

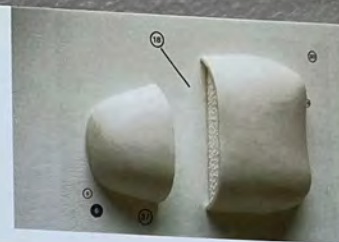
HOLLIDAY.T.DAY

HOLLY DAY retired in 2000 from the Indianapolis Museum of Art where she had been curator and senior curator of contemporary art for 15 years. She received her B.A. degree from Wellesley College and her M.A. degree from the University of Chicago, where she wrote her thesis on the David Smith. Before joining the IMA staff, she served for five years as curator of American Art at the Joslyn Art Museum in Omaha. In her twenty-year career as a museum curator, she organized or co-organized more than sixty exhibitions, including six major traveling exhibitions.

Day was well known for her articles and reviews that appeared in the 1970s in *Art in America* and the *New Art Examiner*. In 1979 she received a National Endowment for the Arts grant for her writing on contemporary art and has served on numerous panels for the NEA. Most recently she has contributed the lead essay on the history of sculpture in the Midwest for the Encyclopedia of the Midwest, soon to be published by Ohio State University.



ATIONS



BIOMIMICRY, THE THEME OF THIS EXHIBITION, refers to the recent interest of the scientific community in examining how biological substances and systems can be mimicked or provide inspiration to solve technological problems, to develop new materials, or to make production of food or other human needs more efficient, less wasteful of resources and less destructive of the natural world. The exhibition theme and its subtitle, *The Art of Imitating Life*, suggest that artists either are selecting subject matters that reflect a natural world uncovered by scientific investigation or are exploring nature using scientific methods. While neither approach is new in the history of art, it is very different from that of artists of the previous generation. It is different because today's artists have changed their philosophical understanding of the world, just as today's scientists have a different view of the world. Both are far more technologically sophisticated as well.

Looking at the work of Peter Voulkos or Jackson Pollock, one is aware of the interest each had in the raw earthiness of their materials, a heroic scale, a process involving a bold macho performance, and most importantly, a resulting art work that would express an intuitive, deep-seated human connection to the abstract rhythms of the primeval world. A quest for first things or a single source that explained the world likewise drove scientists, although their methods differed. DNA, quarks, and the Big Bang theory all represent ways of understanding the fundamentals of the natural world that were unheard of in 1940.

As new technology has arisen to examine the building blocks of the natural world, artists' subject matter has greatly expanded, as have the tools and materials to produce images. Concurrent with the discovery of fundamental entities has come the realization that no system exists in isolation. In chaos theory small changes can produce big results. Small changes in ecosystems can have huge effects on the reproduction systems of organisms within the system, the viability of the system itself and on other ecosystems that may be many thousands of miles away.

In contrast to the intuitive, emotive and sensual relationship Voulkos and Pollock had with an inchoate Nature, today's artist looks at nature as a sophisticated, interdependent, complex system developed over eons. Humans are but one of many organisms in nature. Biomimics believe that appreciation and exploration of these systems, seen and unseen, can perpetuate life on our planet and provide a deeper understanding of our own human existence.

Fragmentation, diversity, interdependence and complexity, all part of the biological world, have been adopted by artists as qualities art should have. In contrast to the earlier generation of artists who tended to discard the art contributions of Post-Renaissance Europe as being too commercial, or hierarchical, or overly refined, artists today have a more inclusive attitude. They are reexamining and reusing traditions that had been previously seen as dead ends. Exploration of the natural world is again as important as it was in 1500. If the Renaissance artist dissected the human body to learn its inner structures, then today's artist can explore the body through virtual computer images produced by magnetic resonance or other modern technologies. If Leonardo da Vinci could design complex systems to control floods or defend cities, then artists today can and do build models of ecosystems using the latest technologies. If Europeans could discover exotic forms of life through exploring the seven seas, then today's artists can find and explore the world electronically on the Internet. If Galileo could see new images through a telescope and Anton Leeuwenhock through a microscope, then today artists can see virtual images of life under the sea or inside the body. How we see and acquire knowledge of the world is radically different from 50 years ago, as well as 500 years ago.

Art inspired by the expanded repertory of biological images made possible by today's technology is a significant part of this exhibition. Such images are usually invented and are starting points for the work. The artist may look to a biological image for principles of how an abstract form may grow or function, but the true subject is not the coral, or flower, or bone structure, or animal or organ invoked or recreated or re-imagined in clay, but rather these subjects are surrogates for those principles that viewers may learn from using nature as a teacher. For example, using the physical example of how a certain organism may grow in nature, the artist can use this principle to make a work that, through association, invokes something poetic or metaphysical or psychological that interests the artist.

For artists, exploration includes experimentation with new materials and techniques as well as reexamining older ones previously discarded. Complex ceramic mixes, including porcelains, and different firing techniques and surface treatments—that in the 18th century were the province of alchemists hired by European royalty and guarded as



state secrets—have become the rule today rather than the exception. Today, artists are becoming alchemists again as they experiment with additives to their clay mixes and with complex surface treatments. Technical sophistication seems appropriate to subject matter that is inspired by science, as well as to the climate of the present day.

In the twentieth century, porcelain and techniques like slip-casting had such a strong association with the commercial production of chinaware that they were considered antagonistic to ceramic artists' goals. Many of the artists in this exhibition employ porcelain in their work. The properties and history of porcelain suit the subject of these artists.

Porcelain, originally invented by the Chinese in the ninth century was considered technologically superior to other clays because it was vitreous, translucent, and strong enough to be fashioned into delicate vessels and sculpture. The Europeans could not make true hard-paste porcelain until the early 1700's, when an alchemist, J.F. Böttger, discovered the secret in Meissen, while working for Augustus II, Elector of Saxony and King of Poland.

Coincidentally, the origin of the word porcelain is apt to the theme of this exhibition. Reputedly the word was coined by Marco Polo because the translucent luster of Chinese porcelain resembled part of a biological organism, the interior of a cowry shell. Thus, he called the Chinese porcelain *porcellana*, Italian for "like a cowry shell."

Today's artists have the luxury of being able to draw on a plethora of images, materials and techniques that they can layer together into a rich visual experience for the viewer. Their choice of image, material or technique reflects its suitability to the subject rather than some pre-established appropriateness for its use in making art.

Brian Boldon's 20-foot-long wall of 14,175 porcelain cubes, *Visible Human*, is, like so many works in this exhibition, a labor-intensive, technically sophisticated multipart structure. Drawn from a digital database for the human body created by the Visible Human Project, the image represents part of a lateral slice through the part of the skull that includes the eyes. Each porcelain cube represents one pixel of the image. Enlarged to 20 feet across and lit from behind, the translucence of the porcelain cubes provides an arresting image of that crucial human organ, the eye. Paradoxically, it is not a view actually seen by one's eyes, but a virtual electronic image created with medical technology.



Perhaps more than any other work in the exhibition, this work addresses how different the visible world is today from, say, Durer's or Leonardo's. Electronic eyes that extend the range of the human eye are magical and wonderful, and also somewhat haunting and dehumanizing, as the physical presence of the object has been replaced by a pixilated image on a flat glossy screen. *Visible Human* reestablishes the physical sculptural presence of these electronic images.

Ying-Yueh Chuang's piece, "+", celebrates nature's own order working in harmony with an age-old construct, the garden. The strict geometry of each of the circle or square sections recalls the formal order of a European knot garden except that the order within each geometric unit echoes the order found in plants themselves rather than an artifice like a knot. Each circle provides a magnified view of a single flower as it unfolds to reveal its petals, stamens, pistils and bracts, rather than containing a variety of different plants arranged in a pattern.

The color harmonies of pinks, gold, and muted greens are both sensually lush and decorative, like a flowered wallpaper or textile. The mechanical structure of acrylic rods reinforces the strong geometric pattern, and simultaneously emphasizes the individuality of each organic form even within a single type of form. The dual role plants have in a garden, as units of a decorative pattern and as natural organisms, is integral to this work of Chuang's.

Gary Erickson's spiral forms echo the rhythms of life. The Spanish titles are his homage to Afro-Cuban musical rhythms. In some works, worm-like creatures twist around each other like laid ropes. In another work, pieces are laid out in a spiral pattern on the wall. There, interspersed among "rocks," are entwined forms that seem to have hatched and are about to parachute down to the floor.

Erickson's spiral forms are not the expansive Fibonacci series derived spirals found within the chambered nautilus. Rather they are tight curls like coiled snakes. The coil-built forms writhe and wrap around each other so that the making process mimics the product formed.

Rain Harris's elegant *Poison Bottles* are aptly named. Like Venus flytrap plants, their seductive surfaces belie their deadliness. Their floral forms hint of sweet smells. Yet, like a rose, sharp, pointed barbs suggest there is a price for beauty. Decorative additions of



gold, pearly surfaces, and floral decals recall the traditional enticements used by bottlers of cosmetics, perfumes and other beauty aids. Although Harris found inspiration in historic beauty potions that were poisonous, today's women are still using poisons in the name of beauty. The most notorious is Botox.

Jason Briggs's amorphous organisms are truly repulsive. Bits of hair embedded in the clay punctuate the unpleasant sensations that emanate from these strange forms suspended on gauze hammocks. Repulsiveness is, of course, in the eye of the beholder and is a difficult emotion to elicit from the viewer with a lump of fired clay, but Briggs is able to conjure it up in such a way as to make the viewer question why something that looks like it is part of the natural world should be repulsive. The presentation suggests that the amorphous blob has been extracted from something else or is some part of the body that is being examined under a hand lens and normally not seen in everyday contact with other people.

Why should we deem something that is part of the body, like hair, ugly if it is examined closely, but beautiful if it is seen from afar?

Scott Chamberlin fashions in terra-cotta imaginary body organs that drip and catch fluids. In contrast to Briggs's horrific textured organisms, these plain pieces have the aura of fetishes whose excretions are sacred or sacrificial. The surface tension of these sac-like forms is pregnant with its burden of fluids, like a cow's udder full of milk. The basic simplicity of the terra-cotta material re-enforces the idea that excretion of fluids is fundamental to human existence. Placing the multipart work on the wall relates it to both the human figure, and water spigots and basins that are found in garden walls that are used to refresh both plants and gardeners.

Karen Gunderman, using the example of some kinds of organic structures, creates a ceramic filigree of nets and tubes that suggests that the clay grew as a plant would grow. She gives individual sections of each of her works a fairly simple exterior shape. In contrast, the interiors are impenetrable mazes of twisting linear forms surrounding empty space. The greens and blues glisten like a verdant growth of plant life.

Mia Fetterman-Mulvey's white vitreous china deer (*cervidae* in Latin) and tree trunks installation combines two different aspects of animals and plants: one, the visible surface appearance, and two, the unseen internal working structure. The first recalls the

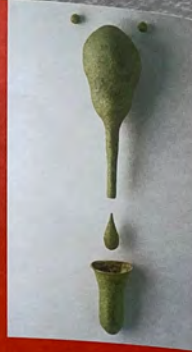
THE ALCHEMY OF ART AND SCIENCE

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ALCHEMY: al-che-my (n): a power or process of transforming something common into something special.

MARK D. PESCOVITZ, MD, is Professor of Surgery and Microbiology/Immunology and Director of Organ Transplantation at Indiana University School of Medicine. Currently Dr. Pescovitz performs renal, pancreatic, and liver transplants in both children and adults. His research interests include porcine T-cell immunology, B-cell immunology, and clinical transplantation. Dr. Pescovitz serves on the editorial board of Transplantation and has authored more than 170 scientific publications.

In the non-medical area, he is a member of the Dean's Council, Herron School of Art, and serves on the Board of both the Indianapolis Opera and the International Violin Competition of Indianapolis.



MARK PESCOVITZ MD

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WITH ALCHEMY AS AN OVERARCHING THEME of the 2004 NCECA conference in Indianapolis, David Russick and Michel Conroy focused on a relatively new field of scientific inquiry as the theme for the NCECA 2004 Invitational Exhibition. The field is biomimicry. While not the initial developer, the person who has done the most to promote the field of biomimicry is Janine Benyus, a writer and naturalist living in Montana. To quote Benyus in her best selling book, *Biomimicry: Innovation Inspired by Nature*, "biomimicry is the process of learning from and then emulating life's genius. After 3.8 billion years, life knows what works and what lasts here on Earth." The science of biomimicry studies the solutions to complex problems discovered by nature, which allowed nature to survive and advance. Biomimics, practitioners of biomimicry, then imitate or emulate these solutions, applying them to human problems. Biomimics are learning from other species on earth. Their goal is not to control nature, but to learn from nature.

In her book, Benyus establishes a set of rules that she believes, if followed, will allow for sustainable existence:

- Nature runs on sunlight.*
- Nature uses only the energy it needs.*
- Nature fits form to function.*
- Nature recycles everything.*
- Nature rewards cooperation.*
- Nature banks on diversity.*
- Nature demands local expertise.*
- Nature curbs excesses from within.*
- Nature taps the power of limits.*

The artists selected for this exhibition make use of these rules in direct or subtle ways in their creations. The very choice of ceramics as a medium through which to explore the field of biomimicry is most fitting, since it is a most natural of compounds.

David Oakey, an artist and early follower of Benyus, has noted that shapes in nature are dependent on their function, and are only as big as they need to be to fit the function. He contrasts this with human designs, which are very geometric and often quite large. Nature fits form to function. In nature's world, there are no natural squares or rectangles, there is no perfect flower and there is no solid color. It is a diverse system composed of modules where each module is slightly different in color and structure. Biomimicry is about the interconnection of these modules.

While ostensibly a new field, Eastern cultures, particularly the Japanese, have been more in tune with nature in the manner of biomimics through a concept called wabi-sabi. Leonard Koren (*Wabi-Sabi for Artists, Designers, Poets & Philosophers*, Stone Bridge Press, 1994) describes *wabi-sabi*, as, "a beauty of things imperfect, impermanent, and incomplete. It is a beauty of things modest and humble. It is a beauty of things unconventional". *Wabi* and *sabi* are two aspects of observed nature. He concludes that "in the West we have tended to analyze the arts in scientific terms and according to design principles, while in the East the tendency has been to evaluate the arts in terms of emotional reaction in aiding us in our awareness to our surroundings." Note the similarities between the concepts of *wabi* as he lists them and biomimicry as described by Benyus:

Wabi helps us to see through and beyond the dehumanizing climate of technological society.

Wabi's role is in achieving a state of mental equilibrium.

Wabi's concepts are eternal and universal.

Wabi is elegant because of its philosophy of understatement—less is better.

Perhaps an obvious question for the reader of this essay is why a transplant surgeon would write an essay for an art exhibition catalog on the field of biomimicry. It might seem that the very act of transplanting an organ from one individual to another is the ultimate example of man trying to bend nature to his needs. However, while the success of transplantation has increased dramatically over the years, our forcing nature to do what we want has led to undesired side-effects from the immunosuppressive drugs, particularly



infections. The harder we push to achieve our goal, the harder nature pushes back. The biomimics of transplantation medicine, not that they would call themselves such, have been studying why people do not reject themselves, a phenomenon called self-tolerance. The ultimate goal of transplant research is to find out how nature achieves self-tolerance and then apply it to organ transplantation.

When David Russick asked me to write this essay, we agreed on two major issues:

1. I would not have to use a thesaurus to write it.
2. He would not turn around and ask me to let him do a transplant.

I have accomplished the first; I plan to hold him to the second.

The following reviews of the invited artists' works are based on the personal statements each provided, coupled with viewing three-dimensional work as a two-dimensional transparency. I state this, not as an apology, but as a statement of this reviewer's limitations.

Brian Boldon was strongly influenced by the Visible Human Project. The Project is the creation of complete, anatomically-detailed, three-dimensional representations of normal male and female human bodies combining computer tomographic (CT), magnetic resonance (MRI) and thin slices of normal male and female cadavers. As a result of this interest, his is the only work in the show dealing with biomimicry of the human form. The feel of his work is one of a fusion of the work of Chuck Close with an atlas of computer tomography. It is, however, somewhat more abstract than that of Close, as even the lay observer can identify a face in the work of Close when sufficiently removed spatially from the work. Without some knowledge of anatomy, the subject of Boldon's work would be quite obscure.

Beth Cavener Sticher comes upon her interest in biomimicry the old fashioned way—she inherited it. She is the daughter of a ceramic artist and molecular biologist. Her two works are at the same time both straightforward and confusing. *Sugar Encrusted Boar* is a male pig on its side. One hardly imagines that such an animal would be sweet or the least bit enticing to approach. To quote her, "I am especially excited about having the opportunity to show the Sugar Boar...the piece is really stunning in person...it practically

early-eighteenth-century, mostly life-sized porcelain sculptures of animals and birds made for Augustus II's Japanese Palace in Dresden and intended as a complement to Augustus's menagerie of live animals. At this time, royal menageries, whether live, stuffed, or made from porcelain, were regarded as microcosms of the universe and a symbol of royal enlightenment, according to Maureen Cassidy-Geige in her October 2003 article in *Antiques Magazine*.

Fetterman-Mulvey's pair of deer resting in the forest are, like Augustus's, about the relationship between animals and humans. In Augustus's time, animals were collected and studied as curiosities. But, unlike his animals, these sculptures reveal, through apertures visible in the rear, a complex interior structure of cells and organs. Suddenly these trees and deer are no longer part of a menagerie, but share with all living organisms, cells and organs that seem more alike than exterior appearances do and raise questions about our relationship with the natural world.

Beth Cavener Stichter uses animal body language and distorts the natural form, texture or size of her animals to comment on the effect of the natural world on human behavior or vice versa. Refined sugar crystals, perhaps symbolic of American culture, have submerged a wild boar and turned him into a relaxed sleeping creature, looking as domestic and docile as a house pet. In *The Inquisitors*, two goats joined by a single head stare at the viewer as if accusing the viewer of meddling with nature. Who is the odd one, the viewer or the goats? Relating human body language to animal body language makes for two very unsettling sculptures.

Brad Miller uses growth habits of plants, like seaweed, as a model for making airy sculptures of clay. In *X*, a rounded piece of white porcelain acts as a pincushion for about fifty metal rods. Atop each rod is a different amorphous porcelain form. In the more recent stoneware pieces, *Reach* and *Ditta*, Miller conceals the rods that support the various projecting parts of the sculpture. The effect is to make the sculpture read as an abstract sculpture with a biological ancestor rather than a replica of a natural organism. The textures and natural colors of the clays and additives that Miller uses contribute to the natural life evoked by the sculpture.

Eva Kwong enlarges to a visible size small creatures of the natural world that are not easily seen, or are seen only with the aid of a microscope, in her multipart work *Bacteria*,



Diatoms, and Cells. Ranging from glassy fish eggs to slithering worms, this cornucopia of shapes and colors presents a bountiful display. *Loving Sprouts/Fungi*, a depiction of three fungi sprouting from a common base, reflects the beauty that may be hidden from one's eyes in daily life. Each of the green polyps or papillae sprouts little rosy buds at its tip. The implication is that these three are a few of many. Like taste buds on the tongue, Kwong suggests that in life, biofragments can give pleasure visually as well as functionally.

Michael McKean's work is more about the journey to explore nature than the result of the exploration. *The Ghost Whale Circuit* creates a metaphorical universe for the viewer to circumnavigate. Each object in the work is a stand-in or code for some fragment of the universe. Tiny cells, as well as giant nebulae, inhabit this fascinating place. Holding powerful speakers capable of tremendously loud sounds, the giant console is a kind of life force that permeates the universe. This selection of disparate materials and objects, laid out on a "raft", is nevertheless held together by a tight formal visual order that is emblematic of Nature's order. Clay is the glue that sticks things together, the dirt that sticks to things, and the stuff that makes graven images for the world.

While many people know what whales are, very few have ever seen one, as these giant mammals circle the globe deep beneath the ocean waters. Consequently, McKean thinks of them as ghosts. He literally posts this "ghost" over a blue carpet ocean. The whale, small compared to the cosmos, yet large compared to the small objects below him, embodies the nature of the unknown world.

McKean's work evokes the aura of that child-like innocence with which we once explored the world. It allows us to be children again and to rediscover that the universe is a wondrous place.

With a few exceptions, the pieces in this exhibition tell the story that the natural world, whether large or small, is a place to marveled at and imitate. Those exceptions carry an undercurrent of human malevolence at work in nature's paradise. The exceptions are powerful and necessary reminders that we do not always appreciate the world as we should. Antidotes to these ills are many, but the best medicine may be McKean's suggestion that one should "make the thing that you believe, or the thing you really want." ■

MIA FETTERMAN-MULVEY

BIOMIMICRY, INNOVATION INSPIRED BY NATURE, is a notion that fits my work well. If environmental reality is pushing us towards this science, then our deepening knowledge of nature is pulling us. In my work I am inspired by science, and in it, our ability to discover wonder. In nature, we are faced with a familiar, but superficially understood, natural world. It is through such discoveries of wonder and beauty that we deepen our understanding of the inner workings of nature and how they may be applied to our lives.

In *Commentary on the Metaphysics of Aristotle*, Albert Mangus wrote: "Wonder is the movement of the man who does not know, on his way to finding out, to get at the bottom of that which he wonders and to determine its cause... Such is the origin of philosophy." Under this definition, wonder is not a static moment; it is the process from the unfamiliar towards understanding, a marvel that incites a desire for the realization of truth.

I am interested in the illustrative, educational representation of objects that reflect the notions of wonder and natural beauty. Nature is an infinite spectrum of such ideas. Through science and mathematics, this world can be delved into and discoveries of wonder can be made. Through the investigation of scientific processes and contexts, I can present real and imaginary objects that hint at the multi-layered discoveries of wonder, innovation and beauty found in nature. I seek to present the unknown and make the irrational rational.

CREATED IN ARTS/INDUSTRY, A LONG-TERM RESIDENCY PROGRAM
OF THE JOHN MICHAEL KOHLER ARTS CENTER. ARTS/INDUSTRY TAKES PLACE
AND IS FUNDED BY KOHLER CO.



TITLE	<i>Cervidae</i> , (2005, two views)
MEDIA	Vitreous china, porcelain, acrylic
SIZE	96" x 48" x 40"