wanted three of my apple botanical illustrations on one 6-by-9 inch page. That did it. I walked away.

Again I was without a publisher. But soon thereafter Globe Piquot Press, specializing in topics by region, offered me a contract. Having learned something from my last experience, I asked if they saw the issues of formatting and content of the book the way I did. The publisher agreed and included it in the contract. Happy days were back! But not so fast — my new publisher was bought by another publishing company. Inexplicably the publisher's new owners

wanted it all in black and white. I walked away. So here I was again without a publisher.

Then, State University of New York Press and Cornell University Press offered contracts. I was delighted, only to be disappointed again. Their contracts offered only a 5% royalty and no royalty for the first one thousand sales. Both presses mentioned that they were non-profit publishers. With these contracts, I fully believed I too would be in the same boat (non-profit). I suppose if I was looking for tenure I would have published with either press, but I'm looking for only a reasonable financial reward. All of these experiences ultimately led me to self-publishing.

The publishing industry is in the process of fundamental changes. Simon and Schuster, one of the oldest and most successful publishers, has expanded to television and other media. Recently it added a self-publishing business that charges the author a high fee for its services. An unusual aspect is it will offer to publish your book if it is successful. So Simon and Schuster sees self-publishing as a way of filtering out the dud books and letting the author pay for the process.

Many other self-publishing companies have been around for a while. They offer everything to the unpublished author for a considerable fee, from \$1500 to \$3500. All monies usually have to be paid up front. That's an arrangement I wouldn't even agree to with my tried and true handyman. Although I'm sure he would like it.

In my research I came across Create Space, an arm of Amazon. It doesn't charge the author anything, and your book and /or Kindle gets listed on Amazon. Its royalty offer is good and it distributes worldwide. And your book is available for listing by a host of other major and minor distributors. Create Space's tech staff is excellent. However the printing quality, especially for color, isn't the best in my opinion, and a book with a \$30 retail price can be directly purchased by the author for about twelve dollars. The only thing they didn't offer was a hard cover of any kind. The features were good enough, so I was sold. I went ahead and published with Create Space.

As time went on, I noticed that the majority of my sales were made at my presentation events; I was feeling like a door-to-door salesman. I decided to find out what was the cause. I called several prime

retail outlets in historic sites and independent bookstores. It soon became apparent to me that I, again, hadn't known the questions to ask in my quest for publication. I was informed that Create Space/Amazon offers retailers a lot less than the usual 45-55% discount, and it has no return policy. In a word, I was being marketed only on the web by outlets and distributors, no store sales. Also many of the independent bookstores wouldn't carry an Amazon company book. This policy strategy of Amazon keeps it as the main seller of the book.

After drowning my disappointment and sorrow in chocolate, I had to think what to do now? I had to get back on my horse and try to overcome the barriers to successful publication. One of the companies distributing my book is Ingram; I decided to call them for advice. I did this because it is the largest distributor and printer in this country, and I had nothing to lose. As it turns out Ingram now has a self-publishing service called Ingram Spark, which just underlines how much the industry is evolving. It doesn't charge the author, but you need to purchase your book's ISBN number, which is about \$150, and it offers other services if you need them.

Ingram Spark also does hard cover, offers industry standard 55% retail discount and you can choose from several return policies. The royalty is 12% and it offers full color for inside and cover. I chose standard full color production and full-color case bound, 6 by 9 inches. The price for that service is \$49.00. It's tech staff is helpful and knowledgeable, but available only Monday through Friday, 9-5. The author has the option of including the name of their self-publishing company on all documents. I've named my newly established indie company New Place Press. Ingram Spark's production requirement and product quality are far better than Create Space's in my opinion.

My publishing adventure has been a growth experience. I've learned about embedding fonts and the best way to use a template. My book is now available for distribution and only time will tell. Now I need to get onto my next book: *Grapes of New York*. Wish me well!

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Concord Grapes by A.I. DuBois

Proposed cover artwork for *Grapes of New York*, book in progress.

Editors' note: The age of the Internet has opened up many new opportunities for individuals and businesses alike. This article chronicles one GNSI member's personal journey into the world of self-publishing. The GNSI does not make any recommendations one way or the other on using the publishers mentioned, but we encourage you to "give it a go", seeking out all the new avenues of publishing and communication.

Chapter Happenings

Get Involved with your Local GNSI

By Gail Guth GNSI Outreach Director, with Diana Marques, GNSI Membership Director

DID YOU KNOW....

GNSI has members in over 20 countries?

ABSTRACT:

The big, happy GNSI Extended Family is large and widely-spread: we have over 800 members in 23 countries! Many of us meet in person once a year at our Conferences or perhaps at an Education Series workshop, and we stay in touch via the Journal, the listserv, and social media outlets (Facebook, Twitter, and LinkedIn). But by far the greatest amount of GNSI activity takes place through our Chapters (and one Group!).

GNSI Groups and Chapters vary considerably in their size and activity level: they may meet a few times a year or nearly once a month. Some have low-key activities, like sketch outings or they simply meet at each others' homes to talk art, eat (!), review portfolios and share information. Others go large, with workshops for their members and the public, exhibits, guest speakers, and field trips. Whatever the size of the groups or the amount and level of activity, they all provide a welcome, local link to like-minded science illustrators, and all are vital ambassadors for the GNSI and our profession.

Although both Chapters and Groups are recognized by the GNSI, Chapters enjoy additional benefits, especially insurance coverage for events.

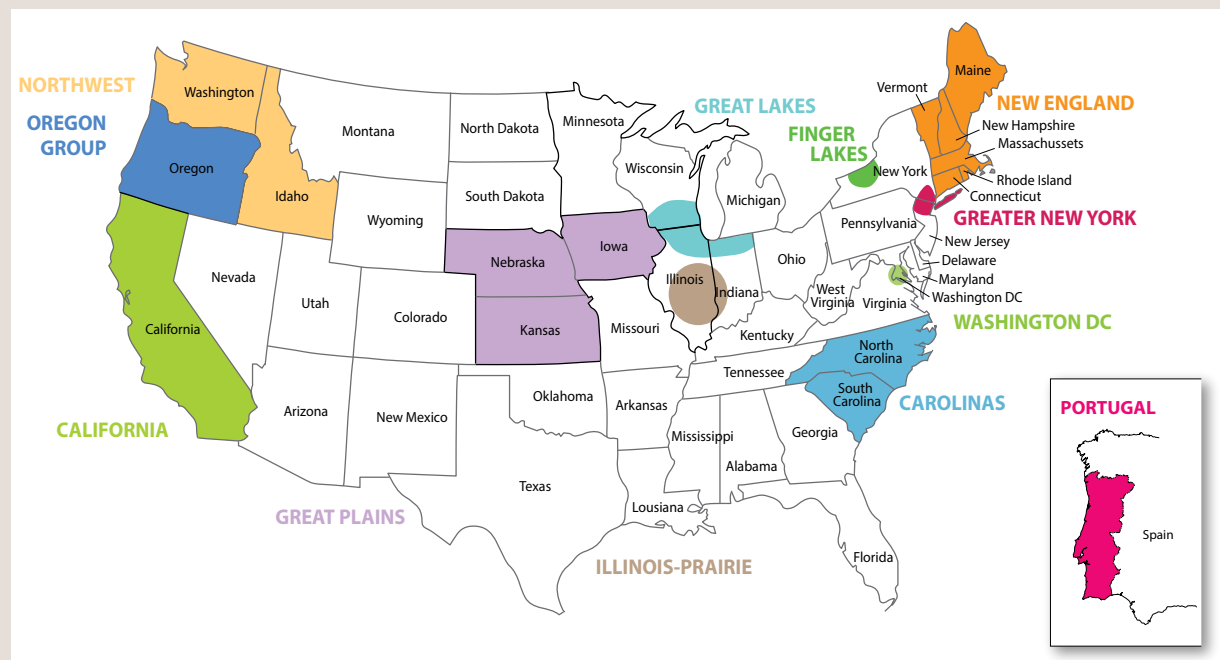
SO, WHAT DO CHAPTERS DO?

The short answer? Exhibits and workshops! But that's not all. Chapters are social events and camaraderie, field trips, information on techniques and materials, and the opportunity for sharing their art and getting feedback... not to mention a fair amount of eating. Here are activity snapshots from several chapters (numbers as of July 2014):

The Washington D.C. Chapter, our flagship group where the Guild began, is large and busy; this is no surprise since there are a number of GNSI members in the immediate area. They meet once a month from September through May at the Smithsonian, and average 27 members per meeting. Meetings feature a wide range of topics, from digital technique to museum displays, art history to data visualization, and often include a guest speaker. Their fall exhibit

GNSI CHAPTERS AND GROUP

The map below roughly represents the areas that GNSI chapters serve; however, anyone can join any chapter. If you live in an area not covered by a nearby chapter, get your science illustrator friends together and consider forming your own.



was entitled Beautiful Maryland and featured 20 works by GNSI regional members.

The Oregon Group initiated The Oregon Ocean Art Challenge in the fall of 2012, ending in late summer of 2014. Major components included a 3-day field trip to the Oregon Institute of Marine Biology/ University of Oregon, a digital computer workshop, art review sessions, and a culminating exhibit and product sale in the spring of 2014.



The New England Chapter has approximately 40 members, 35 of whom are GNSI members, and they meet 3 times a year. They put on an annual exhibit, *Drawing on Nature: Art Depicting New England Wildlife* as well as sketch outings, workshops, and a holiday party. This group sometimes joins the Greater New York Chapter on outings and exhibits.

The Greater New York Chapter has 47 members, and meets about 7 times a year. They do an annual exhibit, and sketch outings and workshops. Lately the annual exhibit has had several venues and a printed catalog.

The Illinois Prairie Chapter, in the Champaign-Urbana area, features workshops on such varied topics as colored pencil, screen printing, and a digital cartographic program; they also enjoy sketch outings and holiday craft meetings.

The Great Lakes Chapter has about 30 members, 10 of whom are GNSI members, and they meet 3 times a year. President Diane Dorigan reports, "Our meetings consisted of meeting, eating, chocolate, workshops, and various other events through the year." (Obviously they have their priorities straight!) Their exhibit, *Nature Through Art*, was at the Red Path Gallery in Seward from January - March, 2014. Workshops included A Tissue Texture Sampler, two found objects drawing workshops at the Morton Arboretum, and a sketch meeting at the Field Museum for the Voodoo exhibit.

The California Chapter has 136 members; they meet twice a year, and installed two exhibits. An active website and Facebook page helps this wide-spread group stay in touch outside of their meeting and event dates.

The Finger Lakes Chapter has 29 members who meet 7-8 times a year; they feature various workshops and a members' exhibit.

The Carolinas Chapter's 37 members meet monthly.

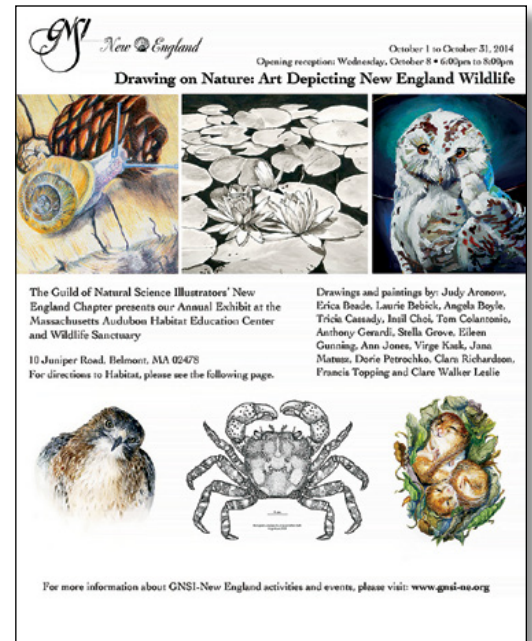
They have been very active this past year, with numerous sketch outings and a wide variety of workshop topics, from learning about Copic markers to sketching reptiles and botanical drawing composition. Their outreach event to the public was held at the NC Museum of Natural Science, and they presented a "Student Scholarship" for May's Master-Level Workshop (one student from NCSU is presented with a full scholarship to attend this workshop). The Chapter has a Facebook page, a web page, and a regular newsletter.

Carolinas members also had four recent exhibits:

- NC Botanical Gardens (May-June 2013): ~15 members displayed work for "Patterns in Nature"
- NC Aquariums (October 2013-March 2014): ~15 members displayed work for "Wings Over Water"
- NC Museum of Natural Science (December 2013 - January 2014): ~20 members displayed work for "Nature Up Close"
- NC Museum of Life & Science (June-September 2014) - ~20 members display work for "Art of Science"

CAN YOUR CHAPTER AFFORD TO BRING IN A SPEAKER OR PUT ON AN EXHIBIT?

If not, consider applying for an Education Fund grant. Both individuals and Chapters/Groups can apply for Education Fund grants that are primarily aimed at funding the public outreach component of your event. The criteria are limited and specific, and grants are considered twice a year, so you need to plan ahead. But the application process is not difficult, and the Education Fund committee will work with you on preparing your application and amending it as needed.



Above, left: Visitors study paintings by New England Chapter members. Chapter exhibits are a great way to advertise member skills and inform the public about scientific illustration.

Above, right: An advertising poster for the New England Chapter Exhibit. Event advertising costs may be covered by a grant from the Education Fund.

With wide community support, the Great Plains Chapter and community members created a unique art exhibit featuring the Salt Creek tiger beetle and its native saline wetland ecosystem. The project was inspired by Tierney Brosius' Ph.D. project.

Right: Banner painted by Michelle Hansen Daberkow and Lana Johnson's drawing class, part of Lincoln's Bright Lights Summer Enrichment Program.

Below right, clockwise: John Cody's hand and beetle portrait; Great Plains members researching the beetle and its habitat; research article by Tierney Brosius about the exhibit and how it was used to educate people about conservation; Lana Johnson's embroidered Salt Creek tiger beetle.



CHAPTER FUNDING

The Great Plains Chapter has 22 members who meet every two months, and offer workshops, sketch outings and general get-togethers featuring such topics as scratchboard, maggot painting ("no maggots were harmed during these sessions") and "something fun". They are still recuperating from a huge project in 2009, to highlight the extremely rare local Salt Creek tiger beetle, an unassuming critter that happens to be one of the most endangered insects in the world. The series of events and activities were designed to introduce the local residents to their very rare neighbor; in the process, Chapter members were able to inform and educate the public about scientific art. Their program included an exhibit with a full-color catalog, and numerous school and public presentations. A guest instructor was brought in for adult and student workshops. The group sought out and secured several grants, including a GNSI Education Fund grant, to pay for their expenses.

INDIVIDUAL FUNDING

There are unofficial "groups" of GNSI members and friends who get together informally from time to time. The Southern Michigan/Northern Indiana area has around 20 GNSI members; we keep in touch via email, and have retreats every two



years or so at a lovely nature center. Just this past summer, several of us, with help from members of the Great Lakes Chapter and an Education Fund grant, put on an exhibit at the Kalamazoo Nature Center featuring Great Lakes flora and fauna. We had a large exhibit space, so we opened it up to any GNSI members living in states that touch the Great Lakes. We ended up with 72 pieces, and an exhibit that was both gorgeous and widely praised. This exhibit coincided with the ANCA (Association of Nature Center Administrators) Conference at KNC in August; attendees came from nature centers and zoos all over the U.S. It was a great opportunity to meet and greet people whose job it is to develop interpretive graphics for their organizations! We manned a vendor table funded by an Education Fund grant, where we presented GNSI materials and enjoyed talking with everyone about what it is we do. Amelia Hansen (who spearheaded this effort) and I also presented a facilitated session with several of the conference goers about what illustrators do, how to work with us, and the benefits of hiring professionals.

GET INVOLVED!

So if you are looking for more opportunities to get your name out to the public (and potential clients!), or to exhibit your work, or to just spend some quality time with like-minded artists, join an existing Chapter or Group, or start up a new one. It's not difficult to start a chapter, and informal get-togethers just require a bit of groundwork. GNSI members can find other members living in their area on the Membership pages of the website, or we can post a notice/request about potential get-togethers on our social media outlets. Check out the GNSI website for information on applying for Education Fund grants for your projects and events, or for information about forming your own chapter or group. And whatever your affiliation, either formal Chapter or casual get-together, let us know what you are up to. We'll be happy to publicize your events beforehand, and post your reviews and photos afterward.

The GNSI is all about sharing; start making contacts, get involved, and get the most out of your membership!



For information on setting up a GNSI Chapter or Group, visit the GNSI website, or contact Diana Marques, membership@gnsi.org

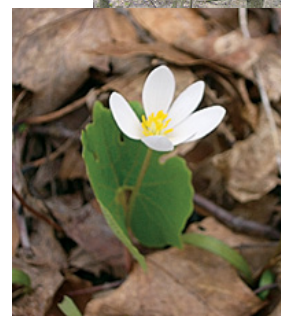


Left: Members of the Oregon Group on the Malheur Field trip - Man Lake. standing l. to r., Paula Fong, Marco Elliot, Joanna Carrabbio, John Carter, Kris Kirkeby, Alice Claycomb, Cindy Kranich and [mellow dog]. In front is Irene Brady.



Left: Allison Jakubauskas supervises maggot painting at a Great Plains workshop.

Right: GNSI members from Michigan and Indiana, as an informal "group", got a surprise private tour at our Artists' Retreat at Pierce Cedar Creek Institute in Hastings, MI. Guide Richard Centala points out tiny blooms in a protected wildflower habitat. Group outings often get you great behind-the-scenes tours!



Bloodroot (*Sanguinaria canadensis*)



Meet our new Membership Director!

Diana Marques has been a GNSI member since 1998, getting involved at her homeland Portugal and continuing to contribute in her second home, Washington DC. As a regular annual conference attendee, Diana shares experiences from her 10-year career as a freelance illustrator and more recently from her doctoral research in digital media, museums and visual science communication.



2015 GNSI ANNUAL CONFERENCE JULY 5 - 11

CONFERENCE OVERVIEW

(Or... What's So Great About Attending a GNSI Annual Meeting?)

Many of us "old hands" at conferences don't need to be prompted to attend, we just ask "when and where?" and head out. Why the enthusiasm? Is it worth the expense, and the time? Of course!

1. CAMARADERIE

Whether you are a seasoned conference goer or a new Guild member, you will find that you will be welcomed at the annual meeting. One thing that distinguishes this group from some others is our welcoming attitude towards EVERYONE, beginner or seasoned veteran, student or Member Emeritus. Participating in an annual meeting is like visiting favorite family members.

2. INFORMATION

The formal programs and presentations provide conference attendees with a wealth of information – from historical perspectives on scientific illustration to discussions of the latest technologies. Whether your interest is in science, art or a combination of both, experts from many disciplines will be on hand to share with you their knowledge and discoveries. Equally as useful as the scheduled events are the conversations and experiences that take place in between them. As designer Bruce Mau says "Real growth often happens outside of where we intend it to, in the interstitial spaces — what Dr. Seuss calls "the waiting place."



GNSI members display their expertise at the Techniques Showcase. L. to r.: Kristie Bruzenak, Scott Rawlins, Kris Kirkeby, and Clara Richardson.



Experience great field trips at a GNSI Conference! The Swan's Island ferry, Bar Harbor 2013 Conference. Photo by Linda Feltner.

3. GEOGRAPHY

Ideally, each year the meeting is held in a different part of the country, and because Guild members are not typically content to remain in a hotel room or on a university campus, special events are planned to take advantage of the unique features of each meeting location. This year, in addition to small town Glenside, PA, conference goers can travel to Philadelphia (northeast, southwest and Center City) as well as rural New Jersey. The East Coast is busy, but there is so much to do so close by!

4. NETWORKING

Some of the most accomplished scientific illustrators in the United States (and often from abroad) attend our annual meetings. Whether you want to watch a demonstration (and ask questions), take a workshop or simply pick the brains of these people, it is a given that new members or attendees will have many opportunities for "interpersonal interaction."

5. INSPIRATION

There is nothing quite like conference week to send you home inspired: to try new techniques, further hone ones you already know, explore new ideas, reach out to others who don't yet know the Guild, and generally absorb everything you have seen and done. It's a wonderful experience!



GNSI 2015 ANNUAL CONFERENCE • July 5-11, 2015

REGISTRATION IS NOW OPEN!

[HTTP://2015.CONF.GNSI.ORG/](http://2015.CONF.GNSI.ORG/)

AUCTION!!

SARA, THE AUCTION FAIRY (yes, GNSI Auctioneers love to dress up!) **REMINDS YOU** to poke around your studio, dig through your collection of miscellany, and send (or bring!) those marvelous treasures to Glenside!

Besides being a total riot, the GNSI Auction raises money for the General Fund and the Education Fund (50/50 split). Have some fun, support the GNSI, and bring home a suitcase full of treasures and trinkets!

You can ship your auction donations ahead of time to:

Jamar Nicholas
Department of Visual & Performing Arts
Arcadia University
450 S. Easton Road
Glenside, PA 19038

Or hand-carry to the conference.

Stop by the Registration Table to drop off your treasures and fill out the auction form.



You never quite know what will be auctioned off! Britt Griswold and Leslie Becker show us how it's done at the Madison conference.

(Download the auction form here: <http://2015.conf.gnsi.org/events/gnsi-auction/>)

HOUSING:



We will be staying in the Oak Summit Apartments, owned by Arcadia University. These apartments have kitchenettes, air conditioning, free WiFi and parking, and include

linens, private (one to an apartment) bathrooms, and private laundry facilities. There are single rooms (limited availability) and 2-4 person accommodations. Parking passes will be available to park for free on campus (stop by the Registration Table).

If you prefer, there are hotels to choose from; the nearest is approx. 10 minutes by car, and offers slightly reduced rates for Arcadia guests.

MEALS:

All regular meals in campus will be served in the Dining Hall, located about 2/3 of the way between the apartment complex and the building where presentations and workshops will take place. Meals will be available as package plans or single meals and commuter packages. There are several on-your-own dining options in downtown Glenside.

GETTING AROUND:

Walking time to campus from Oak Summit is approximately 5 minutes. If walking is difficult for you, you will be able to park near all of the event buildings. There is ample public transportation around the area and to downtown Philadelphia. You can find out more detailed information on the University's website (www.arcadia.edu/admissions/default.aspx?id=577).

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