

Science, Art, and Science Art

Bird Images in the Information Age

You look across the room and notice a large painting of, say, this Great Indian Hornbill (Fig. 1). Impressed, you approach. For an instant, all else fades away—the people milling around, the other nearby paintings, the wall, the frame.

Silent questions arise: Who painted this? When? Do I really like the style? How does this piece fit into the grand scheme of creative work? These are questions that any viewer might ask of any arresting work of art.

But in the case of this painting, it is clear that something else is going on. So additional questions arise—questions about the scene the painting records. What does the artist particularly want me to notice about the bird's behavior and its context? Ah, the fig. Is the bird tossing it, or has it fallen from a higher branch, or has it perhaps been dropped from the bill of another bird? Have I ever seen birds do such a thing? What type of forest is this in the background, and where might it be located? An environmentally conscious observer might also ask whether the species' conservation status is precarious there. Although these questions are related to the earlier ones about art, they are primarily questions about science.

These two sets of questions enrich the aesthetic experience of the art, and you walk away enlivened, informed, and possibly intrigued by the content. These are the aims of science art.

Carel P. Brest van Kempen's *Great Pied Hornbill* exemplifies the kinds of images we find at the crossroads of science and art, a junction, in this case, that

provides a view of the natural environment. Is there a substantial audience interested in this convergence? It would seem so. Many people interested in art are also concerned about the environment and may even be active in the environmental movement. And many people concerned about the environment may be drawn to this genre of painting, even if they are unmoved by much of the rest of contemporary art.



Fig. 1. The Utah artist Carel P. Brest van Kempen presents a Great Indian Hornbill (*Buceros bicornis*) and a puzzle: What, exactly, is the bird doing? Acrylic on illustration board. © Carel P. Brest van Kempen / Science Art.

Darryl Wheye

Woodside CA 94062



Fig. 2. Here the artist unfolds and fleshes out the well-articulated Berlin specimen of *Archaeopteryx*. Discovered 18 years after Darwin published *On the Origin of Species* (1859), it is considered by some to be the most important fossil ever found. Pencil on Bristol board. © Darryl Wheye / Science Art.

One might expect that there would be a sizable audience for this kind of artwork and ample opportunities to view it in a variety of media. And yet venues for the display of science art may be surprisingly difficult to locate. This is not due to any shortage of images, for art that translates science appears to be flourishing, even if it has yet to acquire a conventional name. Perhaps the tag “science art” will catch on, and help us gain access to images, both on canvas (by identifying a work’s genre) and online (by refining searches).



But wait: Why connect science and art when they seem so different? Indeed, more than just different, they are often seen as polar opposites. Science typically proceeds under a system that makes it possible to re-run experiments, and scientists place a premium on the universal legitimacy of their findings. Art, meanwhile, ordinarily proceeds through the skillful use of creative imagination, and artists place a premium on the unique appeal of their style. That is, science and art are about



Fig. 3. Minnesota artist Rick Kelley entitled this painting “On Freedom’s Wing”. It is part of a series featuring the Bald Eagle that has raised over \$40,000 for the Red Cross relief efforts following September 11th. Acrylic on masonite board coated with gesso. © Rick Kelley / Science Art.

180 degrees apart with respect to the principle of replicating the work—it is something that science targets and art vigorously resists. Someone who intentionally replicates a scientific experiment is either validating or invalidating the results of a previous experiment, but someone who intentionally repli-

cates a work of art, like someone who replicates a signature, is either shamelessly copying or committing an act of forgery.

Moreover, science and art usually stir up distinctly different kinds of thinking in their audience. Both encourage an “Ah, now I get it” response, but the “it” tends to be a single prevailing interpretation in science (for instance: *What you see here is an example of the process of evolution*). Sometimes art steps in to amplify this response. My drawing of *Archaeopteryx* (Fig. 2), for example, restores flesh to the most famous fossil of this ancient bird in order to make it easier to see.

But art often permits multiple interpretations (thus: *What you see here is whatever you look for*). Is Rick Kelley’s eagle-dominated landscape (Fig. 3) a commentary on these birds and their rugged habitat? Was it painted in response to a piece of environmental legislation? Was it painted in response to 9-11? Do you think your interpretation is based on how quickly you spotted the flag?

There is, however, a link—what I will call illustrative art—that can join the two kinds of thinking. Such art usually limits the range of reactions experienced by its viewers (*What you see here is what virtually everybody else sees here*). Few among us would not be reminded by Terry Miller’s pencil drawing that a bargain night at the Flamingo Hotel in fact comes at a hidden cost: Flamingos and pelicans may have lost a portion of their habitat to accommodate motel guests (Fig. 4). Moreover, the iconized flamingo may well have been driven from its roost so that humans might have one. If the content of an image shows an aspect of science (in this case, a snapshot of modified habitat), and the style shows it convincingly (depicted, as here, with such a deft hand that it can be mistaken for

a real snapshot), then illustrative art is likely to fall at the crossroads that defines science art.

So, despite their apparent differences, science and art can serve each other: Art can illuminate science, science can inspire art, and, on occasion, vice versa.



When artists invite us to inspect science, they position us to leap past the technical terminology used by specialists. Typically, it is the aesthetic qualities of a piece of art that capture our eye and prompt us to take that leap, as beauty, elegance, novelty, harmony, order, and pattern draw us into the work and encourage us to probe its content.

Just how aesthetic qualities catch the eye has been debated for millennia. Some assert that aesthetics erases the distinction between objective and subjective, taking with it the boundary between rationality and emotionality (Tauber 1996). If so, then other boundaries are likely to disappear, too, such as that between calm and ferment. Perhaps this is at work in Viktor Bakhtin’s painting, where we see the wing poised to outpace the snout (Fig. 5). Whether or not you agree on the mechanism, when science art featuring the environment lures us into exploring ecological relationships such as the predator and its potential prey shown here, it can lead us to a better appreciation of biological diversity, complexity, and the tension that underlies balance. Some believe that this ability of aesthetic experience to erase divisions underlies scientific insight itself (Tauber 1996). Indeed, science art sometimes allows us to witness the fervor of discovery and the hu-



Fig. 4. This drawing by the Maryland artist Terry Miller led “Sources” editor Rick Wright to muse, “We drive off the birds that are really there, like pelicans, to replace them with creatures of the imagination, like flamingos; it’s a bit like destroying a crow roost for a housing development named *Ravenscroft*.” Pencil on Bristol board. © Terry Miller / Science Art.



Fig. 5. The Wisconsin artist Viktor Bakhtin portrays the last moment of calm before the predator's storm, highlighting the adaptive advantage of the wing as it provides a "leg up".
Watercolor on masonite. © Viktor Bakhtin / Science Art.

man aspect of science, an aspect usually suppressed in the effort to keep experimentation and analysis "transparent".



Without a general name (such as "science art") to denote art of this type, searching among its many representatives is not easy. Take journals, for example, where images have long peppered the publication stream. The number of images published in a journal typically increases with circulation size, so it ought to be relatively straightforward to find published images, but it is not.

Until recently, image use has been limited mostly by printing costs. Since most scientific studies are published in primary (peer-reviewed) sources with modest printing budgets, images are relatively uncommon, and are usually found on the journal cover, as a frontispiece, or noticed by luck when paging through a volume. In this connection, it is worth noting that in the year 2001 more than 3,600 bird-related publications (in English alone) appeared in more than 85 journals (Wheye 2002). When a study makes it into the popular press, these secondary sources typically recast the material for a broader, non-specialist audience, and may well provide an accompanying image. Although the larger printing budgets enjoyed by popular periodicals and publishers allow for the publication of more images, these images, too, are still spotted by luck or by laborious page-turning. If a study also makes it into tertiary sources (those quoting or citing secondary sources), it may well be accompanied by an image, since the organizations behind these publications usually have well-funded art departments, and

count on images to capture the fickle, often jaded, attention of the casual reader. But, once again, finding such images typically remains a page-turning effort.

Now, with the expansion of online access to journals, publishers across the board can economically add images to the supplementary material they present electronically, and hunting for images is improving to some extent. But it could be better: If artists would add the tag "science art" to the copyright line when they publish a picture, then searching the web for such images could begin to approach the efficiency of searching for text. For example, by mid-2004 a Google IMAGE search for "Great Blue Heron" and "painting" returned 40 results, and one for "Great Blue Heron" and "art" returned 260, whereas a Google WEB search for the same returned 4,360 and 19,700 results, respectively. Clearly once the convention is established, adding the words "science art" to a search will radically refine it.

Science art is also featured in books (and on their dust jackets), newsletters, bulletins, advertisements, postcards, posters, calendars, and so forth. It is also seen on television when documentaries and news programs either commission new work or use previously published pictures. Adding the tag "science art" to the copyright line might help in all of these cases as well.

Of course, exhibits—whether small and transitory or large and permanent—also display science art that, like the pictures shown here, depicts aspects of the environment. Temporary exhibits bring viewers into museums, galleries, and public spaces of all sorts, from academic centers and the offices of governmental and non-governmental organizations to corporate headquarters. Events sponsored by research stations,

zoos, nature centers, recreational facilities, and companies producing sporting and outdoor equipment, among others, which include exhibits of science art, offer aficionados an added incentive to attend—and a pleasant surprise for those new to the genre. Permanent, publicly accessible collections also house science art, as do the homes of patrons and private collectors, where, though few of us will ever see them, such artworks may greatly influence those who do. Luckily, with access through the web to paintings like the five seen on these pages—some of which reside in private collections—we can ponder from the comfort of home the questions they raise. What was it about that hornbill? Ah, yes, the fig.

Science art has a knack for getting us to ask questions that might have answers, and artists who produce it have a knack for describing their work with precision. In the case of the hornbill, for example, the artist, Carel P. Brest van Kempen (2004), has written the following:

Usually occurring in pairs or small family parties, these birds sometimes congregate in groups of over one hundred to feed in large fruiting trees. Fruits, mostly figs, make up the bulk of their diet. These are normally consumed one at a

time—in the manner depicted in this painting—tossed into the air, and caught in the throat.

Brest van Kempen's image pleases the eye, while his description guarantees that our interpretation stays on track and that we understand that the depicted behavior is real.

Can science art evolve into a bona fide school? Its development depends not only on the involvement of dedicated artists and the attention of critics who influence the art establishment, but also on curators, editors, collectors, granting agencies, and art historians, as well as an appreciative general audience, and the continued strong reception by those who know and love the subject matter—in our case, birds. With each segment pressing forward, how can it not succeed?

Literature Cited

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- Tauber, A.I., ed. 1996. *The Elusive Synthesis: Aesthetics and Science*. Kluwer Academic Publishers, Boston.
- Wheye, D., producer. 2002. *Artist Registry for Ornithological Researchers*. <artist-registry.stanford.edu>. Website accessed 12 June 2004.

Postscript: For More

To see more examples like those shown here, visit the *Artist Registry for Ornithological Researchers* website <artist-registry.stanford.edu>, where you can see the work of 100 artists, lists of 3,600 bird-related publications in 85 journals, and links to the registry's array of sponsors. These sponsors include the American Birding Association and the Leigh Yawkey Woodson Art Museum, whose yearly international "Birds in Art" show, catalog, and traveling exhibition feature many of the best of today's bird artists. Who are those artists? You will find wildlife artists who have extended their expertise to include ecologically informative contexts; academics who have broadened their expertise to include the arts; and gifted bird enthusiasts who are compelled to share a favorite subject. To encourage greater visibility of science art, urge editors to publish it; curators to exhibit it; and fund-raising committees to develop programs that exchange original art for donor support.



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