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ArchitectureBoston

Working Solo

Nanotechnology

Small Houses, Big Books

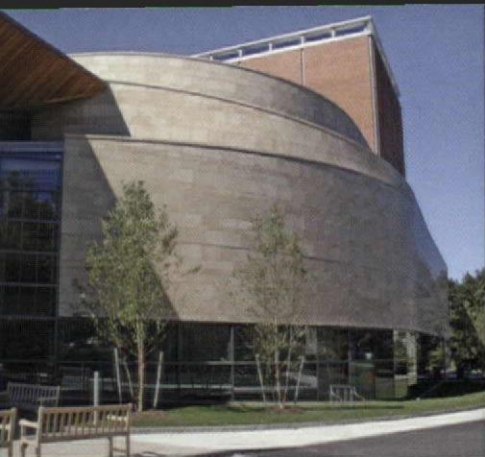
SMALL

JULY•AUGUST 2008

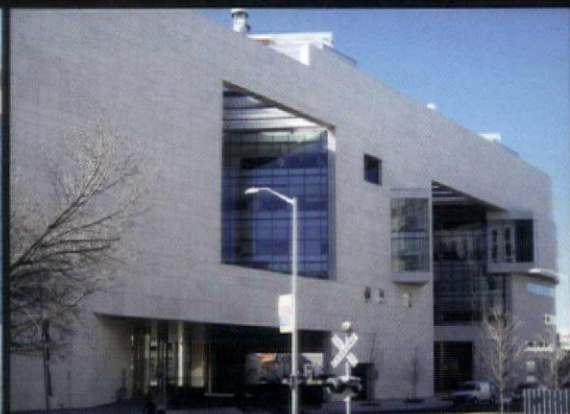


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Cover image: nBots by Peter Yeadon. nBots are nanoscale robotic devices that rapidly self-assemble into mass, machines, objects, and environments. Each is capable of securing itself to its neighbor, to extend power and communication throughout the network (see page 26).

This page: *Fantastic Voyage*, 1966. Film still © John Springer Collection/CORBIS.

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Small-Minded

We know you've been waiting patiently all this time — since March 2004 to be exact, when *ArchitectureBoston* published the “Big” issue. Gifted with intelligence and foresight, our readers just *knew* that one day, the “Small” issue would arrive.

And so here it is, with a nice bit of synchronicity to boot: our “Big” cover featured an image of the surface of Mars, marking the recent success of a very big idea: the landing of the exploration rover Spirit. This issue goes to press just days after the landing of the Phoenix Mars lander — a very small object only five feet in diameter.

*

Within that introduction lies the essence of “big” and “small”: they are relative terms; one does not exist without the other. And in our culture, they come loaded with implied values. Bigness, as in a big idea, is usually lauded; smallness, as in the small size of the Phoenix, is considered merely a bit of data.

In 1973, economist E.F. Schumacher took on this cultural bias with his book *Small Is Beautiful* (see page 50). The title, with all its '60s sock-it-to-me period charm, has survived in the language as a sort of shorthand for a point of view that is often too readily marginalized, even though it has perhaps more relevance now than it did 35 years ago. Small seems to carry a whiff of either the countercultural or the precious, rarely having much influence on mainstream tastes and choices.

And yet there are signs that attitudes are shifting, however slowly, and like all cultural trends, beginning to influence what and how we build. Science and technology have brought new appreciation of the small, whether in nanotechnology, which has introduced entire new classes of materials, or in electronics and digital devices, in which “small” is usually synonymous with “elegant.” The business world, too, has learned to embrace attributes of the small, even in a time of ever-larger merger and acquisition deals. Small firms compete globally; consultants working from home offices no longer bother to try to conceal their non-corporate locations. A small office is not a sign of failure.

Even so, the super-size-me culture is hard to beat down. With the 1998 publication of *The Not So Big House*, Sarah Susanka FAIA became architecture's E.F. Schumacher. Susanka confronted the bloating of the American house (which has grown not only in area but also in volume) and demonstrated that the qualities that many homeowners *thought* they were attaining in larger homes could be found with greater satisfaction in much smaller structures.

Unfortunately (and also like Schumacher), Susanka so far seems to have been unable to sway mainstream culture, which, in our society, is often shaped by celebrities. No one was particularly shocked when Red Sox owner John Henry paid \$16 million for developer Frank McCourt's 13,000-square-foot mansion, with plans to tear it down and build what is reportedly an even bigger house. Every era has its excesses, and stories such as these will likely someday be recounted with the same distaste and amazement with which we describe 16-course Victorian meals replete with oysters, soup, fish, sweetbreads, casseroles, roasts, game, poultry, ices, cheese, puddings, and dessert. (Of course, every era also has its cultural critics — one Victorian observer sniffed that the custom of serving as many as 12 varieties of wine at a dinner was ostentatious, four being “quite enough.”) It now seems likely that the American appetite for bigger and bigger houses will be sated only when celebrities link HVAC consumption with global warming; Hollywood stars driving Priuses surely helped to make hybrid cars popular even before the recent surge in gasoline prices.

“Big” and “small” are relative terms, and in our culture, they come loaded with implied values.

A focus on “small” is not an exhortation to return to Spartan values. But by exploring and legitimizing the worth of the small, we discover more choices and more opportunities: the individual who abhors the megacorporation can find satisfaction and respect in a home office. The tendency of our culture is to pursue the big; by fighting the law of inertia, we all can live richer lives. ■

Elizabeth S. Padjen FAIA
Editor

FIELDturf® Landscape

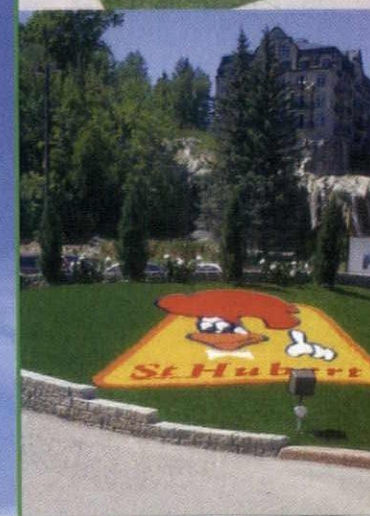
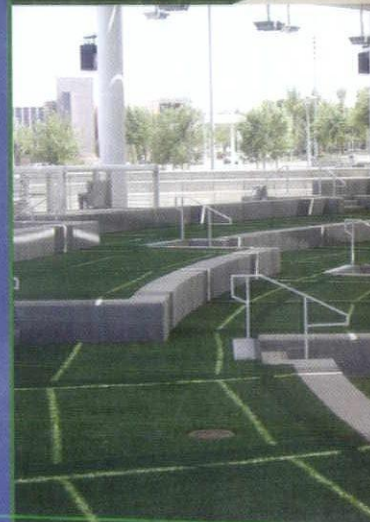
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Thanks to the participants in the “Design and the Reinvented City” roundtable [May/June 2008] for helping to bring the discussion about the creative economy in Massachusetts to the forefront. I’m an industrial designer and co-founder of a design and distribution company based in Boston. Lured by the exciting product design happening here, we moved from Canada in 1997. Boston’s design reputation is in fact firm among designers everywhere; the challenge is to disseminate this information more broadly to integrate it more fully into our culture. For a creative economy to flourish, it needs to be both “special” and “common” at the same time; we want people to take good design as a given, yet we need to maintain its integrity via well-educated, skilled experts. When people walk into one of our stores, they’re startlingly engaged and want to learn about the items that have been designed here; this knowledge adds value to the products and also equips customers with new information to pass on — to “preach,” if you will.

People love to learn about their city and state and how the things that happen here impact their daily lives. With this in mind, a simple, proud campaign of “designed in Boston” would go surprisingly far in helping to raise public awareness of Massachusetts as a design center, and in illustrating the breadth of the design industry in a very straightforward way. The more far-reaching benefits of efforts such as government funding and public programs would follow suit much more smoothly as a result of establishing Massachusetts’ creative economy as common knowledge.

It looks like we have a self-driven design challenge on our hands — but who better to tackle it than entrepreneurial designers themselves? Think about how great the posters will look!

Stefane Barbeau
Vessel
Boston

In the May/June 2008 roundtable discussion [“Design and the Reinvented City”], the participants spoke about the potential of the design industry as an economic engine that needs to be fostered and supported akin to our more visible industries in Massachusetts. Though the article was specific to Boston, I believe it is applicable to the rest of the Commonwealth as we search for new forms of revenue and jobs.

One of the greatest potentials I see in the design industry, and something that was touched on by Beate Becker during the discussion, is the ability of design to offer opportunities to our workforce outside of the more visible sectors of our economy: financial services, academia, healthcare, and biotechnology.

I have seen this with my own constituents. Young people in particular, considering training and entry into professional fields, are attracted to technology-intensive career opportunities in design — from graphic design and architecture to industrial, fashion, and web design. As we strive to strengthen our young people’s skills in math and science, design offers a bridge connecting education to real-life application. That experience is what can spark creativity to power innovation. It is where I feel Massachusetts can stand apart from the rest because of our unique population.

If the design industry is to fulfill its potential as a dynamic economic cluster, there is much work to be done in defining, quantifying impact, raising visibility, organizing, and making connections to other industries. On the state level, we have begun this work with a commitment to the creative economy through recently passed legislation, and filed legislation seeking to establish a Creative Challenge Index. We in the House of Representatives have recently reinforced our commitment to the design industry through an appropriation for the Designing an Industry Initiative. I am excited for the future of design in Massachusetts as we work in partnership

to find new ways to foster its growth and see this vibrant industry’s full potential.

Jeffrey Sánchez
State Representative
15th Suffolk District

Readers of the roundtable discussion

“It All Starts Here: The Politics of Planning in a Small Town” [March/April 2008] may be wondering about the outcome of the Hopkinton Town Meeting’s vote on the future of Legacy Farms (the Weston Nurseries site). I am pleased to report that on May 6, and with a very large turn-out, the Hopkinton Town Meeting overwhelmingly passed (87 percent in favor) the proposed special zoning district (Open Space Mixed Use Development district — OSMUD) that will allow the 733-acre Weston Nurseries property to be developed as a mixed-use master-planned community with large contiguous conservation spaces, rather than as a conventional large-lot single-family home subdivision. The OSMUD benefits to the town will include major contributions to the economic, social, and environmental sustainability of Hopkinton through:

- Conservation of contiguous and connected open spaces.
- Creation of a neighborhood-scale retail center.
- Positive fiscal impacts to the town.
- Provision of a wide range of housing types and price ranges, including affordable housing.
- A mix of land uses for commercial, retail, civic, residential, and conservation purposes.
- Continued operation of the Weston Nurseries retail operation and viable agricultural/horticultural uses.

I believe this issue of *ArchitectureBoston* was very helpful to Hopkinton citizens in their consideration of how to vote on the proposed OSMUD for Legacy Farms. This article and the entire March/April issue in general were frequently cited throughout the zoning review process. The roundtable

was particularly useful in presenting the broad range of considerations and viewpoints and the potential ramifications of the choices facing the town.

The land-use planning and community-impact challenges raised in the Legacy Farms planning process are clearly found in other suburban communities confronting growth and development pressures due to changing demographic, socio-economic, and environmental conditions. Hopkinton's experience and process should be seen as an instructive model in forward-looking town planning to which *ArchitectureBoston's* Hopkinton issue made a significant contribution.

Fred Merrill
Sasaki Associates
Watertown, Massachusetts

ArchitectureBoston's recent focus on Hopkinton [March/April 2008] raises some interesting issues, but fails to acknowledge larger, more critical, issues linked to the region's inability to effectively harness the latent capacity within its former "gateway cities" (see "Reconnecting Massachusetts Gateway Cities: Lessons Learned and an Agenda for Renewal" by the Brookings Institution www.brookings.edu/reports/2007/02regionsandstates_muro.aspx).

Yes, it is important to develop near transit and to establish growth centers; however, if we focus on communities that lack proper infrastructure and support for such growth, we are overlooking more established historic centers that have ample gray- and brownfield sites, as well as a tremendous store of civic and cultural infrastructure. Most current literature on the subject shies away from the tired urban/suburban dichotomy for just this reason.

It pains me to see the Metropolitan District Planning Council's myopic insistence on irrelevant metropolitan boundaries in an age of increased regional interdependence. If Boston is to succeed as an emerging global city, it is going to need the help of its former partners from the dawn of the industrial age. Boston, Haverhill, Lawrence, Lowell, Worcester, Woonsocket, Providence, Pawtucket, Attleboro, Taunton, Fall River, and New

Bedford once functioned as an integrated whole. One need only look to better integrated regions within the mid-Atlantic states or to the Bay Area of California for inspiration. San Francisco is now linked to San José by way of an integrated transit system that serves important communities on both sides of the bay and allows greater access to jobs, housing, and education for all. Locally, the extension of rail service to the T.F. Green airport and the South Coast Rail project are steps in the right direction; however, if the notion of Boston as "the Hub" is to be reinvigorated, we need more bold initiatives like these that break down barriers to regional cooperation.

Edgar Adams
Professor
School of Architecture,
Art & Historic Preservation
Roger Williams University
Bristol, Rhode Island

Not only did I thoroughly enjoy reading the recent issue on Hopkinton [March/April 2008] (Carlisle is also facing similar growth issues), one of the citations in your "Site Work" feature finally resolved a major question that has consumed debates within our home for the last six months — where to find the perfect dog for our growing family.

After visiting the Greyhound Friends' website, we visited the shelter the following Saturday and took home Millie, a 3-to-4 year old female lab/greyhound mix. She is extremely mellow and pleasant around our young children (Emily 8, Caroline 6, and Michael 4). Thank you for helping us find a gem of a dog!

Timothy Downing
Design & Co.
Carlisle, Massachusetts

We want to hear from you. Letters may be e-mailed to epadjen@architects.org or sent to *ArchitectureBoston*, 52 Broad Street, Boston, MA 02109. Letters may be edited for clarity and length, and must include your name, address, and daytime telephone number. Length should not exceed 300 words.

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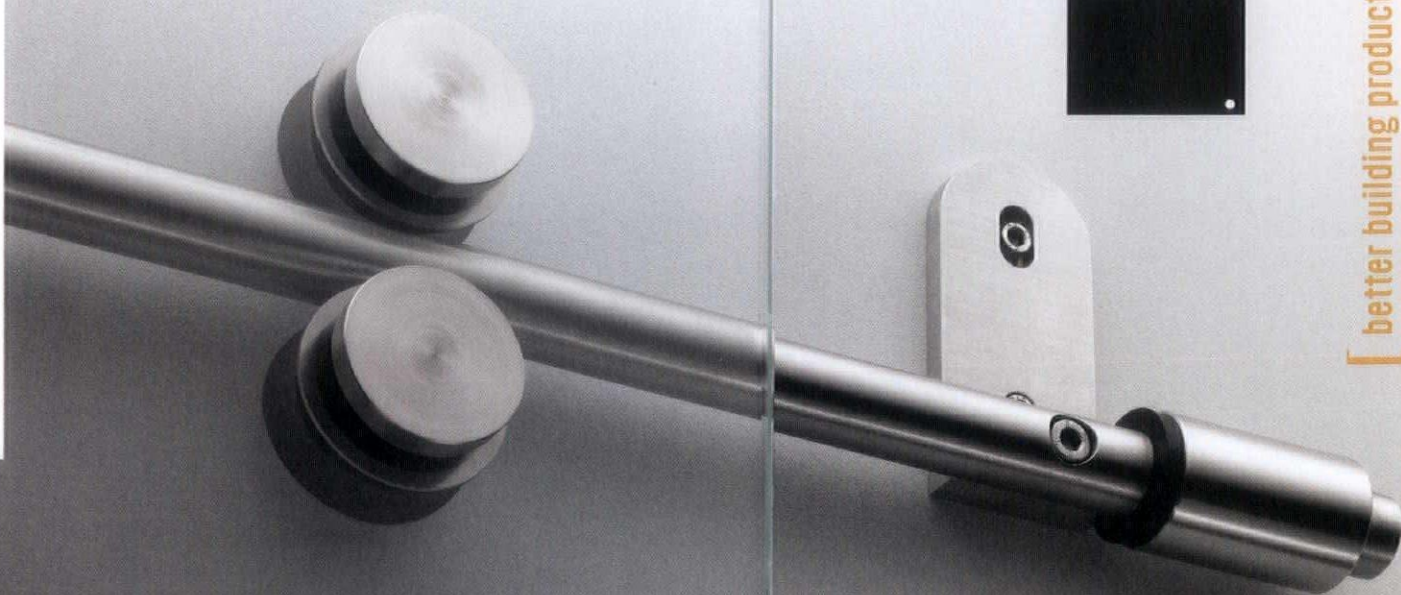
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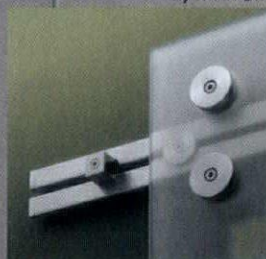
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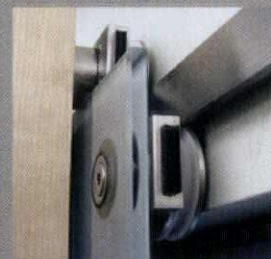
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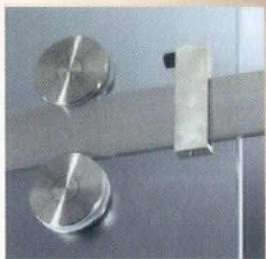
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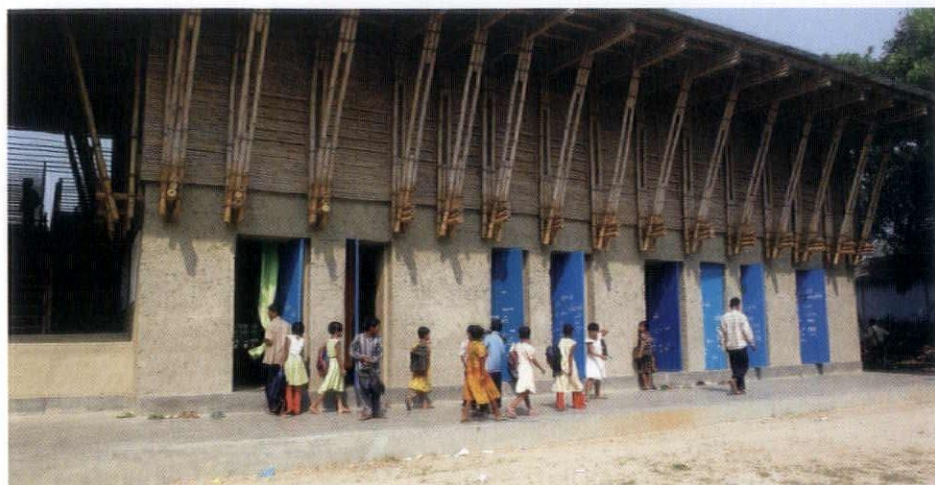
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School in Rudrapur, Dinajpur, Bangladesh. Architects: Anna Heringer and Elke Roswag.
Photo by B.K.S. Inan.

The Aga Khan Award for Architecture: Tenth Award Cycle, 2005–2007

Harvard Graduate School of Design
March 31–May 21, 2008

The Aga Khan Award for Architecture is awarded triennially to projects that address the needs and aspirations of societies in which Muslims have a significant presence. The most recent program recognized nine winners, ranging in scale from the massive University of Technology Petronas in Malaysia to the discreet Samir Kassir Square in Beirut. Varying widely by geography and national identity — from Central Africa to Singapore — the projects underpin the award's engagement of modern Islamic culture's diversity, an apt repudiation to an American tendency to adopt a simplistic view of Islam.

The winners cut across not only political and social lines, but also the *de facto* boundaries of current design practice: landscape versus building, preservation versus new construction, traditional versus modern. By avoiding rigid categories, the exhibition highlights the unique qualities of each project, as with the Royal Netherlands Embassy in Addis Ababa, a cluster of concrete structures that alternate between landscape and building.

The exhibition's consistent presentation (involving photographs, project information, and technical drawings, as well as models, videos, and analytic drawings) ties projects together without erasing their individual qualities. This focuses the viewer on the technical and social characteristics critical to each project, from the modification of vernacular bamboo construction to create a dynamic new school in Rudrapur, Bangladesh, to the role of modern infrastructure in the conservation of the historic city of Shibam in Yemen.

The sheer scope of the Aga Khan winners is a refreshing reminder to designers what successful architecture can be: not merely brilliant aesthetic and formal creations, but the embodiment of the social, cultural, technical, and political features that invisibly overlay every construction site.

For more information on the awards:
www.akdn.org/architecture.

Brent Stringfellow AIA is a senior project architect with CBT Architects in Boston.

Charles and Ray Eames Commemorative Stamps

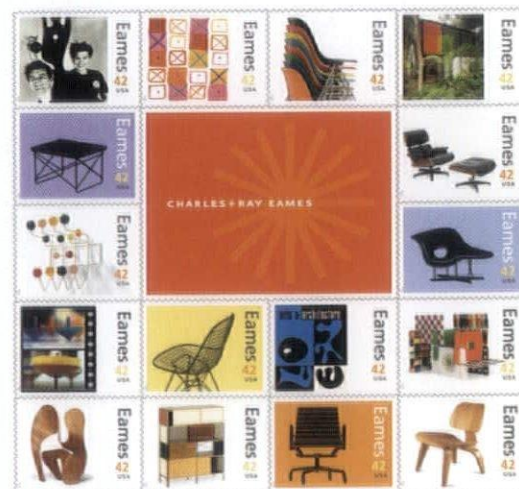
United States Postal Service
First Day of Issue: June 17, 2008

Derry Noyes spent her childhood twirling her friends (and her cat) on Eames lounge chairs until they were dizzy, and hanging her jacket on an Eames Hang-It-All. She built crazy structures with the Eames House of Cards, absorbed by each intriguing image. She sat next to the Eameses themselves at the dinner table and watched as her father, Harvard Five architect Eliot Noyes, projected their films for his family's amusement.

Noyes grew up to be an art director at the USPS; her latest design honors the work of Charles and Ray Eames and was issued at the Eames Office in Santa Monica, California. Convinced that the typical four or five images allowed for a set of commemorative stamps would be inadequate to represent the range of their influence, Noyes persuaded the USPS to take a chance: the Eames set has an unprecedented 16 images. It is a handsome visual ode to two of America's most creative designers.

Brigid Williams AIA is a principal of Hickox Williams Architects in Boston.

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massimpact

CITIES & CLIMATE CHANGE SYMPOSIUM

Symposium One: March 28, 2008

If 75 percent of the earth's greenhouse gases originate in cities, then solutions to global warming are to be found there. The organizers of this ambitious symposium on climate change, which drew multidisciplinary experts from around the world, urged participants to think beyond the scale of individual buildings to the scale of city and region to define the best solutions. Convened as a two-part program by sponsors MIT and the Boston Society of Architects (part two was held on June 9), the symposium is intended to lay the foundations for a design and policy agenda for New England.

The day began with an uplifting keynote address by Jaime Lerner, an architect and former mayor of Curitiba, Brazil. Lerner is internationally admired for his successful implementation of many city-scaled

conservation, transportation, and land-use measures—including a world-renowned bus rapid-transit system, high-density development corridors, and beautiful parks throughout Curitiba. His message: While creating a sustainable city, create an attractive vision to gather wide political support.

Various speakers spoke of energy-efficient buildings, brownfield recovery sites, the Harvard Green Campus Initiative, and visionary Boston Harbor plans. Repeatedly, the theme of scale, and the issue of where to draw the boundary line around the problem, returned in these presentations. For example, sea-level rise cannot be countered at the scale of individual buildings, but only at the scale of harbor barriers. At the building scale, exemplary gold- and platinum-rated LEED designs are laudable. But if a LEED-rated office building is built in a suburb where employees must drive miles

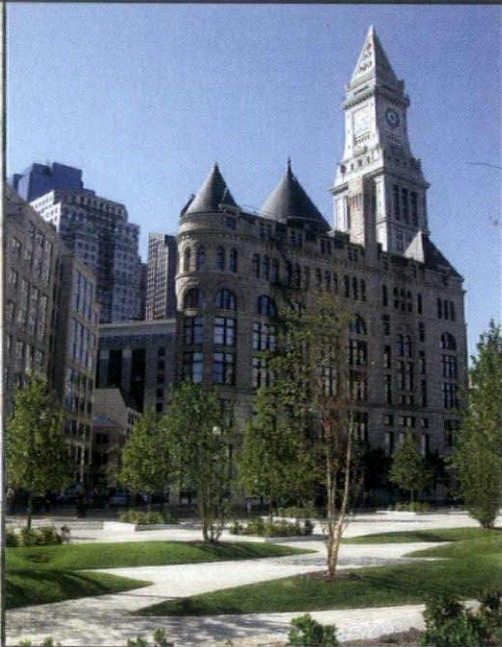
to reach it, the energy savings achieved are negated by the additional auto pollutants. And even if an award-winning LEED project, such as the new Bank of America tower, is constructed in Manhattan where most employees arrive by transit, that achievement can be diminished if it draws its energy from a distant power plant where considerable energy is lost in low-efficiency power transmission lines.

The symposium's many speakers talked not only of their achievements, but also of the road blocks that still hinder progress, such as obsolete regulations and vested utility interests. Mayor Jaime Lerner, having the final say, said he was disheartened to hear of the many barriers that still hinder progress. It is not the lack of means or knowledge that hobbles us, he said, but the lack of political will. In the end, "the city is not the problem, it is the solution."

Lawrence Bluestone AIA is the principal of Bluestone Planning Group in Cambridge, Massachusetts.

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long. This wall was constructed in three sections at Iaccarino's facility for easy transport and reassembled on site. In the private club, the 50-foot lap pool has natural light filtering its entire length through teak trolleys suspended below skylights.

In the heart of the Upper East Side of Manhattan, One Carnegie Hill is a 43 story residential tower featuring an expansive residents' club. The dramatic lobby features rosewood matched architectural panels with glass light block ribbon detail. A richly designed window wall of teak, glass light block, and painted panels stretches over 20 feet

Project: One Carnegie Hill
New York, NY
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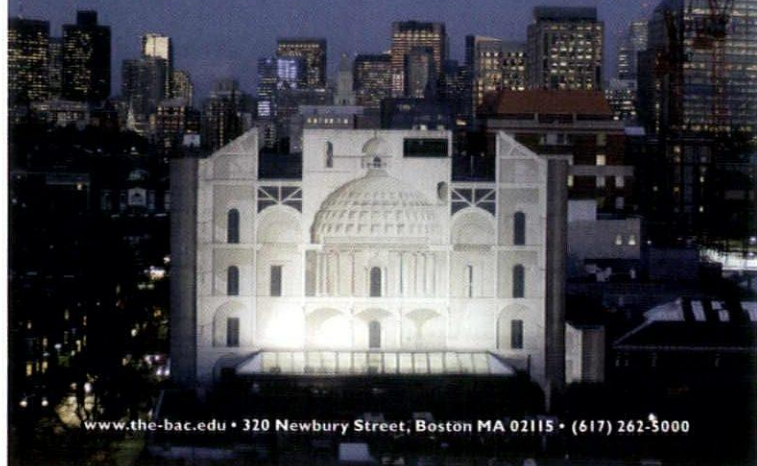
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Drills, Drooling Dolts, and Dominique

The premise: A rainy Sunday afternoon. A video of *The Fountainhead*, the 1949 ur-architect-movie, starring Gary Cooper and Patricia Neal and adapted by Ayn Rand from her blockbuster manifesto of a novel. Maybe you saw this a long time ago and it made you want to be an architect. Or maybe not.

1:26 Sketch of Richard Neutra-like house prompts old professor in dismal Gothic office to kick Howard Roark out of architecture school, explaining: "There is no place for originality in architecture."

1:27 Mediocre colleague Peter Keating: "You can't survive unless you compromise."

1:28 Louis Sullivan-ish figure: "You're setting out to ruin yourself." Looks at drawing again. "Oh why did you have to come to me. I'm perfectly happy with the drooling dolts I've got. Twenty years ago I'd have punched your face with the greatest of pleasure. You're coming to work for me, tomorrow morning."

1:29 Calendar pages flipping. The Louis Sullivan guy is a broken man, railing in Roark's austere office: "See those people down there? Do you know what they think of architecture?" Maddened by the prospect of Roark being crushed by philistines, Sullivan picks up a T-square, smashes Roark's office window, and dies under the desk.

1:32 Not dead after all, Sullivan lies in the ambulance mumbling to Roark: "I told them. I *told* them the form of a building must follow its function."

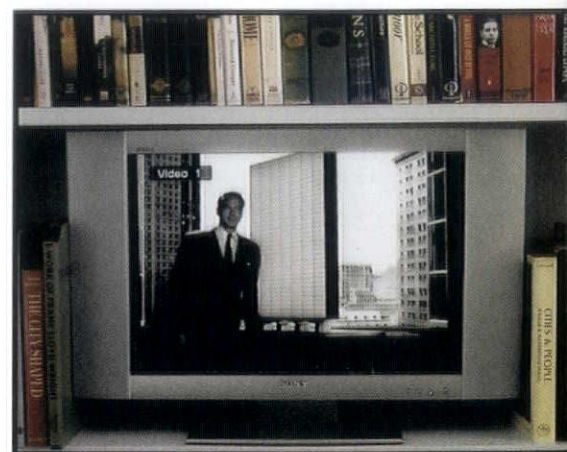
1:38 Stodgy bank executives award Roark a juicy commission, which he badly needs, having hocked his watch. The model looks like the UN. They like everything about the

building except its appearance. They stick some neoclassical sections onto the model (thus transforming it into a mid-1980s Philip Johnson skyscraper). "The middle of the road," they say encouragingly. Cut to Roark. He does not look happy. "But we are your clients. It's your job to serve us." "I don't build in order to have clients. I have clients in order to build."

1:41 The architecture critic Toohey (rhymes with "hooey") shows sleazy newspaper tycoon buildings by Roark's mediocre rival (standard 1920s historicist skyscrapers). "The greatness of Peter Keating's personality lies in the fact that there is no personality stamped upon his buildings," the critic raves. The tycoon seeks a second opinion from the paper's other architecture expert, Dominique Francon.

1:45 Dominique holds phallic-looking sculpture, throws it out the window, and looks tragic. Her hairdo is the most distinctive piece of architecture in the movie so far. The tycoon, who obviously has the hots for her, asks which architect she would recommend. "I don't know a single architect of ability," she says. She tells him she threw the statue out the window because she wants no part of a world where beauty and genius and greatness have no chance. For some reason this seems to turn her boss on.

1:51 Dominique wearing sexy nightgown in Connecticut is awakened in bed by noise of Howard Roark dynamiting nearby.



▲ Photo by Joan Wickersham.

1:52 She goes to quarry and sees him in laborer's clothes sweatily using a drill. He sees her standing at lip of quarry. Her brassiere is remarkable piece of structural engineering.

1:54 She reappears at quarry lip holding a riding crop. "Why do you stare at me?" she asks.

"For the same reason you stare at me."

2:02 After more drilling, Roark hears from prospective client and leaves for New York.

2:04 Newspaper editor looking for something to crusade against. Toohey suggests, "This," throwing down rendering of new Roark tower, a Frank Lloyd Wright-esque building with lots of cantilevers.

2:12 Dominique meets Roark at party. She had not realized the quarry worker with the drill and the architect were the same person. "I admire your work more than anything I've ever seen. This is not a tie but a gulf between us," she intones.

2:14 She goes to his apartment and says prospective clients hate the greatness of his achievement. They exchange words of love like two skyscrapers embracing. "Destroy" "hate" "ruin" and "death sentence" are some of the terms used. She proposes, saying she'll cook and clean and scrub for

him, if only he'll give up architecture. "Save yourself from tragedy," she pleads. He says no. She drives speedboat out to sleazy tycoon's yacht and says she will marry him. Tycoon kisses her neck while she looks despairingly at Manhattan skyline.

2:20 Roark trudges around New York, pausing in front of construction sites displaying signs with names of other architects. Architecture critic Toohey says, "This city is closed to you and it is I who have done it."

2:22 Roark designs a gas station that looks like Fallingwater.

2:23 Renderings of small but integrity-loaded Roark projects: store, farm, factory. Even the handwriting looks like Frank Lloyd Wright's.

2:25 Sleazy newspaper tycoon, now softened by marital love and no longer entirely sleazy, asks Roark to design a "home for my wife and me." Considering tycoon wrecked Roark's career and married his girl,

this takes some nerve; but Roark says yes.

2:27 Tycoon goes home where Dominique awaits him. Their apartment resembles Metropolitan Museum. He tells her he hired Roark. She gets mad. Doesn't he remember his paper's smear campaign wrecked Roark's career? He'd forgotten. She says Roark is a man of integrity.

"He's no better than the rest of us. And if he is, then I'll break him."

2:31 Tycoon tells Roark, "I want you to be the architect of all the buildings I erect in the future. You will build Colonial houses, rococo hotels, and semi-Grecian office buildings." A postmodernist would be giddy with delight, but Roark gets that stubborn look we know so well. "Of course," he says with menacing lightness, "I'll be glad to do it." He picks up his Wright-like rendering of tycoon's house and scribbles a hodgepodge of applied detail all over it. The tycoon giggles, "Good heavens no."

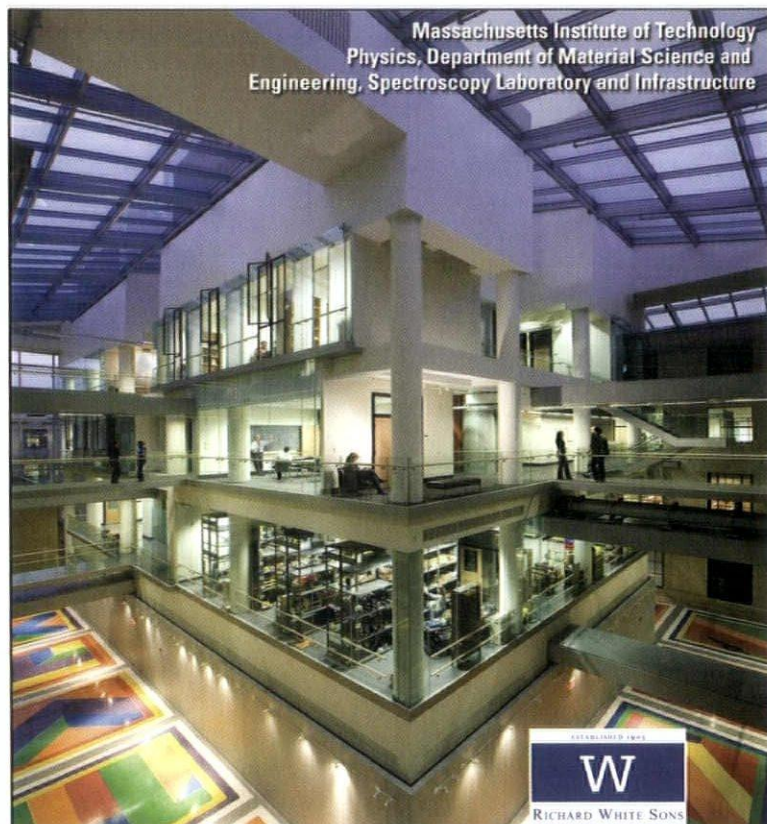
"Then shut up and don't let me hear any more architectural suggestions."

2:33 Roark goes to dinner where Dominique admires the blueprints. The men admire each other, then her. It's a lovefest. Her husband muses about the beautiful morning light that will come into their bedroom, and Dominique suddenly says she can't live in the house. "Why not?" asks Roark.

2:36 Mediocre Peter Keating asks Toohey for help getting commission to design Cortlandt Homes. Toohey says it must be brilliant product of planning ingenuity and structural economy. "Do you think you could do that, Peter?"

"I could try," says Keating, and then shoves his fingernails into his mouth and begins biting them.

2:38 Keating crawls to Roark. "Howard, I'm a parasite. Every good idea I had in school I stole from you. I've come to beg you to design it and let me put my name on it." Roark says OK, as long as Keating agrees to build it Roark's way, with absolutely no changes or compromises. Keating promises. Uh-oh.



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2:42 The Roark-Dominique-tycoon ménage is sprawled under a tree. The tycoon suggests that Roark come on yacht cruise with him. Dominique pouts and asks her husband what exactly Roark is to him; he says dreamily, "My youth."

2:45 Design review on Peter Keating project, secretly designed by Roark, is not going well. Other architects are now involved and want to add "a few balconies."

2:46 View of completed Cortlandt Homes. Many balconies. Keating apologizing, Roark looking grim. "What are you going to do?" asks Keating, apparently unaware of Roark's quarry dynamiting experience.

2:50 Kaboom!

2:51 "What do you know about this?" the police ask, converging upon Roark standing calmly near the smoking ruins of Cortlandt Homes. "I'll talk at the trial," he says.

2:56 The architecture critic is browbeating Keating. "Who designed Cortlandt Homes?"

Keating, whimpering: "Why do you want to kill Roark?"

Toohy: "I want him locked up, strapped, beaten. He'll move as he's told. He'll work as he's told. He'll take orders."

3:00 The tycoon fires Toohy, but then everyone else on the paper walks out. It turns out the architecture critic has secretly taken over the paper.

3:01 The newspaper is boycotted, picketed, reviled by society matrons at cocktail parties. Fights break out in the streets. Mob violence over architecture criticism!

3:04 Maternally tender toward her husband while still secretly smoldering for Roark, Dominique brings the tycoon comforting hot beverages and the two of them manage alone to produce daily big-city newspaper extolling Roark's genius.

3:05 Tycoon cracks under pressure and denounces Roark, thus halving movie's quotient of strong men who love Dominique and clearing way for her to

have happy ending with the only one left.

3:07 Roark makes really long courtroom speech about individualism, proving that Ayn Rand's attitude toward movie-going public resembles Roark's attitude toward clients.

3:15 Roark is acquitted.

3:16 Tycoon hires Roark to design tallest building in city, predicting building will be "the last skyscraper ever built in New York, the last achievement of man on earth before mankind destroys itself."

3:19 Dominique, now Mrs. Roark (the tycoon having obligingly removed himself), comes to visit Roark at the construction site of his new skyscraper. She rides the elevator up the scaffolding. Roark waits at the top. The building is very large. She smiles and rides up, up, up ... well, you get the picture.

Joan Wickersham's new book, *The Suicide Index*, will be published by Harcourt in August.



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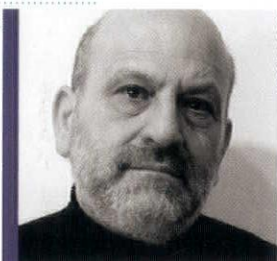
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Working alone can be satisfying, exhilarating, and sometimes downright scary.

Searching for the Roots of Creativity

by Deborah Weisgall

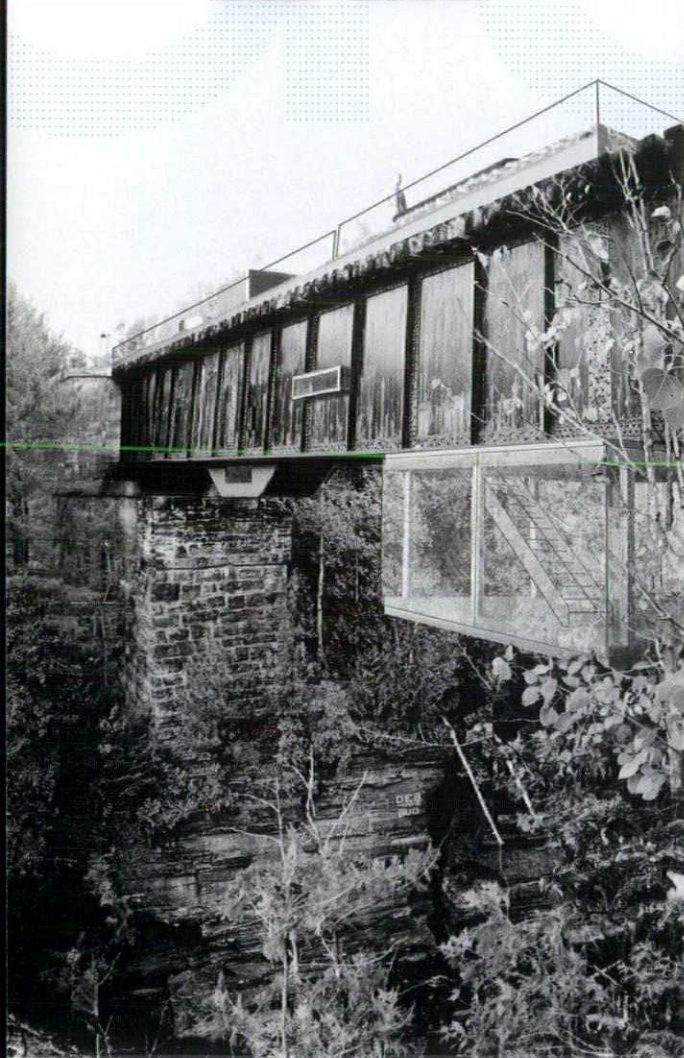
All work involving the mind, involving the invention of something from nothing, begins small. One person and solitude: blank time and space for an idea — a concept, a vision — to coalesce. And a blank surface where that mysterious process occurs: a notebook, a sketchbook, a blank canvas, an empty computer screen, silence, the raw land of a site.

These conversations with people who work alone explore the nature of that solitary process, its advantages and drawbacks, its points of collaboration. I spoke with an architect, Dan Hisel; a landscape architect, Patrick Chassé; a studio furniture maker, Jenna Goldberg; and two painters who are husband and wife, Gerry Bergstein and Gail Boyajian. Temperament, habit, the size and nature of ambition: these determine the decision to work alone, and the ramifications of that choice range — sometimes every day — from delight to loneliness, from the ability to control every aspect of a project to an overload of detail.

Sooner or later, though, every idea has to intersect with the real world. The nature of the collaboration differs. At the very least, the painters and furniture artist have their galleries and patrons; the architect and landscape architect have clients and builders and gardeners; even the lonely writer encounters agents and editors, or an assignment where it's necessary to go out and talk to other people. Negotiating these collaborations is part of the job; sometimes it's fruitful, sometimes it isn't. Working alone permits a greater degree of flexibility, both economic and intellectual; it also is more precarious, with no built-in safeguards, either creative or economic.

The common thread is that all of these people want to maintain — and control — a consistency and thoroughness of thought and of inquiry, an intensity that cannot be diluted. This intensity grows out of the physical aspect of doing what they do: carving wood, painting a painting, building a building, or constructing a landscape. At the same time, all require that place of stillness, the hypothetical space where the mind dances around and plays happily and precariously with possibility.

Deborah Weisgall writes about the arts for *The New York Times* and other publications. Her new novel is *The World Before Her* (Houghton Mifflin, 2008).



Portrait photo by Jennifer Roberts. Above left: Heavy/Light House; rendering courtesy, Dan Hisel. Above right: Z-Box; photo by Peter Vanderwarker.

Dan Hisel has won many awards, including a Skidmore, Owings & Merrill Traveling Fellowship. He was a winner in the Young Architects Forum, and his work has been published in *Architecture*, *Dwell*, *ArchitectureBoston*, and the book *Young Architects 7: Situating*, published by Princeton University Press. He teaches at Roger Williams University in Rhode Island. He is currently practicing in Somerville, Massachusetts, and contemplating growth. His award-winning designs include the Z-Box — a sleeping/storage cube in an otherwise undifferentiated loft — and Heavy/Light House, a guest house imagined from an abandoned railroad trestle.

Deborah Weisgall: How has working alone influenced the trajectory of your career?

Dan Hisel: I have focused on work that played to my strengths: intense, concentrated, and precise projects that emphasize experiential and perceptual conditions and material craft. I have tried to stick to what I'm good at, and I do have a real passion and temperament for more intimate architectural problems — conditions that are easier to investigate at a smaller scale. A house is a wonderful medium for this kind of design work; it ranges from public spaces to private, intimate spaces. I think houses, those kinds of problems, will never get old for me, because this is where my interests naturally lie.

Working is easy for me. I get up early, go downstairs, and start jamming. I run on a high-octane mixture of terror and delight. I do have to say that I thoroughly love drafting and designing details. I can sit down at my computer and get in a zone for hours without getting up. I also have a fair amount of construction experience. I started out digging footings for my father's design/build firm when I was 16, and I've built several of my projects myself, including a sauna. I have an understanding of the way things go together, as well as how easy or difficult certain details may be for a contractor to assemble.

But I would love to grow, slowly, into larger-scale work; and these comments are a reflection of where my head's been at for the last several months. I'd love the chance to design a fire station or a small school, and lately there have been many points at which I would have preferred to be able to hand off something. Perhaps being a solo architectural practice only lasts until you get busy and start landing larger projects. Then your ambition overrides your sense of risk aversion, and you step up and do it.

Deborah Weisgall: How do you work? How do you begin investigating a project, an idea?

Dan Hisel: My design ideas tend to start with a close scrutiny of the program and the place. I try to get forms, spaces, ideas to *emerge* out of a complex chemistry of site, people, and program. But this might sound like design solutions just appear — and that's not true. As architects, we exert a will and make decisions that, in the best buildings, artfully craft experience and awareness. I try to make spaces for a life to be lived in this place with a higher level of intensity. It's like cooking — the more the sauce simmers down, the more intense the flavors become. The extraneous evaporates, and you're left with the critical moves that reveal a deeper, more complex and concentrated level of awareness.

But in any professional practice, there are compromises that come relative to research and design. I started out doing small projects in which there was an intense level of intellectual and creative investigation; I used those projects to ask philosophical and theoretical questions about architecture — to try to get to the deeper questions. When you're working for clients who have a limited budget, you're trying to get a kitchen and get the place insulated, then do a few things that are going to make the house beautiful and contemporary. The work is not cutting-edge the way I would like it to be. But money doesn't have to be a constraint; the Heavy/Light House and the sauna came when

there was unlimited time and few restrictions — an amazing time when I was free to explore.

The question is how to maintain that level of inquiry; that's where my success has come from. Competitions afford that opportunity. And there are moments within each project that afford that opportunity as well.

Deborah Weisgall: What are the limitations of a solo practice? What do you miss?

Dan Hisel: I often wish I had a seasoned architect close by to bounce ideas and problems off. I'd love to have a salty old curmudgeon hovering over my shoulder telling me if something's going to leak, or when to call the civil engineer. Most of the help I wish I had is technical, of course — and this is normal. Most architects just want to design stuff and let someone else fret about the technical aspects. But a one-man office is responsible for everything. It's all on my shoulders — so that's where the terror kicks in.

The fantastic aspect of being solo is that I am the only measure of my own satisfaction, so if I'm content with the process, the design, the light fixture — or whatever — then I am content.

Dan Hisel

Deborah Weisgall: How do you work with your clients?

Dan Hisel: My new clients are coming to me after seeing my work published somewhere — so they're choosing me based on my designs, which makes it easy. I haven't had to turn someone away because I feel that we don't see eye-to-eye on design. Perhaps I'm lucky. But I'm also hungry and, for me, the process of working with clients is something I love. I have been lucky; my clients have valued design and respect my ideas, so the process is usually a lot of fun. The best clients want to make sure they understand how a design will work for them — how it will affect the way they live. I try to be a very good listener and respond with designs that respond to the things they care about. Contractors can be another ball of wax altogether, but so far so good.

Deborah Weisgall: How does working alone dictate the size of projects you work on? Do you think it is natural to work in firms of different sizes at different stages of a career?

Dan Hisel: Up until recently, the question of being a solo practice has not been a conscious choice, but a matter of necessity. Now, though, I'm facing the question of possible growth; it's exciting and scary. And part of the dilemma about whether or not to get bigger is whether that means doing more conventional work. The fantastic aspect of being solo is that I am the only measure of my own satisfaction, so if I'm content with the process, the design, the light fixture — or whatever — then I am content.

GOLDBERG

Jenna Goldberg received her MFA from the Rhode Island School of Design in 1994 and has been making studio furniture in the Boston area ever since. She has exhibited her work — strong shapes with surfaces carved and colored in intricate patterns — in galleries throughout the country and in museums including the Smithsonian and the Philadelphia Museum of Art; it has also been featured in books and magazines such as *Scratching the Surface*; *Furniture Studio Tradition in Contemporary Furniture*; *Furniture Studio: The Heart of Functional Arts*; and *American Craft*. She also teaches at the Rhode Island School of Design. Her studio is in Fall River, Massachusetts.



Left: Gingko Buffet. Above: B and B Cabinet.
All photos by Mark Johnston.

The downside is that I'm left talking to my inner voice, which can be a bit of a saboteur. Working alone constructively is a constant exercise in being present.

Jenna Goldberg

Jenna Goldberg: I like to go into my studio and know that everything is where I left it. I have a whole conversation around "don't touch my stuff" that I'm sure I got from years of sharing space and being in school. Ultimately, it's about control. I also like to control the noise factor. Music or no music. Book on tape or podcasts/radio. It's difficult for me to achieve any sense of flow with someone else in my space.

Deborah Weisgall: How do you balance the necessity for solitary work with the need for interaction, whether it's advice or companionship?

Jenna Goldberg: The downside is that I'm left talking to my inner voice, which can be a bit of a saboteur. Ideas and notions of who I am and what I'm doing can seriously spin out of control. There are days that go by when I don't speak to a soul, and this can get depressing. Pointless conversations with myself, when I question my worth as an artist, become significant when really they don't matter or mean anything at all. Working alone constructively is a constant exercise in being present. I love getting feedback from people, and sometimes I even listen to them. And I love having people around for conversation and fun, but when it's time to get some work done, I need to crawl back into my den and focus.

Deborah Weisgall: How do you balance teaching and work?

Jenna Goldberg: It's interesting — when my teaching time rolls around each year, I have to get into the groove of finding my words. Because I have been working in my medium for so long and by myself, I never explain what I am doing when I am doing it. That is what I have the most trouble with when I teach: I have to talk about what I'm doing.

I also teach during the summers at craft schools around the country. My students are adults. I find that these gigs are a real social injection that I do not get in my everyday life. I look forward to them. But I try to keep the work part of my life at about 80 percent and the teaching at about 20 percent. Teaching has a way of creeping in and taking over. Ultimately I am a full-time maker, and the teaching is just something else I do.

Really, the whole working-alone thing is a double-edged sword. I love having my own space, but I crave the company of others. I created a life of solo artistic pursuits. It's only recently that this box has stopped working for me. I'm really looking forward to pursuing things outside of my solo world — moving into the realm of group. I have no idea what I want to do, but the desire is there.

Deborah Weisgall: How do you come up with ideas for the surfaces of your furniture? Do they emerge as a response to clients' needs or from your own curiosity?

Jenna Goldberg: I spend a lot of time in bookstores and at the library. I'm fascinated with patterns, specifically fabric, wallpaper, prints, and I get a lot of inspiration from these materials. I use them as a jumping-off point. Sometimes clients will ask me to do what I want; sometimes I have to make something that works in a room that is already full of stuff. I'm willing to accept ideas and thoughts; commission work is a conversation, a little bit of give and take.

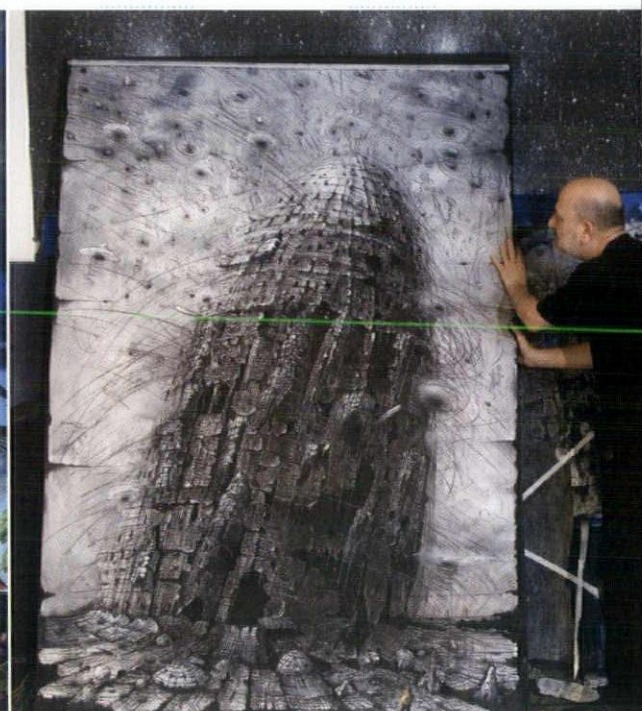
Deborah Weisgall: What about the uncertainties — economic and aesthetic — of being on your own?

Jenna Goldberg: I have learned that trying to do everything myself will ultimately drive me into total exhaustion and probably bankruptcy. But economic uncertainties don't really worry me; worry gets shelved as wasted energy. I haven't run out of projects yet, and people keep asking me to make them things.

I think that when you are an artist there is a preciousness about every part of the process of making something. Somewhere along the line I convinced myself that if I gave up any part of that process I would be taken less seriously, or I would fail in my artistic authenticity. But ultimately what I do is a business as much as it is an artistic labor of love. I have come to know the joys of outsourcing, whether it is bookkeeping or sanding, or any other part of the process that somebody else can do. While I enjoy not doing everything myself, I still like to work alone in the studio. Any work I have somebody else do occurs in their work space.

Deborah Weisgall: Solitude is important to you, then?

BOYAJIAN



After graduating with a joint degree in fine arts from Tufts University and the School of the Museum of Fine Arts, Gail Boyajian attended architecture school at MIT. She practiced architecture for 17 years, working on graphics in projects such as the Statue of Liberty Visitor Center, Epcot Center, and the Big Dig; in 1994, she returned to painting. Her lush landscapes and fanciful cities are populated with historical and imaginary figures, giant goldfinches, and helicopters delicate as hummingbirds. Her paintings read like strata of time, layered into the future. Her work has been shown in numerous galleries and museums. She teaches architecture at Phillips Academy, Andover, and is married to Gerry Bergstein.

Above left: *Multidisciplinary Sky* by Gail Boyajian; photo and portrait by the artist. Above right: Gerry Bergstein with *Mound*; photo and portrait (right) by the artist.

Deborah Weisgall: How do you balance the need for solitude and the desire for companionship? And how do you maintain the important tension between your own invention and the world's response?

Gail Boyajian: My studio is a sanctuary — it's private. Sometimes I wish there were more people around, but I have teaching for that. When I've worked in studios in residencies, I've liked having the chance to show off what I've done, as I like to hear what others are grappling with, but then I just want to get to work alone again.

The presence of a critical, interested audience is valuable as a stimulus, and I'm often inspired by what has happened or been said, but only when I'm alone do I feel free to use it for my own purposes. The time alone is necessary to process and distance myself from direct experience and other sensibilities, and from my reactions to those. That is when I decide what is truly mine.

Gerry Bergstein: There is a point when I need another set of eyes — another heart and another mind. I love working alone, since my work comes from a private space. It arises from an original idea and then a continuous set of discoveries emerge from the process itself. My world is in my head. However, there is always an assumption — a hope — that the work is a way of sharing this world and my discoveries. The tension comes when my bubble is burst — when my beautiful, private world proves to be not deeply enough explored. Art is still a form of communication. It does not necessarily make you a better person, but perhaps it can make you a more complex person. One way or another, the viewer is important.

Deborah Weisgall: You both teach — and you both love to teach. Is teaching a way to connect with the world, to try out ideas?

Gail Boyajian: Since I teach architecture, not painting, there is a different benefit. I get enormous satisfaction from guiding the efforts of students and helping them develop skills and ideas without feeling in any way that my own private projects are in any way at stake. Teaching gives me a chance to use skills and knowledge I developed earlier in my life and to share my passion for the subject. With architecture, I feel confident in a way that I may never feel with painting, which is always an exploration for me.

Gerry Bergstein: Teaching certainly is a way to connect. My style of teaching involves sharing what I know and letting students respond with what they know and what interests them. I

continually discover new artists and ideas. I also get to experience how successive generations explore perennial issues — power, mortality, ideology, aesthetics — with new languages. This certainly affects my work; it deals with the ideological struggles of art as a metaphor for wider human struggles. In fact, teaching may have generated this idea in my work.

Deborah Weisgall: Do you ever think about growing — establishing a workshop, the way Renaissance painters did, and the way many artists are doing again now?

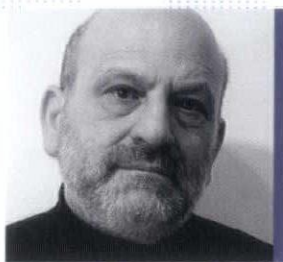
I love working alone, since my
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place. My world is in my head.
Gerry Bergstein

Gail Boyajian: The way I work has partly evolved because I don't farm any part of it out to others. I discover things as I do the repetitive parts, such as foliage or sky. If production were important for a large-scale project, it would be necessary to figure that out, but I work small partly so that I can do things myself.

Gerry Bergstein: Murakami, Jeff Koons, Damien Hirst, Matthew Barney — these are some artists who have workshops of their own or who hire craftsmen to execute their designs. I see nothing wrong with this at all; I don't think art is necessarily the product of a solitary genius. But too much of my work comes from daydreaming, discovery through the act of working itself. My studio is chaos — a luxury which I enjoy and even get ideas from.

Gerry Bergstein is the head of the painting department of the School of the Museum of Fine Arts, Boston. One of Boston's most important painters, he also graduated from the school. His paintings, with their masterly draftsmanship, are dense with references to art history and to popular culture; Bergstein is working out his place — the artist's place, and sometimes it's very small — in the world and in time. He has shown in galleries throughout the United States and Europe, and his work is in numerous museum collections, including the Museum of Fine Arts, Boston; the DeCordova Museum; the Davis Museum at Wellesley College; and the Rose Art Museum. He is married to Gail Boyajian.

BERGSTEIN



CHASSÉ

A landscape architect with a special expertise in historical landscapes, Patrick Chassé's work has ranged from renovations to the Rockefeller Gardens, the Azalea Gardens, and the Thuya Gardens in Northeast Harbor, Maine, to projects for the New York Botanical Society and the Institute for Advanced Study in Princeton, New Jersey. He has also designed numerous private landscapes and gardens, as far away as Istanbul. Born and raised in Aroostook County in northern Maine, he has taught at the Harvard Graduate School of Design. Recently he spearheaded the effort to preserve Garland Farm, the last garden designed by Beatrix Farrand. He is also curator of landscape at the Isabella Stewart Gardner Museum.

Deborah Weisgall: Even though you work alone, and conceive of the idea, design the bones, and then put together the puzzles of plants in a landscape, it is very much a collaboration. How do the good interactions work?

Patrick Chassé: My favorite collaborations are with clients who are more interested in ideas than in flowers. They can appreciate an idea or a concept for its relationship to the larger culture, and then they really understand how it gets translated into a built landscape. The same concept can be translated in different ways or in different media, but if the idea is strong, the result will have a kind of soul or power that transcends the collection of plants and materials from which it is composed. The client-collaborators who appreciate the concept will often give fairly free rein on how that idea is translated. There are often likes and dislikes in terms of types of plants and materials, but the broad strokes can dominate the composition. What I don't like is the fussiness of trying to include one of everything in the garden.

Deborah Weisgall: Over the years you have experimented with expanding your practice.

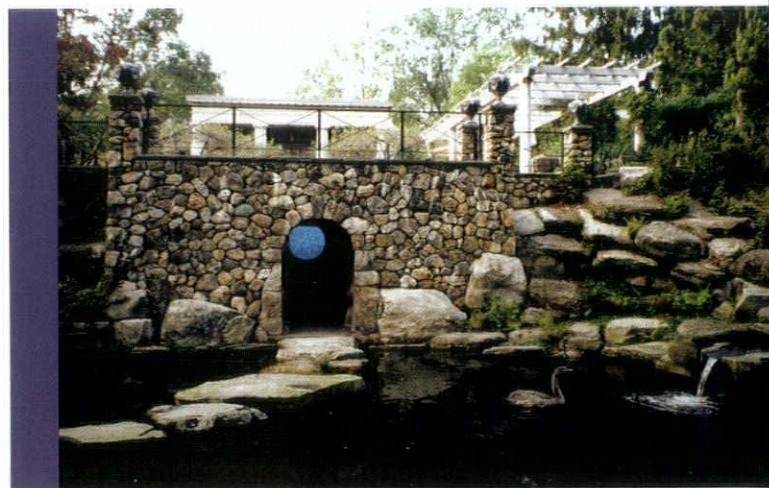
Patrick Chassé: Collaborating with young staff has been challenging. The inexperience of young designers is sometimes magnified by a natural impatience to develop a style and an identity. I use up energy keeping traditional procedures and techniques from being supplanted or ignored, and the management time required to enforce design standards — and reduce design liabilities — is considerable, and for me highly unsatisfying. I know what will work, what will hold, and what will collapse; my father had a construction business and I learned to drive his earth-movers when I was a kid. I currently work alone, with full responsibility for all phases of the design process. I can

accommodate fewer projects, but I find them more satisfying and more consistent in spirit and form from conception to completion.

Deborah Weisgall: What are some of the advantages and constraints of your chosen medium?

Patrick Chassé: The end product in landscape design often has a functional requirement that adds considerable complexity to the creative challenges. If a garden is primarily a viewing garden — some sort of tableau or stroll-through composition — the creative process and the client interactions of collaboration are freer and more open-ended. When a given or proposed space has to be functional — a driveway, outdoor living area, sculpture gallery, play area — the creative chess game literally becomes more three-dimensional. The difficulties of creating a balanced design that satisfies the complicated list of requirements and also allows for what nature will tolerate seem to increase exponentially.

Deborah Weisgall: It seems that landscape design has something in common with herding cats — there are so many variables to take into consideration.



Portrait photo by R. Gordon Manchester. Above: Nymphaeum, South Salem, New York. Right: Lotus Bridge, Cortlandt Manor, New York; both photos by Patrick Chassé ASLA.



Patrick Chassé: I've worked in a number of media in previous lives as an artist — paint, printing, clay, glass, and precious metals. Working in landscape has two major differences. First, one doesn't produce a piece of work independently and find a client/buyer who fits the work, and second, one usually doesn't actually make or build the complete work. That means that the realization of these landscapes of the mind depends on the skills and sensitivity of a team of contractors: builders, masons, earthmovers, stonecutters, plant nurseries, irrigation experts, electricians, plumbers, and woodworkers. It's more like putting together an orchestra to produce a single important concert. The timing, sequencing, and virtuosity must be in balance for a sublime result. The Rockefeller Gardens, for instance, are designed to be at their peak for a period of six weeks every summer. To achieve the effect, we installed more than 600 different types of plants — for only six weeks.

Natural and unnatural delays can throw the whole thing off, and of course there's a deadline for completion — a *Curtains up!* The landscape medium is not a hands-on means of expression, like watercolor or ceramics, and the degree to which the vision is realized depends a great deal on the cooperation and understanding of others. This causes much of the work I do to miss the mark — for me, though few others would perceive any shortcomings. Often a contractor will make a change, or several changes without consultation, and it's impractical and expensive to redo. And since landscape must incorporate change, clients

are sometimes not shy about making their own changes. But this precariousness makes the successful translation of terrain into landscape heady triumphs that trump any joy from selling a piece of art in a gallery. It's an amazing high — and I'm hooked.

Deborah Weisgall: What are some of the elements that contribute to a triumph? In other words, what would be your ideal circumstances for designing a landscape?

I currently work alone, with full responsibility for all phases of the design process. I can accommodate fewer projects, but I find them more satisfying and more consistent in spirit and form.

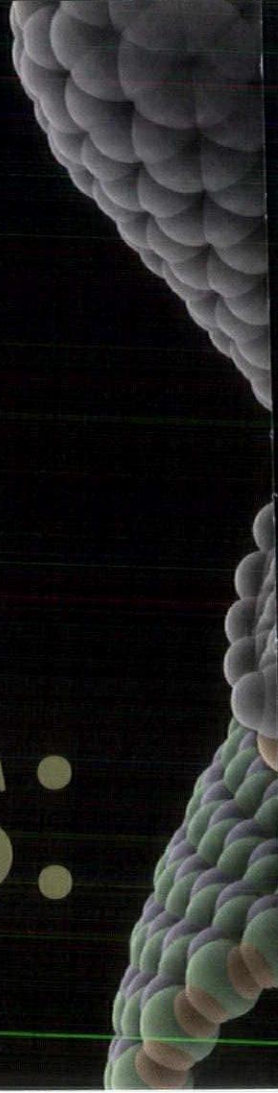
Patrick Chassé

Patrick Chassé: There's really no such thing as *carte blanche*. Big budgets can help — they keep options open, but ultimately space/size and physical or cultural context become the controlling parameters for fleshing out landscape ideas. And then there's gravity.

Client consistency — at the conceptual level — is a must. The only times I've found this to be a problem is with the dual personalities of a husband-and-wife client team — what I call the "wishbone design process." Who gets the longer part of an idea can cause wild gyrations and fluctuations on the path to the garden — if the garden is built at all. A few years after I graduated from the design school at Harvard, I received an alumni questionnaire asking for suggestions for courses that should have been offered in the design curriculum. I suggested "Marriage Counseling 101." We're trained for office and liability management, but not client management.

And then there is landscape management. In the long term, the maintenance and tuning of a landscape are critical to its sustainability as a living work of art. This doesn't mean just mowing the grass; it's more like making sure that all the members of an orchestra keep practicing. So that's a big part of the client relationship: owner responsibility. ■





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Nanotechnology Materializes

During the late 19th century, George Parsons Lathrop was in the enviable position of engaging Thomas Edison in a number of conversations, which he described in a delightful account in the February 1890 issue of *Harper's New Monthly Magazine*. His "Talks with Edison" article was written with the intention of preserving their exchanges; however, Lathrop also proved a graceful listener, "learning from [Edison's] own lips some of those things which tend to give one at least a more vivid perception of how an inventor invents."

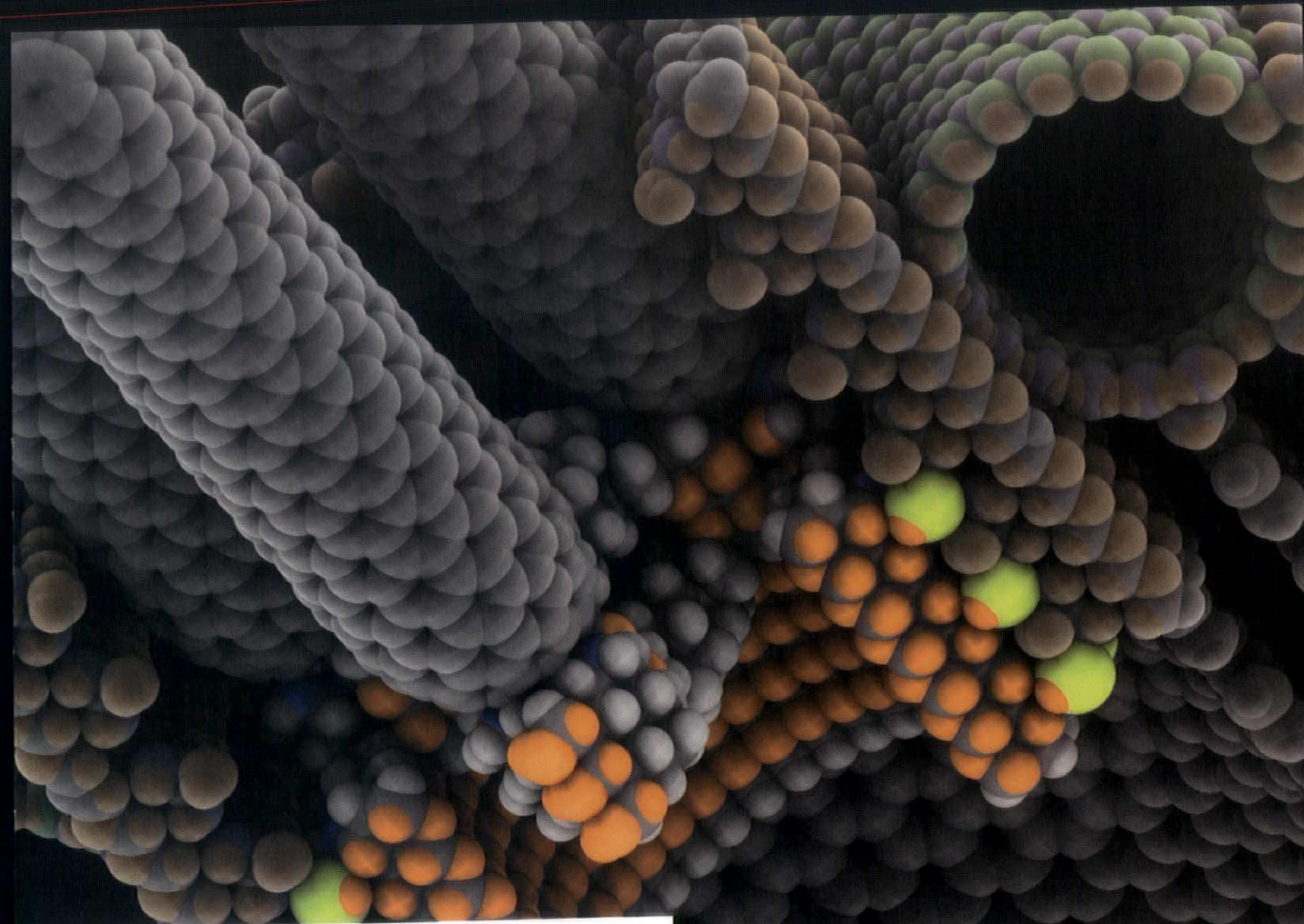
Edison considered atoms to be intelligent particles, as corroborated by their ability to form, disassociate, and reform with other elements. One day at dinner, Lathrop recounts, Edison marveled at the possibilities, and personal gratification, that would emerge if humans could gain complete control of all of their constituent atoms. Edison explained, "then I could say to one particular atom in me — call it atom No. 4320 — 'Go and be part of a rose for a while.' All the atoms could be sent off to become parts of different minerals, plants, and other substances. Then, if by just pressing a little push button they could be called together again, they would bring back their experiences while they were parts of those different substances, and I should have the benefit of the knowledge."

Had a nutritionist joined the two friends for dinner,

Edison of course would have been reminded that he was already benefiting, at least in part, from experiences offered by the minerals, plants, and other substances that nourished him. Edison's ruminations on anthropomorphically charged atoms and his dominion over them often come to mind in the course of my research into the architectural implications of nanotechnology. Consider, for example, this excerpt from "Molecular Manufacturing: Societal Implications of Advanced Nanotechnology," a presentation by Christie Peterson before the US House of Representatives Committee on Science in 2003: "Humanity's drive to improve our control of the physical world is intrinsic to our species and has been in progress for millennia. A vast international economic and military momentum pushes us toward the ultimate goal of nanotechnology: complete control of the physical structure of matter, all the way down to the atomic level."

Nanotechnology is the study and fabrication of small molecular structures that measure between one nanometer and 100 nanometers in at least one dimension. Due to this dimensional definition, the field of nanotechnology has a very broad scope and can be thought of as a territory within which a range of disciplines converge, including chemistry, physics, materials science and engineering, medicine,

by Peter Yeadon AIA, RIBA



biology, and systems architecture for computing. Imagine defining architecture as a structure wherein at least one of its dimensions is between one and 100 meters! Imagine the number of disciplines that could lay claim to such creations! The dimensions matter, however, as nanotechnology would otherwise be difficult to identify. Like biotechnology, nanotechnology is not a single technology; rather, it is multiple technologies. Generally speaking, nanotech is concerned with single molecules. But this, too, can be cause for some confusion, as some single-molecule structures are much larger than the 100-nm ceiling that helps define nanoscale science and engineering.

Often the last to arrive at the party and occasionally the last to leave, architecture has been slow to embrace and participate in the development of nanotech innovations. The paucity of architectural publications that have been devoted to the subject over the past two decades suggests that most of us can likely be counted among the 70 percent of Americans who know little, or nothing at all, about nanotechnology. This is beginning to change and, as it was with the last industrial revolution, architecture is awakening to a new industrial revolution that is already substantial. Nanotechnology fundamentally alters our relationship to matter; it has already produced a variety of

Image: nBots by Peter Yeadon. A detail of three carbon nanotube "fingers" and a molecular bearing "wrist" for the nBots. The project is being developed with HyperChem and NanoENGINEER advanced molecular modeling suites, which can simulate atomic reactions. (See cover and caption, page 1.)

materials with novel properties, and it offers new approaches to making that will undoubtedly affect the fabrication of architecture in the future.

Two recent books, one by John M. Johansen and the other by Sylvia Leydecker, begin to address the vast implications of nanotechnology in terms of materials and making. Johansen's *Nanoarchitecture: A New Species of Architecture* (Princeton Architectural Press, 2002) was likely one of the first books to introduce many of us to the topic of nanotechnology in architecture. Although it contains an assortment of uninspiring projects by Johansen with dubious connections to nanotech (and he doesn't actually get around to mentioning molecular nanotechnology until page 151), he was one of the earliest architects to identify the emergence of nanotechnology as the dawn of a new epoch. Johansen borrowed heavily from K. Eric Drexler's *Engines of Creation* (Anchor, 1987) to proffer a vision of post-fabrication architecture, in which architecture is self-assembled and can grow like a seed in a vat of nutrients.

Leydecker's *Nano Materials in Architecture, Interior Architecture and Design* (Birkhäuser, 2008) surveys a number of projects that incorporate nano-engineered materials. Most of these are coatings that are self-cleaning, anti-fogging, anti-graffiti, or antibacterial, but Leydecker also includes nanomaterials that provide enhanced thermal insulation or fire-resistance. These technologies demonstrate how nanotech

Architecture has been slow to embrace nanotech innovations, but this is beginning to change, and architecture is awakening to a new industrial revolution.

is discreetly infiltrating architectural systems, lying dormant but ready to perform.

To expand upon Leydecker's list, the products of nanotechnology are generally of two types: existing products that have been optimized and enhanced by nanotechnology, and an entirely new class of materials and products that have heretofore never existed. Composite materials are a ready example of the first type, whether they are stronger industrial plastics that can biodegrade, or have been reinforced by the unsurpassed strength of carbon nanotubes. Many sensors and smart materials, too, have had their properties improved by nanotechnology, including thermoelectric and piezoelectric materials, and second- and third-generation thin film photovoltaics.

Of the entirely new products, many are focused on energy abundance, efficiency, storage, and conservation. Products like nanoantenna photovoltaics that continue to work at night, and quantum dots that efficiently luminesce in a bright, visible spectrum of light, might eventually play a significant role in architecture. They are also good examples of recent advancements in optics/photonics research, which

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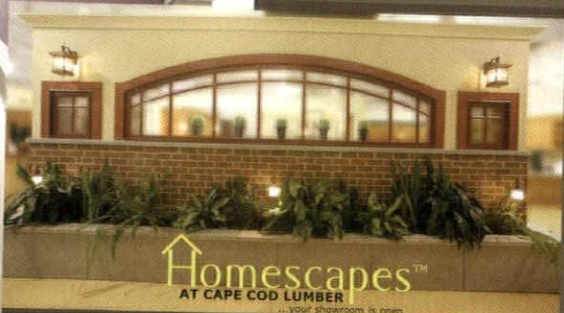
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has also produced metamaterials that guide light around cloaked objects. But the most striking new products are the biomimetic nanomaterials wherein our knowledge is finally able to benefit from plants and other organisms that have developed a number of remarkable mechanisms for sustaining their existence over millennia. These include super-adhesives that mimic the byssal threads of mussels and can stick to nearly anything, tapes that emulate the van der Waals forces found in the setae of a gecko's foot, anti-reflective materials that mimic the structure of a moth's eye, synthetic membranes that efficiently filter water in the same way as kidneys, self-healing synthetic systems that sense damage and then mend the defect, "nastic materials" that respond to external stimuli, and strong, stretchy nanocomposites that have the desirable properties of spider silk.

It is interesting to reflect on the six short years that have passed between these two publications, one visionary (even if lacking substance) and the other a review of commercially available material technologies. The evolution of nanotechnology has followed a similar trajectory. Nanotech funding is increasingly shifting toward achievable near-term applications and is wicking away from the kind of scientific research that has remained unsullied by industry and commerce during the

past 10 years, as the field itself migrates away from the visionary roots set down 20 years ago in Drexler's *Engines of Creation*.

One of Drexler's central tenets was that nanotechnology would eventually enable us to create molecular machines that could replicate themselves, and might then be reprogrammed to carry out useful tasks by assembling products from the bottom-up, atom-by-atom, molecule-by-molecule, from a reservoir stock of elements. Twenty years ago, Drexler's critics were undermined by his adroit analogies to living organisms that self-replicate — for example, a potato, and you and me. Even today, Drexler's nanofactories might seem fanciful, but a variety of molecular machines have already been developed. Single-molecule couriers have been created at the University of California that can transport other molecules on a surface, a nanocar was built at Rice University that has its own molecular motor, and an array of programmable DNA robots were self-assembled at NYU that can grab molecules from a solution and fuse them into finished materials.

Thomas Edison would have been delighted. ■

Peter Yeadon AIA, RIBA, is a principal at Decker Yeadon in New York City. He is an associate professor at the Rhode Island School of Design, where he teaches courses on smart materials and nanotechnology. Yeadon currently serves as chief editor of *Nanoarchitecture.net*.

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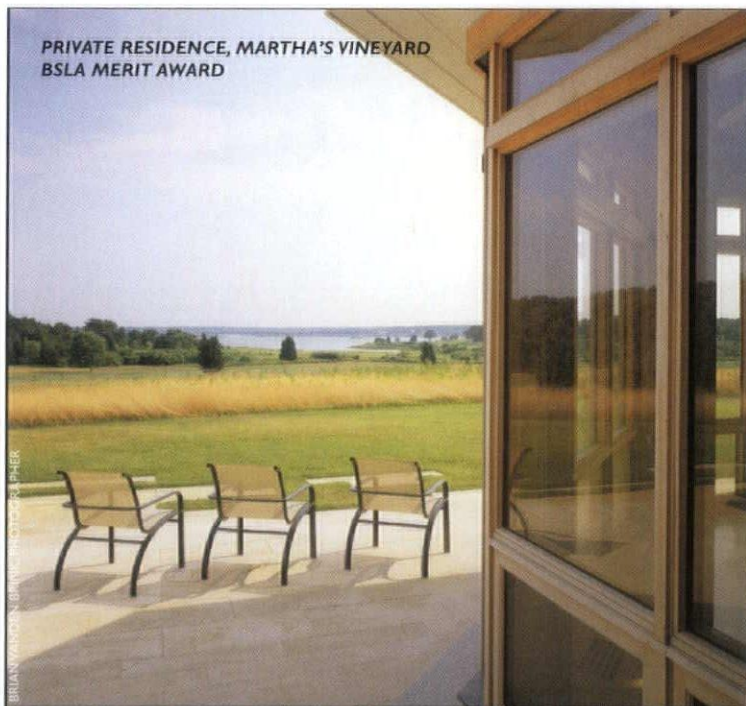


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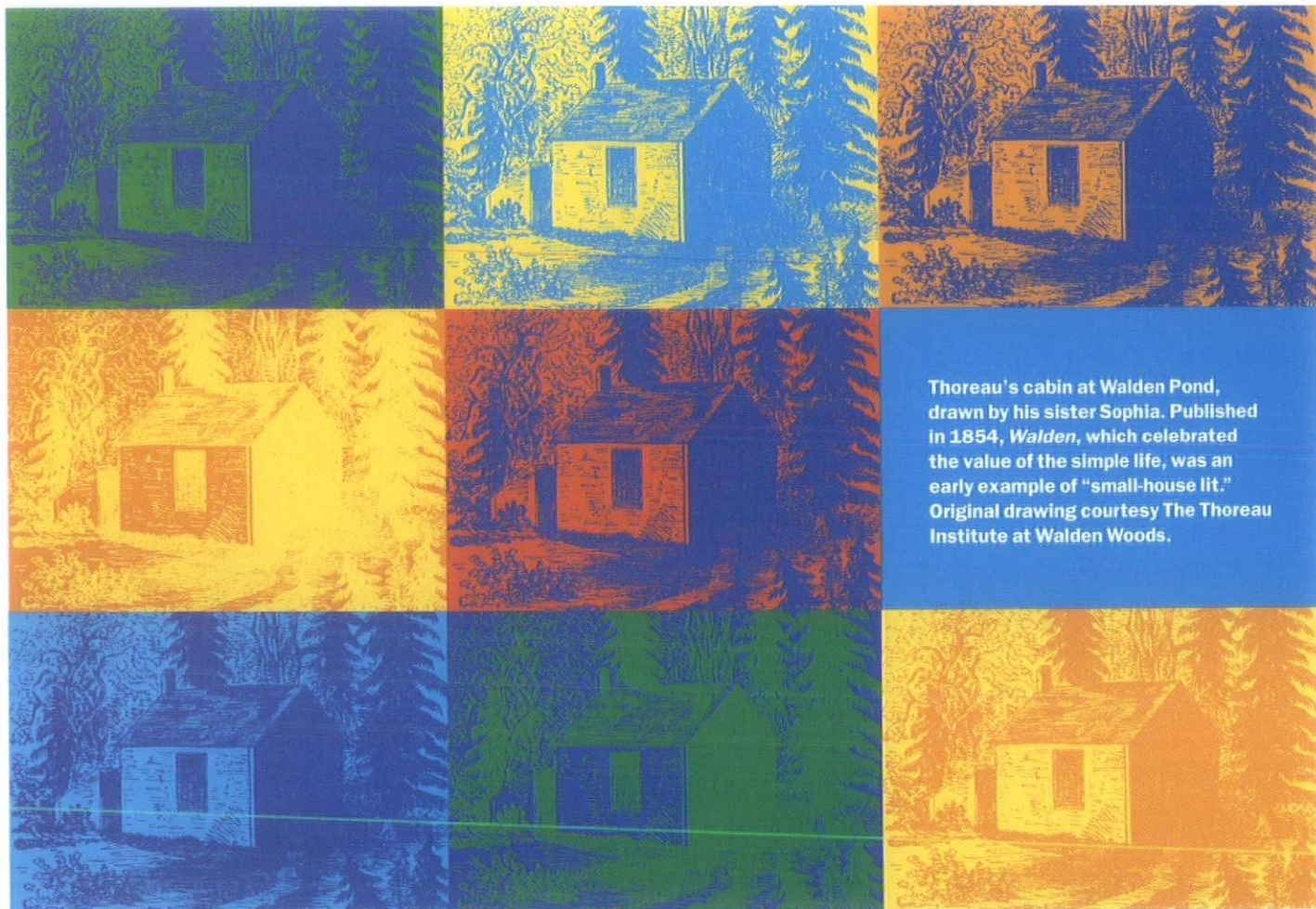
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Thoreau's cabin at Walden Pond, drawn by his sister Sophia. Published in 1854, *Walden*, which celebrated the value of the simple life, was an early example of "small-house lit." Original drawing courtesy The Thoreau Institute at Walden Woods.

BRINGING DOWN THE HOUSE

Publishers and designers have joined forces to make small houses big business.

by James McCown

When Connecticut-based Taunton Press accepted a proposal by architect Sarah Susanka in the mid-1990s for a book entitled *The Not So Big House*, editor Peter Chapman thought it would take its place next to the rest of the "shelter" titles and rack up respectable, but unspectacular, sales.

That was six books ago. Susanka now presides over what could be called, depending on your tolerance for puns or oxymorons, a "cottage industry" or a "mini-empire." The Not So Big House brand includes a full calendar of speaking engagements by Susanka around the country, frequent television appearances, and a very successful website with paid listings of real estate brokers and architects who "embrace the philosophy of designing and building Not So Big."

"She just hit the national mood at the right time," says Chapman. Susanka is even blurring the line between designer

and therapist with her latest work, *The Not So Big Life*, just published by Random House, in which she mixes design advice with New Age wisdom, urging readers to "make room for what really matters."

While full shelves in bookstores feature the small-house subject, there is no correspondingly high number of Americans opting to live in such abodes. The Web and television have played their part, but the success of the idea is a remarkable example of the enduring power of the world of publishing — yes, to paraphrase Mark Twain, the demise of the printed word has been greatly exaggerated.

Whether influenced by books or blogs, most design professionals need little convincing of the advantages of building small. Despite the relatively recent presence of McMansions in the landscape — and the scorn heaped upon

them by most architects — architectural anti-gigantism has a long history. The 18th-century monk Abbé Marc-Antoine Laugier tapped into the primordial human need to build shelter, and sanctified the small: “Man wants a dwelling which will house, not bury him. Some branches are broken off... He chooses four of the strongest and raises them perpendicular to the ground to form a square.” New Englanders such as Henry David Thoreau and Ralph Waldo Emerson often praised small-scale shelter, and early 20th-century architects Bruno Taut and Frank Lloyd Wright had sojourns in Japan, returning with a reverence for that island nation’s seemingly magical use of small living space. In the late 1950s, the French architectural theorist Gaston Bachelard summarized a growing ethos: “The cleverer I am at miniaturizing the world, the better I possess it ... values become condensed and enriched in miniature.” In the mid-1970s, in his seminal *A Pattern Language*, Christopher Alexander wrote that small “does not preclude richness of form. The trick is to intensify and overlay; to compress the patterns ... to make every inch count double.”

For those outside the design professions, small was more like a temporary penance, a stage from which to advance. In the suburban expanses of the 1950s, General Motors promised upwardly-mobile families a natural progression from Chevrolet to Buick to Cadillac. In much the same way, the small Cape or Levittown-style house was a necessary way station on the route toward the inevitably larger and grander place on the horizon.

What seems to be pervasive now is a belief in small for its own sake, regardless of location or means. A growing number of advocates are touting the small-is-beautiful gospel around the country, well beyond urban centers such as New York and Boston, where tiny apartments and houses are often more of an economic necessity than a conscious choice.

“I recently went to a city in Indiana, where you wouldn’t think there would be much interest in small houses, and after my talk, people were standing in line asking where they could find local architects,” says Susanka, who began her practice in Minnesota and is now based in North Carolina. “I pointed to a corner with the AIA members who had invited me to speak. It was like the two groups didn’t know each other existed.” Susanka firmly believes that nurturing appreciation of smaller spaces and homes is expanding the demand for architectural services. “We’re trying to increase appreciation of the kind of detailing — built-in furniture, custom storage — that architects can design best,” she says.

Susanka’s design mantras are far from revolutionary, but she expresses them eloquently and without professional jargon: Careful framing of small spaces can make them seem large; formal, separate living and dining rooms are long outmoded vestiges of Edwardian stuffiness; the commercial homebuilder’s focus on square footage yields big, ugly, and cold rooms; restrained size is the natural ally of familial harmony ... and on and on.

Predictably, her success is attracting others, who are staking their own claims. Writer Shay Salomon and photographer Nigel Valdez, a couple based in Tucson, are operating under the moniker of their book *Little House on a Small Planet*. Like Susanka, they are in demand on the speaker circuit. But their

Small-House Lit: A Not So Short List

25 Houses Under 1500 Square Feet

by James Grayson Trulove (Collins Design, 2004)

The Big Book of Small Houses:

75 Award-Winning Plans for Your Dream House

by Don Metz (Black Dog & Leventhal Publishers, 2004)

Big Ideas for Small Spaces

by David Lansing and JoAnne Liebler (Sunset Publishing Corporation, 2006)

Compact Houses: Architecture for the Environment

by Cristina Del Valle (Universe, 2005)

How to Live in Small Spaces

by Terence Conran (Conran, 2007)

Little Boxes: Architecture of the Classic Mid-Century Suburb

by Rob Keil (Advection Media, 2006)

Little House on a Small Planet

by Shay Salomon and Nigel Valdez (The Lyons Press, 2006)

Living Large in Small Spaces:

Expressing Personal Style in 100 to 1,000 Square Feet

by Marisa Bartolucci and Radek Kurzaj (Harry N. Abrams, 2003)

Micro: Very Small Buildings

by Ruth Slavid (Laurence King, 2007)

Mini Casas by Josep M. Minguet (Monsa, 2007)

Mini House Now

by Àgata Losantos (Collins Design, 2006)

Mini House Style

by Rico Komanoya (Harper Design International, 2004)

The Not So Big House by Sarah Susanka (Taunton Press, 1998, 2001)

Small Brick Houses of the Twenties

by Ralph P. Stoddard (Dover Publications, 2005)

Small Buildings, Small Gardens: Creating Gardens Around Structures

by Gordon Hayward and Peter Harrison (Gibbs Smith, 2007)

Small Bungalows

by Christian Gladu and Ross Chandler (Gibbs Smith, 2007)

Small Environments

by Yenna Chan (Rockport Publishers, 2007)

The Small House Book

by Jay Shafer (Tumbleweed Tiny House Company, 2006)

Small House Tokyo: How the Japanese Live Well in Small Spaces

by Brett Bull (DH Publishing, 2008)

Small Houses: Contemporary Residential Architecture

by Nicolas Pople (Universe, 2003)

The Smaller Home: Creating the Perfect Fit

by Dan F. Sater II (Collins Design, 2006)

Smart Approach to Small Space Living

by Susan Boyle Hillstrom and Glee Barre (Creative Homeowner, 2007)

The Very Small Home: Japanese Ideas for Living in Limited Space

by Azby Brown (Kodansha International, 2005)

The Wright-Sized House: Frank Lloyd Wright’s Solutions for Making Small Houses Look Big

by Diane Maddex (Harry N. Abrams, 2003)

XS: Small Structures, Green Architecture

by Phyllis Richardson (Universe, 2007)

book and website are aimed more at the crunchy-granola/Birkenstock crowd, overtly linking smaller houses with sustainable and social ideals. The Salomon/Valdez book rails at “house lust” and the “equating of the single-family house with equality and democracy.” Chapters have titles like “Build a Glove, Not a Warehouse,” “Three Generations Under One Roof,” and a pithy call to anti-status seeking — “Quit Jonesing!”

“People continue to project onto their houses things that houses cannot provide,” says Salomon, who trained as a carpenter and builder before helping to found the Small House Society (www.smallhousesociety.org) and publishing her book in 2006. “There is this idea of selling a ‘home’ rather than a ‘house,’ but that is completely phony. I’ve seen people’s dream ‘homes’ balloon into unimaginable giants, and looked for new options that could lead people to simpler, happier houses.”

The small-house movement has spawned its own crop of extremists, hipsters, and idealists. In the extremist camp, California-based Jay Shafer is pushing — or is it shrinking? — the envelope of how small a residence can be. Author of *The Small House Book* and proprietor of the Tumbleweed Tiny House Company (www.tumbleweedhouses.com), Shafer himself lives in a 100-square-foot house in Sebastopol, north of San Francisco.

“A human being can only take up 12 square feet of space at a time,” Shafer states on his website. His tiny houses are known for their humor, their architectural detail, and their portability — many can easily be placed on a trailer and towed behind a car, without the “Caution Wide Load” signs.

In the hipster category, St. Paul-based Alchemy Architects offers both pre-fabricated and built-on-site “weeHouses” (www.weehouse.com) that begin at about 350 square feet and that the firm says can cost as little as \$60,000 to build, exclusive of land and site preparation costs. The designs definitely err on the Modernist side and seem aimed at urban trendies who want a second home away from the city, or the otherwise well-heeled in search of “writer’s cottages” and outbuildings and guest houses as part of a larger property.

More about help than hip, Katrina Cottages (www.katrinacottagehousing.org) present housing alternatives to those displaced by the 2005 hurricane. The program has a Solomonic simplicity. Just days after the storm, architects in Mississippi began working with the Mississippi Governor’s office, the Congress for the New Urbanism, and fellow designers to provide simple plans that draw on centuries of Gulf Coast architectural tradition. They also arranged a variety of “delivery” options — the cottages can either be built on site or pre-fabricated to various stages and assembled on site. Home-improvement giant Lowe’s even offers pre-specified materials and extensive assistance for the build-it-yourselfers.

Katrina Cottages combine time-tested and beloved Southern vernacular architecture — front porches, pediments, white columns — with the ruthless cost-saving logic of building small. But further, the program taps into the natural altruism of many architects. The cottages range from one-room “Tiny” models of about 300 square feet to “Double” cottages of as much as 1,500 square feet. For as little as \$70,000 — about the cost to the Federal Emergency Management Agency (FEMA) to keep someone in an undignified and dangerous trailer for 18

months — these miniature southern manses offer the displaced hurricane victim a deep sense of connection to place and tradition — and the real possibility of home ownership.

Because of the sheer number of small-house books, and the way the movement has been covered with breathless enthusiasm by the shelter/lifestyle magazines like *Dwell* and *Real Simple*, the whole enterprise has a whiff of elitism to it — from which even the Katrina Cottages aren’t entirely exempt.

“It’s not a movement about people claiming to be ‘tinier than thou,’” insists the Small House Society website. Or is it? The American suburb, as it is, might actually not be quite as cold and soulless as people in Cambridge, Massachusetts and Berkeley, California presume it to be. And are we really ready to completely give up interior spaces like dining rooms and living rooms, which for generations have had profound cultural meaning for millions in the American middle class?

What seems to be pervasive now is a belief in small for its own sake, regardless of location or means.

Centuries ago, Marie-Antoinette had her architects build a small farmhouse near Versailles so she could pretend to be a shepherdess. A modern-day royal, Prince Charles, no stranger to architectural criticism, has over the past few years spoken about “the beauty of the small house” — an interesting stance for a man who grew up in a house with 78 bathrooms.

“There is a real aspect of class to it,” says Yale University architectural historian Sandy Isenstadt, author of *The Modern American House: Spaciousness and Middle-Class Identity*. “After all, it takes a lot of money to live an elegantly simple life. I think with a lot of small houses, it’s almost like yacht design, extracting the maximum pleasure and utility from the minimum space.”

Isenstadt, who grew up in Levittown, New York, is interested in the psychological and cultural manifestations of housing size and spaciousness. The 1950s were unique, he says, in that it was the first time the idea of spaciousness was internalized and that “there was a desire for a perception of space that was greater than the space itself.”

The environmental benefits of small houses are hard to dispute. But, despite the wide coverage of the small-house movement in the media, most Americans prefer to live in houses considerably larger than those espoused by Susanka *et al.* Maybe there is a fascination and longing for expansiveness that exists within our national soul.

In the end, the small-house movement speaks to a deep need for appropriateness and authenticity. Within this frame, both small and large houses have their place. Advocates for small houses are at their best when, eschewing the usual scolding about Americans’ putative wastefulness, they speak to the idea of restrained interior spaces as being humane, intimate, and familial.

That may be the biggest idea of all. ■

James McCown is director of communications at Sasaki Associates in Watertown, Massachusetts.

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Material World

Photographs and text
by Ron Sturm

There is one thing I truly know about myself: I am fascinated by patterns in nature. From my early childhood as a sun-baked, crew-cut little boy loading my pockets with rocks, fossils, and odd things, to my adult occupation as a scientist, I have found my interest in nature and the internal structure of things to be one of my driving curiosities in life. Whether it's the concentric banding of growth rings in a fallen 100-year-old tree trunk, the swirl of leaves in a stream, the never-repeating forms of snowflakes, or the internal chambers of an ancient nautilus, my curiosity has guided me through a science-based curriculum, a degree in geology, early years as an environmental scientist, and to my present career as a microscopist.

Through these years, I also found an aesthetic side of nature that fed a growing interest in photography. My first camera followed me through my college years, a summer in the mountains of Wyoming, and to my uncertain, early years after graduation. I enjoyed the view through the lens so much that I began to contemplate a career in the arts. But because of the responsibilities of early adulthood, and a need to make a living, the camera was pushed aside and delegated to part-time hobby, to be enjoyed on weekends and vacations. Never quite ready to give up on artistic expression, I continued to study photography, mostly on my own. Inspired by the works of Edward Weston, Ansel Adams, David and Marc Muench, Art Wolfe, and others, I became more fascinated by nature photography.

My growing career as a materials scientist, however, gave me an opportunity to see a side of nature experienced by few. I once saw patterns through the lens of a camera; I now see them through the lens of a microscope. What started as a compromise between artistic ambition and my professional skills has developed into a new fascination, that of the microscopic world.

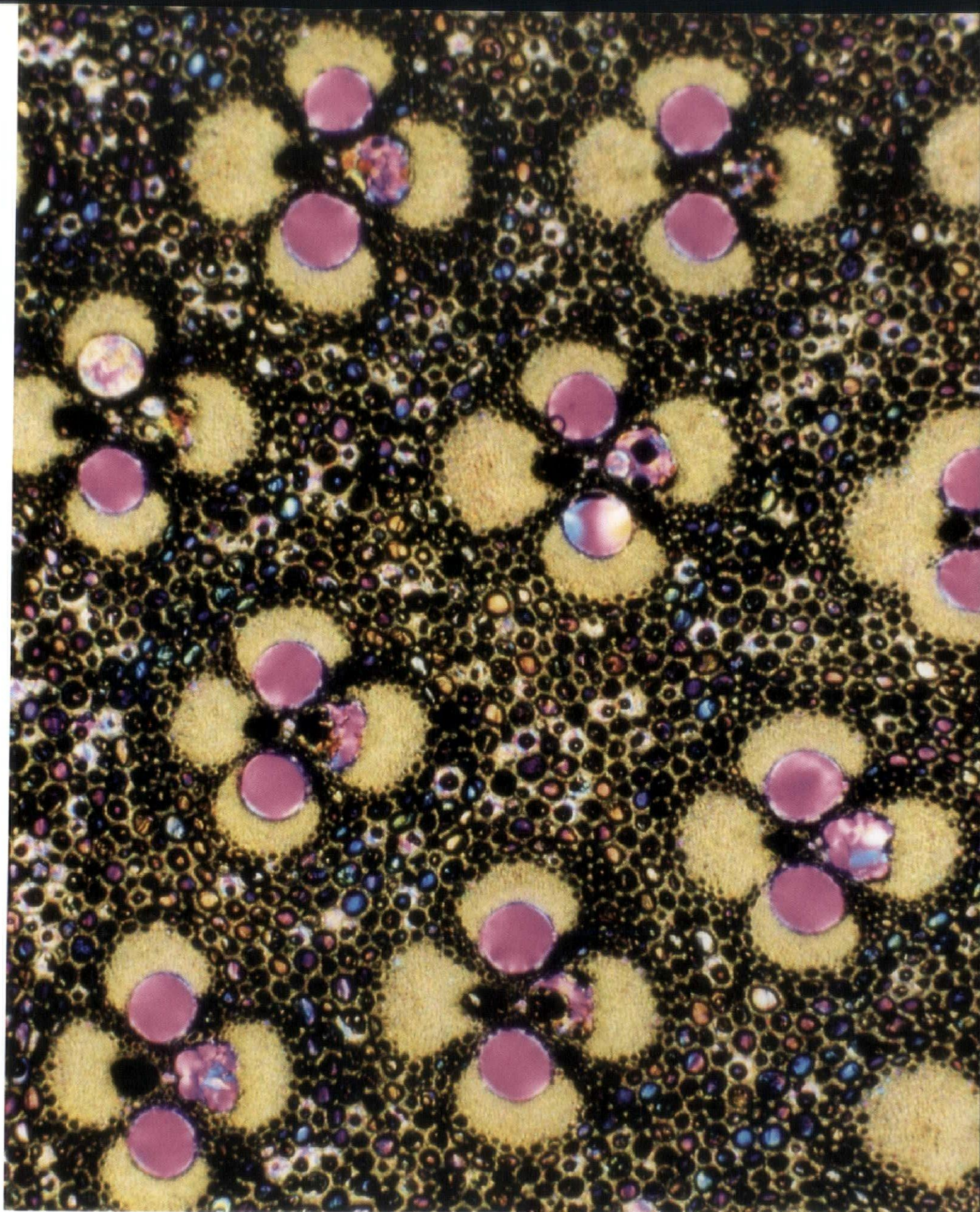
Photomicrography is photography of microscopic objects. Photomicrographs can be taken with the simplest compound microscope (with some jury-rigging of adapters) or the highest-power electron microscope, which can see the minute hairs on the

wings of a fly. Useful to scientists ranging from microbiologists to geologists to forensic scientists, photomicrography is an invaluable part of my work, documenting telltale evidence of features in building materials. As a concrete petrographer, I apply microscopy to the study of concrete and other hydraulic-cement based materials. Whether it is mortar in masonry walls of historic national monuments, the remains of a structure damaged by an earthquake, or the deterioration of a backyard concrete patio after a hard winter, the microstructure of such mundane materials may hold the clues to why seemingly indestructible materials fail. Such analysis is also used in research to find new and better ways to repair and restore our infrastructure, and in court cases to assign culpability for premature or unexpected failure.

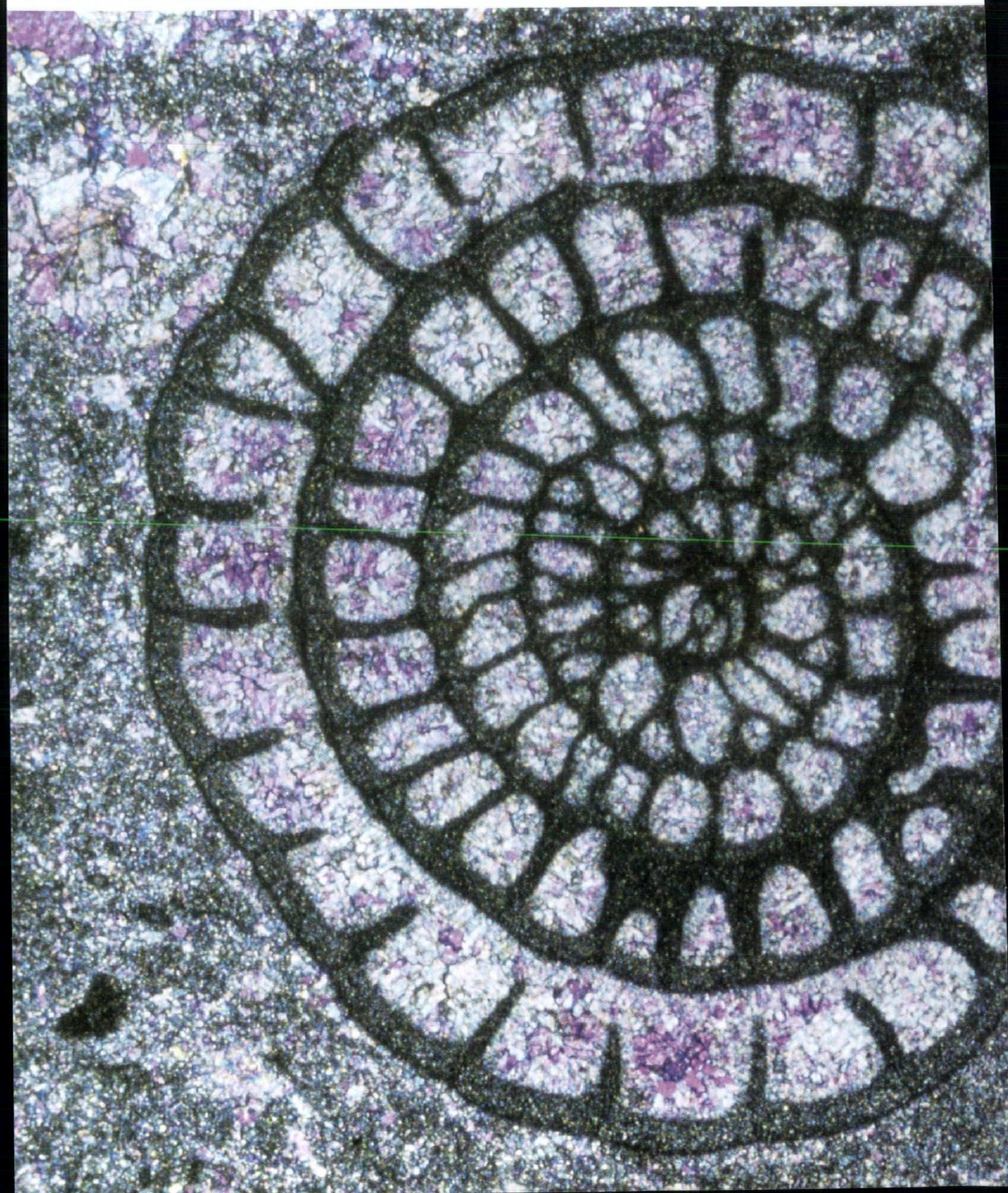
Microscopy also provides a view of an unseen world filled with beauty and incredible complexity. It can show the intergrowth of crystals formed in billion-year-old stone formed well before dinosaurs walked on earth; the skeletal remains of an ancient sea micro-organism fossilized in limestone, still showing both form and function; or the play of colors seen when light passes through crystals formed in a drop of chemical solution. Patterns of nature can be observed in a myriad of things both seen and unseen by the human eye. I have had the chance to see such beauty in many ways that others have not, and I have found a little bit of balance in my life as a scientist and artist. The photomicrographs presented here give just a glimpse of the world I see on a daily basis. ■

Ron Sturm is a senior microscopist and concrete petrographer at CTLGroup, engineering and construction technology consultants in Skokie, Illinois. His photographs have been widely published and have won several awards in Nikon's annual *Small World* exhibition.

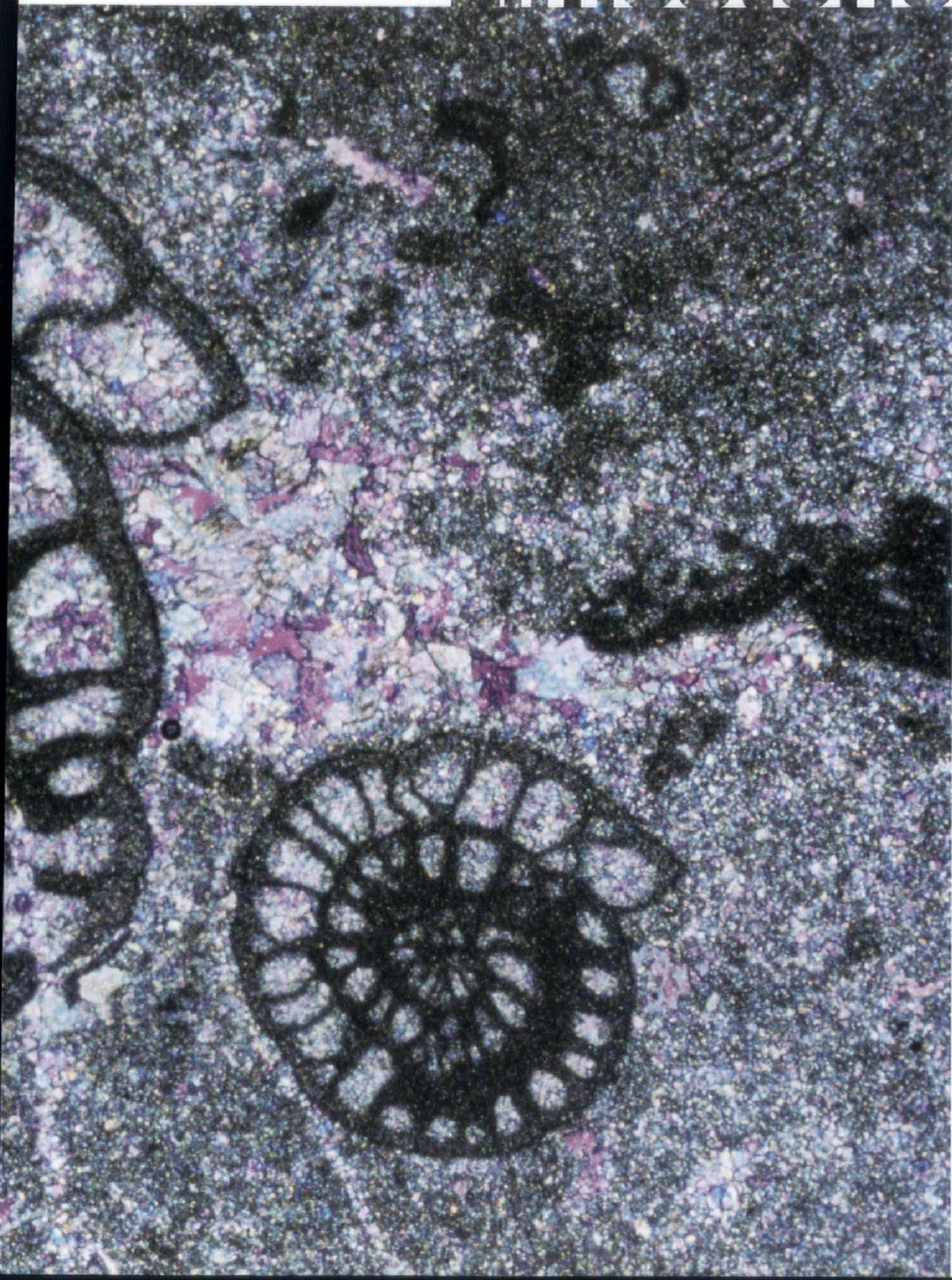
Editor's note: *Small World* will be on display at the Marine Bio Lab, Wood's Hole, Massachusetts from July 25–August 30, 2008 (www.nikonsmallworld.com).



Bamboo

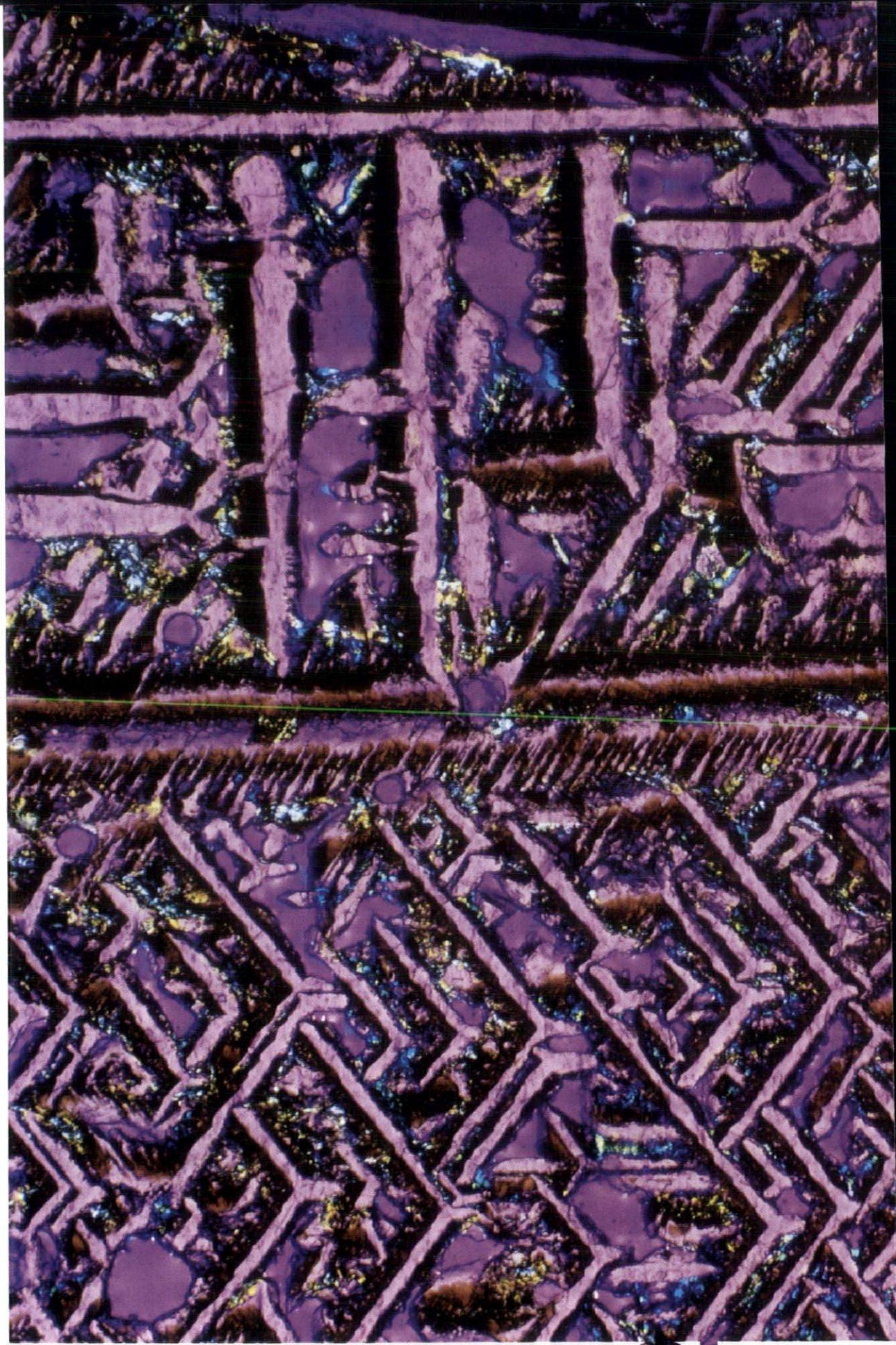


microfossils in Limestone



Fossil fusulinids in limestone (field width 3mm), 1993.

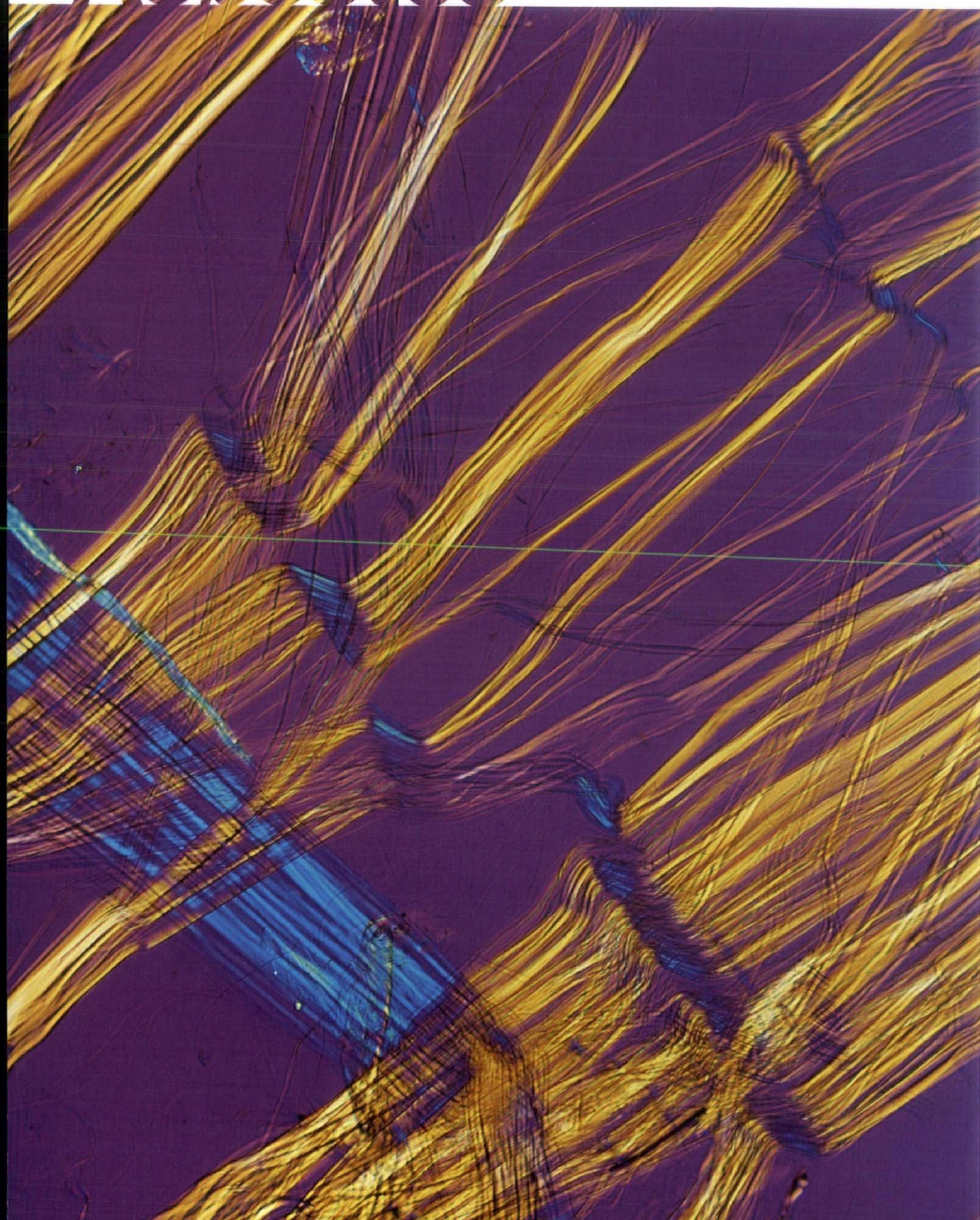
Steel blast furnace slag (recycled waste from steel production used as aggregate in concrete) (field width 3mm), 2002.



Slag



Asbestos





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Coloring Outside Lines

Embracing your inner
smallness can lead to
big things.

Seth Godin is a bestselling author of business books and a successful entrepreneur, whose 10 books include *Unleashing the Ideavirus*; *Permission Marketing*; *All Marketers Are Liars*; *Survival Is Not Enough*; and *Meatball Sundae*. A nationally recognized speaker on marketing and new media, he was the founder of Yoyodyne, a leading interactive direct-marketing company acquired by Yahoo! and, more recently, is the founder of Squidoo.com. His popular blog can be found at www.sethgodin.com.



Jeff Stein AIA is the head of the School of Architecture and dean of the Boston Architectural College and is the architecture critic for *Banker & Tradesman*.



Seth Godin talks with Jeff Stein AIA

Jeff Stein: Your recent book *Small is the New Big* is written rather like a blog, one riff after another revolving around the world of business and new media. In the physical world of architecture, small is indeed the new big, in terms of cost savings and energy savings. In the world of technology, we see it everywhere: the handheld iPhone does what a roomful of computer equipment did 50 years ago. But you're not talking about the physical reality of being small.

Seth Godin: Actually, my point is that thinking small is more important than being small.

Jeff Stein: Which might, for example, have an effect on how people are treated: personal service, the kind of attention that used to be available to customers only if they were dealing with a mom-and-pop small business. But new technology has made it possible for large businesses and institutions to act as if they were small. Is that it?

Seth Godin: Exactly. Big companies used to search for insulation. Now, the challenge is to search for exposure. Friction. Context. Interaction.

Jeff Stein: In one of your books, you write that in the course of simply doing your job, you inadvertently became a bestselling author of marketing advice for what is euphemistically called "the new economy." How did that happen?

Seth Godin: It wasn't an organized plan as much as it was a decision to refuse to make something that's mediocre. And to avoid going to meetings. I found I could use that freed-up time to engage with people, discover what they were wrestling with, and try to help them think about the world in a different way.

Jeff Stein: How did that outlook come to you? You graduated from Tufts University here in Massachusetts in 1982, with a degree in computer science and philosophy. Then you went to

the other edge of the United States, to Stanford for an MBA. Did those experiences introduce you to this particular way of thinking and of relating to the world?

Seth Godin: I learned two things about myself at both institutions. First, I learned that I am impatient and unable to sit still for long periods of time. Second, I learned that mastering the canon of an established field is not as interesting to me as provoking discussion about a new one. While sitting in advanced physics or engineering classes, learning that there were many miles to go before I could be considered an expert, it struck me that my ability to contribute to those fields was going to be very limited. Some people are quite good at adding that one last little nit to something that's been accepted for a really long time, but I found instead that my skill was in looking at a clean sheet of paper and saying, "Why are we starting here? Why don't we start there?"

Being afraid gets in the way of being remarkable.

The way most people deal with fear is by coloring **within the lines**, because if you color within the lines, you are **beyond criticism**.

Seth Godin

Jeff Stein: You're talking now to someone who represents that other end of the spectrum: I'm an architect, someone working within an established canon.

Seth Godin: And architects are the perfect example of my point. If we look at the happiest and, by some measures, the most successful architects, they are not the people who are designing the same buildings they designed six years ago. There is a glut of that sort of architect out there, and they are not rewarded for their efforts or their expertise, because they're a commodity. They are replaceable cogs who are doing the same work that 20 other people could do.

When I talked with Michael Graves a few months ago about his career, it was clear that, from the beginning, he was restless and unsatisfied with the status quo. And that is why he is happy and successful, because he refused to see the field as one where he needed to do what everyone else was doing, and understood that by being the best in the world at what he set out to do, he could command the respect of a larger group.

Jeff Stein: I had a teacher once who said, "If you're not willing to do what it takes to be remarkable, then I can't be of much help to you."

Seth Godin: Right. The thing about established fields is that

there are lots of places to hide. It's easy to look at something Frank Gehry does and criticize it — to say it's not rational or that it won't hold up. There are always lots of ways to argue for the status quo in a field. But it turns out, paradoxically, that the older a field is, the more opportunities there are to stand out by challenging the status quo.

Jeff Stein: There used to be more places to hide than there are now. The profession of architecture is a shrinking one. There are about 101,000 registered architects in the US; and for the last decade or so, that number has been going down by about 3,000 a year. People are dying off or simply leaving the profession for other things. And of the nearly 5,000 graduates of architecture schools around the country, only about 1,200 of them are sitting for the licensing exam. So the profession is shrinking, and right now there's a perfect storm of sorts in the building industry: there's the low value of the dollar, the housing crisis,

inflation, and of course there's the price of oil, which almost overnight has made every building that exists obsolete.

Seth Godin: But there's never been a better time in history to be an architect than right now. It's almost beyond argument. Everything that you just listed is a reason why it's good to be an architect. The opportunity for the struggling architects I know is to realize that the problem is internal, not market-based. And the internal problem is that you're afraid. Being afraid gets in the way of being remarkable. The way most people deal with fear is by coloring within the lines, because if you color within the lines, you are beyond criticism. I guess the challenge that I propose to someone reading this is, what did you do yesterday for which you could be criticized? If you're not regularly doing work for which you can be criticized, why are you surprised that people aren't seeking you out?

Jeff Stein: In the talks that you give, do you have ways of inciting bravery in your audiences?

Seth Godin: I think that you can't rationalize your way out of fear; you have to emotionalize your way out of it. And the way that people do that is by falling in love with the goal. If you can fall in love with the outcome, if you can see the light, then you will be able to tell yourself a story that will get you

through the tunnel. What I do for a living, because I don't do any consulting, is to try to paint a picture of what it's like on the other side. I try to tell heroic stories of people who have overcome fear, however irrational it might be, and then went on to build something remarkable, whether they're in the sock business or the architecture business or the consulting business. There are examples everywhere.

Jeff Stein: Another of your books, *The Dip*, teaches the reader when to quit and when to stick. In it, you chart the dip on an X-Y axis, where the vertical axis is results and the horizontal axis is efforts. At the beginning of undertaking pretty much anything, results are usually good. Then, after quite a bit of effort, there is a dip where the results diminish. If you can somehow get through this dip, the results are often terrific.

Seth Godin: A great example is becoming a doctor. In order to become a doctor, first you have to be pre-med — you tell your grandmother and she's all excited, so there's positive feedback. Then you have to take organic chemistry. Organic chemistry is the dip. Organic chemistry exists for a reason: to get pre-med students to quit. And that's a good thing, because some pre-med students make it through and end up being doctors. And if you end up being a doctor, you make a good living because doctors are relatively scarce. In fact, the dip is your friend because it creates value. The architecture licensing board is another example of a dip.

Quitting is, unfortunately, underrated. Our culture thinks quitting is a bad thing, that quitting is for chickens, for people who don't have what it takes. But in fact, sometimes the smartest thing you can do is quit before you start. Quit something when you know how big the dip is and before you get stuck in it. Don't even start if you can't make it through that dip. So if your goal is to be an architect who builds the tallest building in the world, there's a pretty big dip you're going to have to get through before you end up there. If you evaluate that quest up front and realize how big the dip really is, you might decide not to go down that road. But the worst thing is to invest all the time, all the energy, to make it halfway, then get stuck in the dip and give up, which is what most people do. Most people do what they think they're supposed to do, which is put in every last bit of effort. Then, when they can't give it enough, they quit. If you can look at your career upfront and say, "I have a choice. I can either chart a path where I can get through the dip and be the Frank Gehry or the Michael Graves that people seek out, or I can quit right now" — and then choose one or the other — you'll be fine.

Jeff Stein: You also point out that most of us have been the victims of bad advice, some of it in school. You cite one piece of advice as being particularly bad: that it's really important to be well-rounded.

Seth Godin: When you think about where you go for dinner, or who you decide to marry, or where you decide to work or live, you realize you never pick anything because it's pretty good at lots of things. If you're going out for pizza, you don't care if

the place also makes pretty good eggplant parmesan, because your goal is pizza. And if I'm hiring an architect to design my house, I don't care that she makes a pretty good office building. I want a good house; that's what I want right now.

Jeff Stein: You point out that the list of what's scarce and what adds value has changed pretty radically over the course of this generation. One of the things that's on the list now is time.

Seth Godin: That's right. Spare time. There used to be something called pastimes. You could go to a store to buy stuff to while away the hours. It's inconceivable to us now that we need more stuff to fill our time. What we want is things to save our time. That's a shift. It used to be that energy was cheap and plentiful and you designed a building without even thinking about energy. Now the opposite is true. So if you go down the list of the things that you are doing for people and compare it to the things that are scarce, that people really need, you may discover that you are spending a lot of your time and a lot of your activities solving a problem that your customers don't have. And the people who are winning today are the ones who are embracing the new scarcity and taking advantage of the fact that plenty of other things that used to be scarce are now plentiful. I'll give you a simple example. There's a whole generation of tax accountants who have discovered that they can send those shoeboxes filled with receipts they get from their clients to people in India who, for three dollars an hour, lay them all out in beautiful spreadsheets. So the accountant instead gets to spend time working with clients and doing high-leverage stuff.

Jeff Stein: There's a sense of this in the recent Hollywood writers' strike. The writer Michael Wolff pointed out that what you have now is a population of writers trained to write for a medium that no longer exists.

Seth Godin: That's exactly right. All strikes are unfortunate. This one was doubly unfortunate because it solved the wrong issue. The reason that TV shows used to be 30 minutes long is only because it was important that people be able to remember what time the show was on. You couldn't broadcast the show at 7:54, because people wouldn't remember it. Once you get rid of live broadcast, and everything can be recorded so it's on whenever you want it to be on, there's no reason for shows to be half-an-hour long any more. Suddenly the art of writing a two-minute bit is just as important as the art of writing something that's an hour long. Suddenly it doesn't matter that you have really high production values; now what matters is that it's quick and it's funny and it's free.

Jeff Stein: You point out that there are seven million videos on YouTube that are on average five minutes long and that are watched for an average of 10 seconds.

Seth Godin: Exactly. Business models are changing, and the way people approach problems is changing. I think that architects

need to be honest with themselves and realize that they have an opportunity. Sure, fewer houses are going to get built, but the ones that are going to get built are for people who don't want to live in a house just like every other one that's already been done. If I am trying to build a green house or a waterfront house or whatever, Google enables me to find the best people in the world to do it, no matter where they live. And if they're easy to find and easy to work with, they're much more likely to get my business than if they just went to the right cocktail party. That's not the way things get done anymore.

Jeff Stein: In your latest book, *Meatball Sundae*, you suggest that what many businesses do, and architecture is among these, is make meatballs. Yet, when they look at new marketing opportunities through the Internet and new media, they're in effect putting whipped cream and cherries on top of these meatballs.

Seth Godin: Right. If you're an ordinary architect doing ordinary work for an ordinary client, why do you think a website is going to help you?

Jeff Stein: Well, because you've heard that that's true.

Seth Godin: But in fact, the Web is your enemy. The Web is helping people who are doing extraordinary work for extraordinary clients and charging extraordinary fees if

necessary. The Web rewards the outliers, the edges, the people who are worth talking about, and it punishes the average folks in the middle.

Jeff Stein: So we're not worried so much about brand management any more; as you point out, the next model is tribal management.

Seth Godin: That's exactly it. If you don't have a tribe of people who adore you and follow you and are interested in what you're doing, then I suggest you go find one.

Jeff Stein: What the Internet has fostered is that sort of social network. It's the relationships between people and objects, rather than the objects themselves, that are important now.

Seth Godin: Exactly. And architecture as an edifice, as a souvenir, as a process, can be right in the center of that, creating spaces that connect people as opposed to spaces that isolate.

Jeff Stein: In all your work, you push for change — in favor of success, authenticity, the remarkable. "I dare you," you say in *Small is the New Big*, "to read any 10 of these essays and still be comfortable settling for what you've got."

Seth Godin: Architects who settle are unhappy architects. ■



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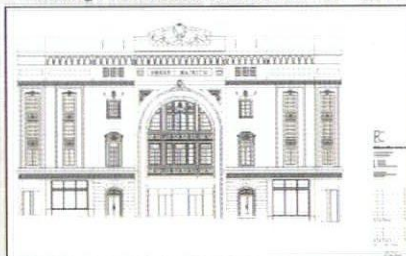
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Covering the Issues

Design Business... *Harvard Business Review* offers a couple of articles that may help to enhance your bottom line. In "Design Thinking" (June 2008), Ideo chief Tim Brown explains the team-based iterative process that designers typically employ and suggests ways for designers to involve clients and users along the way. Venturing into less familiar territory, Harvard Business School professor Frances X. Frei explains "Four Things a Service Business Must Get Right" (April 2008). Working from the premise that service businesses (such as architecture) differ from product-based companies, Frei argues that different tools are needed. Success depends, for example, on finding creative ways to fund time-intensive research, hiring for aptitude and attitude, effectively managing clients, and even deciding which services *not* to do well — sometimes excelling in one area means not competing in another, such as price. At first glance, the specific examples of Progressive Insurance or Cleveland Clinic may seem to belong to a different world, but listen to Frei's larger message and let the ideas percolate. You may see your business in a new light.

Good medicine... Most medical clinics, doctors' offices, and hospital rooms feel "like a Hyatt [hotel] from the early '80s" laments Virginia Postrel in *The Atlantic Monthly* (April 2008). In "The Art of Healing," Postrel points out that good medicine doesn't need to come with bad design. Even though the big bucks fund the high-tech equipment and salaries for first-rate medical talent, paying attention to relatively low-cost, small-scale design elements such as materials or room orientation can have enormous influence on the quality of patient care and rate of recovery, too. Postrel cites the 2006 AIA

example, as a positive step. The evidence is out there. Patients with views of trees or in rooms with natural light suffer less anxiety, request less pain medication, and enjoy shorter hospital stays. And then there's also the Starbucks effect, which shouldn't go unnoticed in competitive medical markets: add better interior design to excellent service and more customers will come.

Forget green. Go orange... If you, too, are growing weary of all the green-washing out there, skip those colored covers and turn to *Wired*'s fluorescent orange one instead (June 2008). "Screw Organic. Go Nuclear. Live Urban. Crank the A/C," write the editors, in their cover story on "Inconvenient Truths" about climate change. All that really matters is dramatically reducing our carbon footprint. You may not agree with every directive here — Alex Steffen certainly doesn't in his companion piece, "It's Not Just the Carbon, Stupid" — though they'll definitely get you thinking. For instance, is it really better to heat (as we New Englanders do) from zero degrees to 70, than to cool (as those in Phoenix do) from 110? After all, they only have 40 degrees to change...

Designing minds... *Seed* takes a very different tack as it, too, explores relationships between design and science in its Design Issue (March/April 2008). Coinciding with the "Design and the Elastic Mind" exhibition at the Museum of Modern Art, the issue springs from discussions among scientists, architects, curators, and designers at MoMA as they developed the show over an 18-month period. Features include a conversation between curator Paola Antonelli and mathematician Benoit Mandelbrot, while a series of short spots highlight innovative thinking, forms, and products that come



Dubai, Dubai, Dubai... If you (like me) are one of the few Boston designers not working in Dubai right now, and even more importantly, if you are, check out Joe Saddi, Karim Sabbagh, and Richard Shediak's cover story on the new "Oasis Economies" in *Strategy+Business* (Spring 2008). Our news headlines, with their focus on political tensions, largely ignore the extraordinary economic shift and subsequent physical transformation underway in the Middle East. As Dubai's manmade Palm Islands rise from the sea and Abu Dhabi plans for \$200 billion in construction over the next decade, the authors ask: "Is this a fertile, sustainable oasis — or the deceitful promise of a mirage?" As they explain, they clearly believe that the Middle East's transformation is real, stable, exciting, and very much here to stay.

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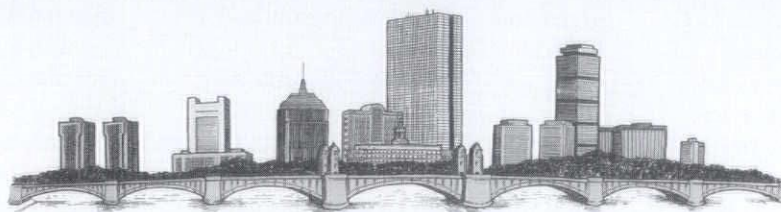


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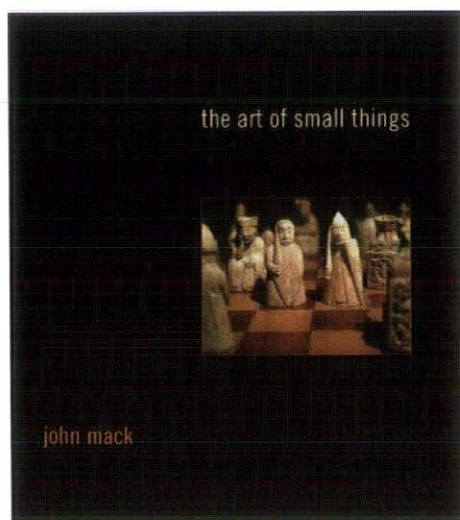
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THE ART OF SMALL THINGS

By John Mack

Harvard University Press, 2008

John Mack's inviting new publication, *The Art of Small Things*, explores the allure and meaning of diminutive objects. This "extended ethnographic essay" follows Mack's 2003 publication, *The Museum of the Mind: Art and Memory in World Cultures*, and, like that earlier publication, is globally expansive.

Currently professor of World Art Studies at the University of East Anglia, Mack was formerly a curator at the British Museum. He wears his vast knowledge casually, moving easily from European miniature paintings, to architectural models, Egyptian amulets, microscopic books, South African divining bowls, medieval maps, Roman gems, and Asante fertility dolls. More cautious scholars might have been reluctant to incorporate such diversity in one short volume.

Mack notes that we measure the world through our own bodies — early measurements were intimately tied to the human form, a "foot" perhaps being the only term still in common usage. He argues that the miniature is compelling both for its relationship to the scale of the body and for the perceived skill inherent in its manufacture. But size and technical prowess alone cannot account for the

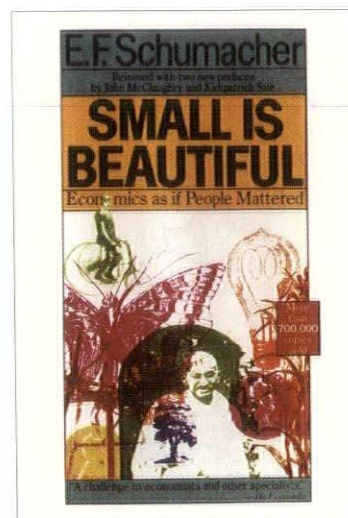
power accorded diminutive objects across many cultures. Mack suggests that "small is beautiful" because these works function as microcosms of the world. Microcosms embody the essence of the larger worlds they represent and consequently, they are proportionally more potent.

Small works are often perceived to have spiritual and talismanic qualities. Reliquaries were necessary to consecrate early Christian churches. Mack also poignantly illustrates a 10th-century silver medallion struck to commemorate the re-establishment of order in the city of Baghdad. Often designed to be carried on the body or held in the palm of one's hand, small works of art are also inherently intimate. Queen Elizabeth I, when discovering a concealed portrait of Cecil, one of her own favorites, around the neck of a lady at court, snatched it to wear upon her shoe. By publically exposing this private token, the queen appropriated and negated its power.

The Art of Small Things is profusely illustrated with objects from the British Museum's collections. Each image is annotated and, collectively, the illustrations form a secondary essay in tandem with the main text. However, Mack spends considerable time writing on objects that are not in the British Museum's collection and are therefore not illustrated. Some of them — Joseph Cornell's box constructions — can be conjured in the mind's eye with ease, but other more obscure examples are harder to recall. This divergence between illustration and text can be disconcerting at times, but it also encourages multiple and non-linear readings.

Although not a miniature book itself, the volume is small — slim and slight, it fit neatly into my bag and I carried it around with me for a week, savoring each chapter as a delicious morsel.

Karina H. Corrigan is the associate curator of Asian Export Art at the Peabody Essex Museum in Salem, Massachusetts.



SMALL IS BEAUTIFUL: ECONOMICS AS IF PEOPLE MATTERED

By E.F. Schumacher

Harper Perennial, 1973

One of the most influential books of the past century, *Small Is Beautiful* is simultaneously a manifesto and a mentality. Even those who have never heard of E.F. Schumacher or his little book recognize in his title an argument in favor of elegance over the tacit veneration of bigger-faster-more-more-more. Its 1973 publication thrust a counterculture mindset into a mainstream debate over what costs we as a society should and should not be willing to pay in the Faustian commitment to "growth at all costs" — a debate that has since heated up along with global temperatures.

Schumacher offers an empowering language for the point-blank critique of the continuous and limitless material exploitation of a finite world that still passes for business as usual. These are not simply shortcomings in our technical and social systems, but a metaphysical crisis. In place of the dehumanization of work in servitude to per-capita gross domestic product, Schumacher calls for a humanization of productive relationships in support of a higher quality of life. Transcending any blanket condemnation of capitalism or socialism, Schumacher's ideas gained

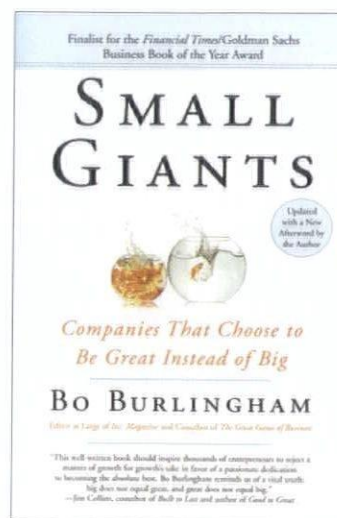
currency across the political and social spectrum from the *Harvard Business Review* to *The Whole Earth Catalog* by identifying scale itself as a key factor in the success or failure of systems. New technologies will continue to require us to revise what we consider “small,” but the essential considerations of human scale identified by Schumacher show no signs of change.

Schumacher’s controversial statements on the inevitability of energy scarcity proved prescient on the eve of the 1970s oil crisis. Moving beyond simply identifying the “logical absurdities” embedded in our systems, Schumacher provided some of the first examples of pragmatic measures intended to displace self-destructive global behaviors with local cultures of stewardship. He pioneered the notion of “intermediate” or “appropriate” technology paving the way for everything from solar ovens and mosquito-net programs to hundred-dollar laptops and microfinance.

One wonders what Schumacher, who died during a lecture tour in 1977, would have added to his already prodigious

insights on our present condition. The most significant contributors to a new metaphysics of sustainability have explicitly built on the Schumacher legacy. Notably, Schumacher’s “natural capital” is the basis of Paul Hawken’s book *Natural Capitalism*. Had Schumacher survived, he would no doubt find resonance in the novel ways in which critical thinkers such as Ulrich Beck have used the characteristics of “reflexivity” to identify self-regulating biological, technological, economic, and social systems, the key attribute of what some have postulated as a potential “second modernity.” The beauty of smallness derives from the elegance of this reflexive self-regulation. For demonstrating what it might look like to respond to the metaphysical crisis of modernity, Schumacher has earned the mantle of “godfather of sustainability.”

Robert Cowherd, PhD, Assoc. AIA, is associate professor of architecture at Wentworth Institute of Technology in Boston.



SMALL GIANTS: COMPANIES THAT CHOOSE TO BE GREAT INSTEAD OF BIG

By Bo Burlingham

Portfolio, 2005 (hardcover);

Penguin, 2007 (paperback)

In today’s highly competitive business environment, the conventional wisdom is that bigger is always better. Indeed, size is often synonymous with success,



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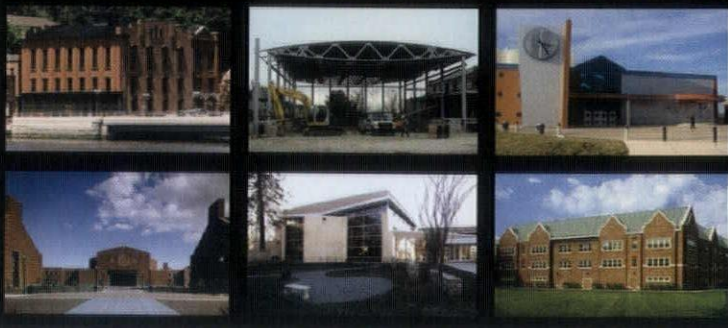


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whether measured by the number of widgets produced, people employed, or profits generated. Yet we all know that bigness does not necessarily equal greatness, and there is a sneaking suspicion that size and quality may actually be incompatible in some fundamental way. Ironically, some really great companies have failed because of their success — too much growth too fast can indeed be fatal. Yet the pressure to expand is inexorable, and it comes from many sources, including customers, suppliers, employees, and stockholders, all of whom have a vested interest in growth for growth's sake.

Small Giants, by Bo Burlingham, tells the stories of several companies that have survived and prospered by taking exactly the opposite tack — by deliberately staying small and focusing on their niche markets. Each is highly successful in its own right, boasting loyal customers, dedicated staff, and sustained profitability. Some of these companies deal in products, others in services. All are unique, but

they do have something in common — dubbed *mojo* by Burlingham — that makes them outstanding performers in their chosen fields. The founders tend to be people of great imagination and vision, with enormous energy and personal commitment to the business, who can motivate others to achieve a common goal. They excel at creating a special bond among their customers, suppliers, and staff, based on a strong shared value system that drives the enterprise. Not surprisingly, words like “passion,” “intimacy,” and “trust” are used liberally throughout the book. Burlingham clearly believes that business is something of an art, with spiritual as well as economic aspects.

These “small giants” are transformative in nature; they have re-conceptualized their markets and in some cases redefined whole industries. And while profitability is essential, money is not all that matters. Extraordinary customer service is key, as is “soul.” They are deeply rooted in their communities (a quality Burlingham calls

terroir), with an impact that transcends the bottom line:

Businesses are the building blocks, not just of an economy but of a whole way of life. What they do and how they do it have an impact that extends far beyond the economic sphere. They shape the communities we live in and the values we live by and the quality of the lives we lead. If businesses don't hold themselves to a high standard, the entire society suffers.

Small Giants is an enjoyable read, though a bit repetitive in spots. By telling the personal stories of the founders of these enterprises, Burlingham draws the reader right into the action; it's an effective way to get the point across. Those who believe that small is beautiful will find much comfort in Burlingham's thesis.

Scott Simpson FAIA, LEED AP is managing director of KlingStubbins in Cambridge, Massachusetts.

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THE CENTER FOR SMALL TOWNS

www.morris.umn.edu/services/cst

SMALL TOWN IDEA GENERATOR

<http://news.minnesota.publicradio.org/projects/2005/04/smalltowns>

Obviously, Minnesotans care about their small towns. The University of Minnesota, Morris sponsors a research center, while Minnesota Public Radio maintains a site that is a fascinating model for online civic discussions.

THE MICROPOLITAN MUSEUM

www.microscopy-uk.org.uk/micropolitan

Art-history books are full of still-lives, landscapes, portraits... but somehow micro-organisms haven't made the cut. Here to correct this serious omission is the Institute for the Promotion of the Less than One Millimeter, the sponsor of the virtual Micropolitan Museum. Is this the beginning of the end for starchitects and multimillion-dollar museums?

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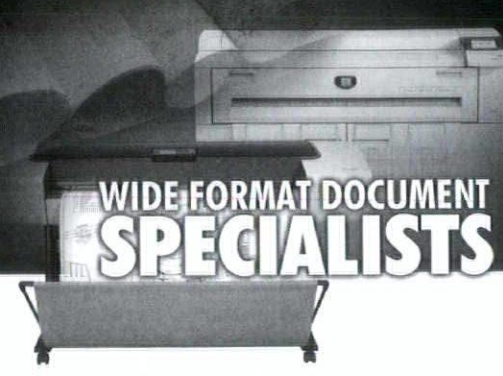
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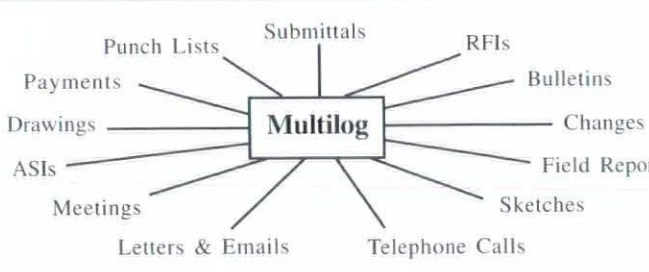
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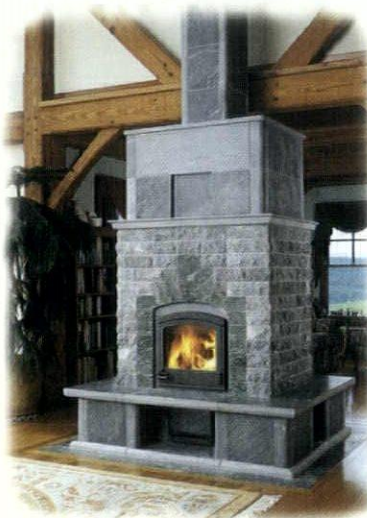
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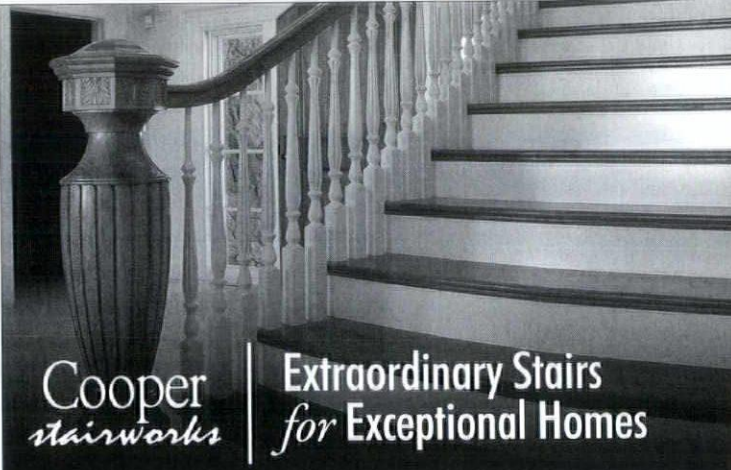
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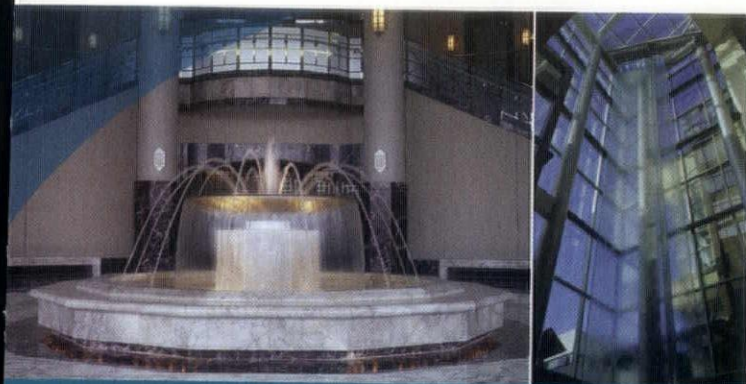
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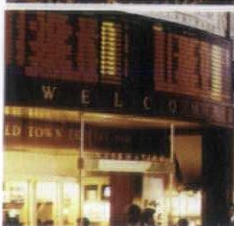
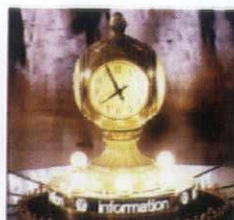
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The Kitchen Cupboard

▼ Photo illustration by Mary Ross.

Every evening our teenage daughter, **Becky**, sets the table — that is, if we've remembered to leave the clean dishes in the dishwasher. If they're in the cupboard, she won't be able to reach them.

When the phone rings, she steps up onto a stool so she can grab the receiver. If she needs something from the freezer, she moves her stool over to the refrigerator. And at breakfast time, she knows where she'll be able to find the boxes of cereal: on the floor.

She can barely reach the sink, either at home or at school. She navigates stairs as though they were boulders from Stonehenge. When she starts to drive, she'll need pedal-extendors so she can manipulate the gas and the brake.

Becky was born with achondroplasia, the most common form of dwarfism, and these are just a few of the obstacles with which she must contend. At four feet, she's as tall as she's ever going to get.

Legally speaking, she has a disability, and we have the handicapped-parking placard to prove it. But dwarfism doesn't look like a disability in the ordinary sense. People with dwarfism can experience more than their share of orthopedic woes, but many do not. Becky is healthy in every way. Her arms and legs, though disproportionately short, work just fine. She walks, she swims. She enjoys life just like any 15-year-old.

Thus dwarfism is primarily a socially constructed disability — a disability arising from the fact that much of the built environment was designed for people between five and six feet tall. Think of it this way: If a little person gets stuck in the elevator because he can't reach the buttons, then he has a disability. But if the buttons are low enough for him to reach, then he doesn't.

One night nearly six years ago, I was sharing a late dinner at a restaurant in suburban Baltimore with Dror Paley, a surgeon who performs a procedure known



as extended limb-lengthening, or ELL. I'd spent the day making the rounds with him at Sinai Hospital, meeting kids and their parents, and observing some rather gruesome-looking practices. ELL involves breaking the bones of the arms and legs and stretching them with metal frames that are inserted into the limbs. You can gain a foot or more in height, but complications — admittedly rare in the hands of a gifted surgeon like Paley — can include infection, nerve damage, even death.

Paley pointed to a corner of the restaurant near the door. "That coat hanger right there is almost inaccessible to most dwarfs," he said. "But who designed it to be that way? If we were all three feet tall, it wouldn't be that high, would it? The position of that handle on the door is not designed for a dwarf. It will hit him in the forehead. So he has to reach up here" — he gestured with his hand — "to hold that handle. The door knob, the light switches — it's a fact of life."

Paley's philosophy — that people with dwarfism should be able to choose surgery in order to fit into that built

environment — is not wrong. But it's wrong for Becky, who wants nothing to do with surgery, and is improvising her own methods of navigating a world made for what must seem to her like giants. And if it's wrong for Becky, then it's wrong for us.

In recent years, disability-rights activists have succeeded in lowering ATMs, gas pumps, and the like, benefiting not just people with dwarfism but wheelchair-users and others. Still, it's unreasonable to expect that society will lower all of its barriers when we haven't even been able to remove them from our home.

But Becky is not someone who is broken and must be fixed. There's value to difference. Respecting and accommodating that difference, ultimately, will lead us all to a much better place. ■

Dan Kennedy is an assistant professor of journalism at Northeastern University. His critically acclaimed book, *Little People: A Father Reflects on His Daughter's Dwarfism — and What It Means to Be Different*, is now available in a free online edition at www.littlepeoplethebook.com.