

arcca

architect in the community issue

11.2

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the journal of the american institute of architects
california council

Crissy Field Center, San Francisco, Project FROG

The Business of Architecture

People Know Brad Pitt Wants To Be an Architect, but . . . Research Entrepreneurship Mergers & Acquisitions
Can CAD Be Saved? California Prefab: Current Market Report Architect as Developer
What I Learned from My Former Employer that I Didn't Appreciate at the Time

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arcCA, the journal of the American Institute of Architects California Council, is dedicated to exploring ideas, issues, and projects relevant to the practice of architecture in California. **arcCA** focuses quarterly editions on professional practice, the architect in the community, the AIACC Design Awards, and works/sectors.

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I truly enjoyed the latest issue of your magazine. It was a nice collection of views on our professional organization. After reading the comments of the non-members, I thought I'd send along a couple of historical quotes from *American Architect & Building News*, the first magazine of the AIA:

October 28, 1876 "Some members have been disposed to ask, (rather inconsiderately, it seems to us), what they get in return for their annual [AIA] fees . . . The work of the Institute is the improvement of the standing, influence, and efficiency of the architectural profession in the United States. Its benefits cannot be parcelled out and estimated for individuals."

February 1, 1879 "Dear Sir: Can anyone inform us what expense the AIA is under which forces it to call for a special assessment? The writer, in common with all the Associates of the AIA, pays \$7.50 per annum for which he has absolutely *nothing* in return."

A hundred and thirty five years later, and not much has changed.

**Bill Beyer, FAIA
Minnetonka, Minnesota**

11.1 may be the best issue of **arcCA** yet (or its predecessor *Architecture California* for that matter).

With his brilliant stroke of s-t-r-e-t-c-h-i-n-g from an invocation of the amazed-sounding authority of de Tocqueville, through the comfortless encomia of Coach Farson, to macho rants of non-contributors, the Editor comes out boxing (not swinging, too smart): punch, parry, punch, punch, hit, etc. Gracefully, he will "float like a butterfly..." to a ten-round decision in his (and **arcCA's**) favor.

This endless, wrangling work that so sorely tries the patience of energetic editors and contributors alike reminds me of the marksmanship test the Army used to give basic trainees. That's when the range officer, growling with stentorian clarity, would calmly assure a line of nervous riflemen, "The targets will come up. You will knock them down. IT'S JUST THAT SIMPLE. Any man here can do it."

It wasn't true. You tried, but, in reality, you could barely make out the farthest targets when they swung up at 400 yards. So when the sergeant straddling you

yelled, "Hit!" you had to figure he was lying to build your self-esteem. But you never knew for sure. Maybe you did hit it, or maybe some other guy—an even worse shot than you—hit your target by accident. It still felt good.

I'm not sorry I didn't notice your survey when you were conducting it. (I confess I don't read every word either.) But now, as a sole-surviving son, maybe it's time for me to explain that twenty years ago, a vestigial editorial board (Joe Esherrick, Bill Turnbull, and I) actually wanted the magazine to feel more like what one recent critic has termed "a college rag" *precisely in order* to emerge from a silly, self-congratulatory, poorly written past as a credible professional journal. Or maybe it doesn't matter.

Congratulations, anyway.

**Barton Phelps, FAIA
Los Angeles**

I eagerly anticipated reading my copy of the latest issue of **arcCA**—anxious to get California's take on "valuing the AIA." It was an interesting read, but I must admit that I came away a little disappointed. Perhaps it is because I have been around so long and have heard this discussion so often that the conversation always seems to be a replay of the same one over and over.

My own reaction to the discussion this time is that we all know the arguments for membership pretty well—advocacy, networking, socializing, learning from peers, etc. The problem is that these arguments have never had much success in turning non-members into members. I come away with the feeling that the answers to member value do not lie in these kinds of generalities but in the specifics of member need.

I particularly appreciated your inclusion of statements by non-members on why they were not members, and I'd like to use them as examples of what I am talking about in regard to "specifics" above.

For C. Douglas Barnes, I understand the challenges remoteness and lack of resources place on membership. While I am glad to hear that he is getting continuing education and networking through the local Builder's Exchange, I wonder why these experiences couldn't be made richer through partnership with the AIA. I wonder why the Fresno component couldn't

regard this Mr. Barnes' outpost of membership as a "little buddy" to be taken under their wing and nurtured. I believe such "buddy programs" are a potentially potent answer to underserved membership. If the drive is too far for participation, perhaps virtual participation could be an option.

For Maxine Ward, it sounds to me that she is doing excellent work with the San Diego Architectural Foundation, and I certainly applaud her efforts and her interests. Here, I always just wonder why it has to be an either/or kind of choice and why the Foundation and the AIA couldn't be excellent and very compatible partners in "expanding knowledge about architecture and design among the general public?" That certainly is one of the AIA's long-standing objectives as well.

To me, understanding the unmet needs that result in a lack of value is the first step. Applying creative means to address new value propositions is the next step, and probably the only real answer to these ongoing issues.

On another matter, I didn't respond to your member survey, but if I had, I would have definitely been in the "positive camp." I find **arcCA** to be a consistently excellent publication that I value more than most because so much of the content is generated by California membership—most refreshing and generally much more relevant than the over-generalized stuff that appears so often in the national publications.

For those components that do not enjoy California's member resources writing for your publication (I know there are many who are really challenged to have significant content developed by membership), I was wondering if you had ever considered reaching out to your fellow state components around the country to offer them the opportunity to reprint **arcCA** content? You might be surprised at the response, and with time, established relationships, and dependable content, you might find your way to making this a non-dues revenue source. I think this might be particularly attractive as more components move to an on-line format. Sharing of this sort is something that I believe the Institute needs to foster as much as possible.

**Stephen K. Loos, FAIA
Denver, Colorado**

The best time for marketing is always.



Some Practical Basics

Marketing: Julie D. Taylor, Hon AIA/LA

Models: Michael S. Bernard, AIA, and Nancy Kleppel, Associate AIA

Mergers: Mark Cameron

People Know Brad Pitt Wants To Be an Architect, but They Can't Name Any Real Architects



Julie D. Taylor, Hon. AIA/LA

When Brad Pitt lusts for blueprints, and Frank Gehry “stars” on “The Simpsons,” and the term *architect* is used to aggrandize every other activity, one might think the profession is better understood than ever. Perhaps so. But can anyone outside the profession name five living architects? Could your clients?

Besides a few stars, it is common still for architects to bear blame but not glory, to be eclipsed by clients, and to be relegated backstage at grand openings and groundbreakings.

There may be nobility in being an unsung hero, but it doesn't generate new business.

The answer to unwanted anonymity is more consistent communication. Marketing is the nexus between communication and sales. And sometimes, I'm afraid to say, architects can be their own worst enemies when it comes to verbal expression. You must communicate to potential clients and allies in a way that promotes your business as well as the ethos of the profession.

The economy seems to be inching its way back. Yet competition among architects for each commission remains fierce. More than ever before, architects need to understand—and more important, aggressively partake in—marketing and public relations.

Myth #1: Marketing is a 4-Letter Word

You did not spend all those years in school and all that time in licensing exams to be a marketing expert, right? However, without a notion of what marketing is, you won't have the chance to put all that great talent and time to use. The real four-letter word for marketing is W-O-R-K. It takes work and it leads to work. Marketing is not for other people; it's for you. Marketing is the overall term that pertains to the process of getting work. Under that rubric fall business development,

I can count the instance of a reporter knocking on an architect's door and asking to publish her house on one finger. Being "discovered" takes work.

marketing communications, and public relations. A few definitions:

- **Business Development:** The direct means of securing clients through lead development, networking, RFQ, RFP, committee membership, interviews, design competitions.
- **Marketing Communications:** Relaying messages about your practice through website, corporate identity, newsletters.
- **Public Relations:** Partaking in activities giving you greater exposure to the public realm, such as awards programs, speaking engagements, exhibitions, and media relations.

Within all of these areas, a consistent, well-crafted message about the practice and the work is the necessary first step. Put your practice through analysis to drill down to your message, your "brand," to define the practice. There is a natural antipathy in nearly every professional to having a complex, nuanced, and earnest practice marketed as a brand or easily-digested set of ideas. But remember, the world is a large and crowded stage—your message can be elegant, but must be concise and understandable. Enlist help from a marketing consultant, mentor, coach, or colleague to get an outside view and discover if the message is getting through.

Myth #2: Marketing Is Only Needed When Business Is Down

The best time for marketing is *always*. When business is good (remember those days?), you still need to keep your name out there and cultivate new leads and jobs for the times when business is slow. Because each job is going to end eventually, and too many are on stop-and-start schedules, you want always to be marketing. The best way is to integrate marketing activities into your practice and impart that everyone in your organization is part of marketing. Understand that it's in everything you do and present: company name (a string of last names, a bunch of initials, or a word); identity (business cards, graphics); website (message *and* usability); digital communication (emails, e-newsletters, blogs, Facebook, Twitter). Even how the phones are answered makes an impact (human or machine?). Look at every seemingly minor element of the business and make sure it corresponds with the message of your practice.

Myth #3: If I Build It, They Will Come

If you don't let anyone know about what you do, how will they know to hire you? An architect once told me he thought he never got published because the work just wasn't good enough. No, he never got published because he wasn't pro-active enough about it. Getting your work and message to the media introduces you

to new audiences and bolsters your existing image among clients and peers.

In a media-saturated world, it's even more important to be represented. Right or wrong, that's the landscape now. Although it seems our print vehicles are getting fewer and fewer (R.I.P. *Metropolitan Home*, *Progressive Architecture*, *I.D.*, etc.), there are still great venues in print—particularly in business-to-business trade publications. Moreover, the web has been exploding with architecture and real estate related venues—see *Architizer*, *ArchDaily*, *Curbed*, *Globe Street*, or *Bisnow*. In many cases, the blogs and websites are leading the news.

In addition to eight-page glossy magazine stories, there are myriad ways to get your story told. The trade publications often take bylined articles, which allow you to put forth your expertise on school design, healthcare architecture, or any number of disciplines. These publications may not be as sexy as those on the newsstand, but they do reach a very targeted audience of decision makers. You can also state your case in newspaper and online op-eds, blogs, and public comment areas. Oh, and about those glossy spreads—pursue them when you have the right project and great photography.

Myth #4: I Don't Need To Pay For It

I can count the instance of a reporter knocking on an architect's door and asking to publish

her house on one finger. Being “discovered” takes work, which you can do by yourself, or you can hire a professional. There’s no shame in paying for help in marketing your firm. There’s no mystique in pretending you did it all yourself. I’ve never understood the architects who insist they’ve never had help, when they have a public relations firm working behind the scenes. However, others are happy to introduce you to their publicist, proving that they have “arrived.”

Some architects I know are naturals in marketing and public relations. Some love it, and others hate it. Just know that you will pay for it either way—in time or in fees. If you don’t already have an in-house marketing department or dedicated professional in your firm, then assess your current team for marketing ability. Is someone really good at personal networking, and another at writing? Allocate the non-billable hours wisely to take advantage of these other skills. Or, hire a professional. A professional can lend an outside view and broader knowledge of the marketplace to develop business plan, marketing strategy, branding, and public relations.

Myth #5: Everything Has Changed

Because the Internet and social media are now integral parts of our lives doesn’t mean everything has changed. Some things have changed, but most standards of business marketing

remain true. That’s because, at least as of now, we’re still doing business with other human beings. Business is fundamentally about relationships. So, it’s not a matter of replacing your old marketing tools, but adding to them. Take advantage of the proliferation of outlets on the web to create profiles (Facebook, *Architizer*, *Architype Source*, etc.). Keep your website up to date. Respond to blog posts and newsletters. No matter what the delivery system, a story is still a story, and you need a consistent, cohesive, and comprehensible message to deliver to the audience.

The bottom line in all of this is more than the bottom line. For any type of marketing action, it’s imperative that you are both true to who you are and what your practice represents, in addition to being flexible and adaptable to the business climate. This should really be natural for architects, who by their nature deftly balance time and budget, art and science, public and private, and other seeming contradictions. ●

Thinking About Business Models



*Michael S. Bernard,
AIA, and Nancy
Kleppel, Associate AIA*

Imagine if it were in our nature as architects to launch and main-

tain a practice in which a distinct design vision were integrated with a solid revenue model—a model that is of the right complexity for the firm. Armed with a solid understanding of our financial integrity, we would engage in the pursuit of market sectors and projects of appropriate scale and complexity, rather than following our desire to capture projects—only subsequently guessing at how we might do the work to realize them.

This is our recommendation: aim to build the model and find projects to suit, rather than finding the work and then building the firm to suit. The reason this is important is that you can build in (and maintain) some control over the strategic and planned growth of your practice, in good economic periods as well as in challenging ones.

Right Size, Right Place

The last three years have taught us that there is great benefit in being extremely flexible with respect to firm operations, marketing, and the manner in which we approach projects. Much was in flux over the course of the (durable and continuing) recession. In fact, the current period of unpredictability may be the landscape to which we have to adapt architectural practice for the foreseeable future. Perhaps the familiar, “static” model based on firm size will have some place in a future economy. But consider the present situation: firms have shrunk,

have been acquired, and grown in size after acquisition. Firms have seen market share disappear because of “outsiders” moving into our territory (competition). Firms have moved to new geographic markets to find work in their areas of specialization (and by doing so, have become “outsiders” themselves).

We benefit by looking to our strengths to figure out where we want to be in the marketplace. We need to be brutally frank in our appraisal of our strengths and our position relative to our clients and our competition. The narrative we repeat to ourselves is of no value if it recounts only where we think we are. It must remind us of where we really are, both in terms of the sectors in which we compete for services, and with respect to our geographical location.

Consider an example in which you own or work for a large, multi-regional firm in North America. Is it appropriate today to compete in many market sectors in each of your offices at a local or regional level? Is it sensible, given your firm’s “hit” rate, to compete for labs, schools, cultural, institutional projects, and so forth, in each of your regions, potentially competing with your own offices? What is appropriate and economically profitable for you to do? Is this a viable model for today’s economy?

Would it perhaps be better to pause, assess, and rethink the firm’s structure and specialization, locally and nationally, differenti-

ating each office so that they are recognized as specialists in narrowly defined market sectors? By doing so, you create the opportunity to communicate your capabilities more broadly, crafting a national identity rather than a regional one. For your firm, would such an adaptation be a strategic and potentially lucrative response to the current economic period—and to the reality of specialization on a global level?

The large firm can thus create regional offices that specialize, rather than regional offices that are generalists. By doing so, large firms begin to speak for (and to) a global market for architectural services, and perhaps more effectively. We redirect our current resources to compete globally, with other firms that are based outside of North America.

Now let’s drop down a notch. Let’s say that you are the principal of a twenty-person firm in a given region, spread across a few market sectors. How can you expand your practice, or at least hold onto market share? The successful adaptation may be global affiliation, but does not exclude national or regional alliances with firms of similar or different composition, which pursue work in complementary markets.

Let’s drop one more notch: the small firm. It is at this level where we most bluntly face our mortality as design professionals.

The obvious treasure (valuable asset) in our portfolio is the combination of our client base and the valued professional relationships

our work has engendered: those human beings with whom we have worked to realize past (and ongoing) projects. This is true across market sectors, whether the projects be single-family houses or laboratories.

For example, residential clients are often individuals who give direction and who hold high-level, decision-making roles in their organizations. In addition, these clients often hold other community responsibilities, perhaps in a committee context: school boards, non-profit organizations, church groups, building and design review boards.

If we work with a high-end residential client, for example, what inhibits us from asking about their own careers and the organization that they own or within which they drive outcomes? We might begin by reviewing a successful collaboration with them, say, working with the client on their house. At the end of a project with a successful outcome, we have the opportunity to craft our mutual future together. Ask: “Is there an opportunity for us to provide services to you in your other role, for your organization? Is there an upcoming project for which we might offer our services?”

Turn the example around: Can we put ourselves in front of decision-makers on a school board that present opportunities to pursue projects with them or their contacts outside of the current project? To engage the client and to think more broadly about how we might col-

The narrative we repeat to ourselves is of no value
if it recounts only where we think we are.
It must remind us of where we really are.

laborate in the future represents a strategy that supports the firm's business model. Can we identify opportunities to leverage such business relationships so that they lead to work beyond what we are already in contract to do?

Relate these relationships back to the business model: If we build a model that indicates we need to generate a given amount in fees, and given our clients' business areas, in which market sectors can we pursue work that meets the demands of the model?

With the elements of this strategy in place, regardless of firm size, we can work in the present tense to set up opportunities for the future.

Above All: Know Your Value.

The last three years have taught us that design excellence alone cannot foster a durable practice, at any scale. We have been chastened by recent events and strive to adapt to the unstable environment in which we pursue our craft. The successfully adaptive firm is vigilant and continuously aware of its place in the market, subtly adjusting and refining its course.

The challenge is to maintain a stable presence in the present market and yet adjust to shifting economic winds. People need to be able to recognize you and your firm in a crowded marketplace, where many firms (and the services they offer) may resemble your own.

Such a conundrum is not solved by adaptability and flexibility in the way that we render

professional services that respond precisely to shifting client needs. We must also develop a strategy of subtle refinement of our authentic value, as needed, and communicate that message to current and prospective clients (not to mention to staff and the network of consultants with whom we collaborate).

What we value—and what clients value—may not be the same tomorrow as today. And they may not be in synch. The elements that define the term “value” have changed, and will continue to do so. We must strive to keep our definition of “value” current, keeping our value as high as possible. Regardless of whether your firm is XL, L, M or S—or even XS—understand where your firm stands along the “value continuum,” with respect to where and how design services can be profitable in today's economy and that of tomorrow. ●

Mergers & Acquisitions: Why Design Firms Shouldn't Ignore Them



Mark Cameron

If you were to ask the opinion of a practicing architect about the recent spate of acquisitions of large U.S. architecture firms, most would say that these acquisitions don't have any effect on their firms. There is a common belief that what is happening 'out there' at the mega-firm

level is an exception and has no relevance to mainstream design practices.

Even architectural press editors have a tendency to scoff. In a recent article in *Architectural Record* (March 2011) editor C.J. Hughes acknowledged the strategic advantages that mergers provide, but asserted that, “It is debatable whether mergers will continue as a trend.” His opinion was that practitioners would shy away from them for fear of losing their existing culture and their design voice.

Certainly, some will shy away. But, let's not be in denial about what all this activity may mean for the future.

Factors Driving Mergers or Acquisitions

It's important to have a historical perspective. Mergers and acquisitions, considered by some to be a recent fad, are actually a trend that started decades ago and is now picking up steam.

Secondly, the factors influencing whether to consider acquiring another firm or to be acquired haven't changed and aren't going to change any time soon. The reasons that are commonly articulated are:

- Access to deeper expertise or markets;
- Broader geographic reach;
- Access to the talent pool in a new region;
- Reduction in overhead costs through efficiencies of scale, resulting in more competitive pricing;
- More capital for IT and R&D;

At the root of the suspicion about mergers and acquisitions
are the biases of many design professionals against large firms.

- Stronger portfolio in specific markets, which means greater competitiveness.

In a business climate that is more competitive than ever, these reasons gain even more importance.

In addition, one must factor in personal self-interest. The money factor will be a major consideration for the Baby Boomers nearing retirement age. Here is how it works: a major shareholder of a design firm nearing the end of his career wants to monetize all the years of hard work and sacrifice and believes he/she can't get an adequate return by handing over the reins internally. Either their potential principals don't have "the right stuff," or they haven't been compensated adequately over the years to build their net worth, so that they can buy out the retiring principal. The best chance is to sell externally.

Yet, just because the giant firms may be consolidating, does it have any impact on the smaller firms? Remember, the average size AIA firm is less than fifteen people.

Large Firms as Pioneers

To answer this question, let's recognize the role that large firms have played as pioneers for the industry. Some examples:

Large firms invested in CAD early, when many professionals in smaller firms regarded it as a fad. Large firms also invested early in

BIM. They made the first explorations into large international markets, like China. Principals of a large health care architectural firm created the concept of "evidence-based design" and used their credibility and commitment to the idea to give it wings. Finally, large firms developed internal knowledge networks, to spread best practices across their offices.

In all these cases, the large firms paved the way for mid-sized and smaller practices to adopt some of these tools and approaches. It is a reasonable conclusion that large firms are harbingers of what is to come. So, if large firms are pointing the way toward consolidation, you can count on it that acquisitions will be more prevalent over time.

Concerns about Large firms

At the root of the suspicion about mergers and acquisitions are the biases of many design professionals against large firms.

It is commonly assumed that in a small firm the practice of architecture is very different from in a large firm. In large firms, "principals lose touch with projects;" "a principal goes to the interview and is never seen again;" "the culture is cold and impersonal, and an individual is not valued;" "the only interest is in the bottom line."

There is also a bias that innovation happens only in small firms. Not only do practitioners hold to this belief, but even some

consultants do. In a recent paper, "How Bleak is the Mid Size Firm Future," Coxe Group's Hugh Hochberg wrote, "The firms that do the most exciting, creative work with the most consistency are, with a few exceptions, small and midsize."

Really? Is Foster's Clark Center at Stanford not creative? Is Craig Hartman's Cathedral of Christ the Light a "cookie-cutter" building? Is NBBJ's Gates Foundation Headquarters in Seattle a conventional office development? What about Perkins+Will's new university in Saudi Arabia for 8,000 students, completed in three years? Didn't conceiving and delivering that project require considerable innovation?

We believe that the perceptions about large firms are largely just biases. Innovation can occur anywhere. It has been our experience from consulting to some of these large firms that they are keenly interested in having a strong design culture and in achieving design excellence. Most principals in large firms value their project involvement, and if you were to ask their clients, they would often say that the principal was "hands-on" and available to them when they were needed.

The "trick" is to make sure that large company structures, which are necessary to operate, don't impede the aspirations of its professionals; and that the design culture of the firm is valued and protected.

Learning from Mistakes

When acquisitions have gone badly, it was seldom related to the structure of the deal, but rather in the melding of two firms into one. A few of these situations have been widely reported in the design press. But, surely, that was not by intent: no acquiring company wants to pay for a firm and then see its potential disintegrate.

What is significant to note is that the companies which intend to continue making acquisitions are analyzing what worked—and didn't—in previous situations and changing their processes so as to be more successful in the future.

What does the future look like?

If there will be a lot more acquisitions and mergers in the future, what will be the complexion of architectural practice in that future world?

Our industry has already evolved to where there are a few giant companies. While many people criticize them for their failings, over time these companies will have learned how to integrate their acquisitions better, and then they will be more effective at leveraging their global footprints and achieving the efficiencies of scale.

We expect to see many firms emerge in the 500-1,500 size range, created through acquisition of mid-sized practices. The rationales for creating these combined entities are to achieve the results defined in the beginning of this

article. In undertaking their acquisitions, they will have benefited from the lessons learned by the giant companies. As long as they continue as privately held businesses, they won't have to deal with the tyranny of quarterly earnings statements for publicly traded design companies.

Design professionals in these 500-1,500 person firms will share a commitment to quality, to exemplary client service, to design excellence. They will have more specialized resources, so as to be more credible to potential clients. The companies will have more capital, so as to reinvest in improvements to the practice and the business. They will be strategically placed geographically to have access to a larger talent pool and to bring value to their client base.

Of course, there will always be room for the signature design firm, built around a strong personality and sought out for their distinctive look.

But, what does this mean for the thirty-to-eighty person firms practicing regionally? Are their days numbered? Our opinion is, they will have to be of outstanding caliber to be competitive. In their expertise, they will need to be genuine "thought leaders." Even with fewer resources, they will still need to invest in R&D to drive innovation. Their leaders will need to have broad skills, not only in technical aspects of the profession, but also in the "soft" skills of client management and communication. ●



Architect as Developer:

the San Diego Story

arcCA asked three architect-developers in San Diego, where the species seems to flourish, to tell us about their motivations and experiences. Here, Lloyd Russell and Jonathan Segal join in a dialogue; Ted Smith's narrative follows.

What prompted you to undertake your first development project?

Lloyd Russell: There was no work happening at the time, so we used to joke that the only way to get hired was to hire ourselves. At a time when architects are getting marginalized in the building industry, it is empowering to be in the middle of things bringing a project to realization. And, if you do it well, you get to own it. It's also putting your money where your mouth is. Architects promote the profession with the argument that we add value. Well, why not realize that value?

Jonathan Segal: I never wanted to have a client after working at two firms and seeing the lack of respect the clients give to the architects and the compromises they were forced to make. Just as significant was the pittance they were paid in comparison to the contractor.

Did you have training or experience that specifically prepared you to do development?

LR: I used to believe what my teachers at San Luis Obispo were telling me, namely that architecture would save the world. Problem was, I had to drive thru LA to get to school from San Diego, and I could not rationalize what I was seeing from the freeway through that paradigm. So I got interested not just in how buildings were built but why. And who made those decisions.

JS: I'm Jewish. But all architects have the tools required to do development.

The Q, Jonathan Segal Architect. Photo by Jeff Durken.



Centre Street Lofts, Lloyd Russell Architect. Photo by Harrison Photographic



Richman/Poorman, Smith & Others.

Are you also the general contractor for your projects?

LR: Owner-builder, technically.

JS: Not in the beginning, but after building a few projects and seeing the generals take no responsibility for the work I paid them to do, I finally woke up and vowed never to hire another contractor again. They add no value and only subtract from the process, and now we always build our own work and have never looked back.

Did you have training or experience that prepared you to act as G.C.?

LR: I worked construction trades through school and after graduation without telling anyone I was a graduate. I got an earful on what contractors think about architects.

JS: Yes: the same experience that all architects have. Contractors don't have any better skills than we do, and they have zero passion in our process. Passion is at the heart of every project.

What is your approach to risk management?

LR: I prefer to develop multifamily for rent instead of for sale. Ironically, when you take on all the responsibilities/liabilities of multiple roles, you get to a tipping point where the risk becomes less, because you won't sue yourself.

JS: Build your own stuff; get the subcontractors to indemnify you, not the other way around; build apartments, never condos.

What do you most enjoy about your mode of practice?

LR: It's more a lifestyle than a practice. You make different decisions on when, where, and why to take on a project when you have a stable cash flow from prior projects.

JS: Multi-tasking and seeing our sculptures take shape. Most importantly, we have a sustainable practice that has rental income and creates long term balance sheet growth. It's time to help all other architects do what we do.

Ted Smith: I first developed a house for my family. I'm not sure you call that development, but I guess it is. That was in 1975. Five years later, the economy was crashing, no one was hiring architects, and I couldn't make my mortgage payment, so I borrowed one last \$20,000 from a hard money lender and built my first real development, where I was counting on renting space to pay the bills. That was the first of a series of shared houses with six suites in each, with private exterior entrances, that I called GoHomes. These turned out to be popular, and I built five such houses over as many years, each with six to eight suites, providing very affordable ownership in pricy Del Mar Terrace.

Over this same period, the demographic of the neighborhood changed from surfers and academics at UCSD to yuppies, with property values as their main interest. The new people didn't like affordable housing, so I left the Terrace and joined my good friend Rob Quigley downtown, where he and Kathleen Hallahan had built their new home and office

in Little Italy. Kathy McCormick, my collaborator and by the way girlfriend, was looking at the Sunday paper, and she saw a lot that cost about the same as the lots in Del Mar Terrace, but you could build a big building there, and there were no Nimbys. So we moved our practice downtown and built San Diego's first (as far as we knew) townhouses, something Kathy was championing, along with a bunch of GoHomes. We called the building the Richman/Poorman building, since it combined high-end row houses with tiny apartments in one building.

We found these experiences extremely rewarding, being able to invent the building type, which seemed much more substantial than decorating some developer's bad idea. We could serve a population that we understood and direct the development to places that were more friendly to the environment than, say, the big custom homes we had been designing in Fairbanks Ranch. This ability to control the project remains the overriding motivation behind deciding to be an architect/developer. Of course, we also had learned that it was easier to borrow money from banks than to collect it from clients, and the income from apartments was recession proof, freeing up the anxiety that comes with the cyclical traditional practice of architecture.

I was untrained when I began, and that naiveté is probably the only reason I would have tried development. Certainly, a project like the GoHomes would not have come from someone with wisdom. If I had understood the complexities, I probably would have shied away.

I've always built the projects I have developed. I had built my first house, and I always understood that the construction is where the money is. I also learned that it was less trouble to be the contractor than argue with one. I learned to build on the job, and any mistakes I made were well worth the substantial savings.

My staff has always been young architects, whom I would partner with to accomplish the projects. This is expensive, because you end up giving away a lot more than you

might if you had the money to hire, but a group is more powerful than an individual, and I have always been a bit of a socialist when it comes to being fair and providing opportunities. When one develops, profits are way down the road, so it is good to have all the staff on board, agreeing to show up and work for some common goal way off in the future, and a group helps establish a discipline that working alone does not. Everyone agrees to show up first thing in the morning and work until dark. Also, many jobs just require a number of people to accomplish, like framing or building a foundation or placing the windows. We always do about half the subcontracts, as well as act as the GC. I have had many young, talented architects help make the projects, and they have nearly all been partners. Only on very large projects have they been joined by paid staff.

As soon as projects become larger than, say, four units, a rich man is required to co-sign the loans. So these projects are not for beginners without wealth. Small projects are also the projects that need to get built, infill. Normal developers don't want to build small, because the effort is the same no matter the scale. I prefer a street of individual ownerships, an expression of community, over a full-block building that seems more to express a developer's big money dreams. The big (and mostly bad) projects get built anyway. It's the fine-grained projects that require a very large amount of work for their size. The purpose of the Master in Real Estate Development program at Woodbury University is to teach these skills to young architects, who are the ones schooled enough in what is good urbanism to take these infill projects on. The big guys can go ahead building the full blocks, tracts, and industrial parks.

I manage my risks by doing as much as I can by myself and by careful choice of partners. That way, when something goes wrong, it is our fault. I can get a screwdriver and fix it, rather than hire a lawyer. I also build for a market of young, artistic people, the kind who see the world in a good way. I am less comfortable

building for people with money. If they have money, they are probably not my market; and, besides, they are probably the kind of people who will sue me, rather than be reasonable. This has worked well for me. I haven't been sued as a developer, except once almost by a disgruntled partner. I figured out how to buy the unhappy partner out, and it all was OK. That is one instance in what has been thirty years of development at this point. So, risk management has more to do with picking partners than buying insurance.

I enjoy development, because it builds wealth, and it builds those projects that would not be built by the normal industry. I love being in control, and I am always advising young architects to stop traditional practice as soon as possible. It seems to me that the normal practice of architecture is a foolish endeavor, where wonder is promised in school only to run up against the sad reality that is normal practice or services for hire. Traditional practitioners, except in extremely rare cases, make way less money and have way less control, so the architecture is worse and the income intermittent. Of course, there are exceptions to anything one says. Certainly there are many good architects, who, with savvy political skills, navigate the treachery of traditional practice and even make great buildings, but I've never been too good at trying to sell an idea; I'd rather just decide to do it. It's enough trouble just to sell an idea to myself. ☉



What I Learned...

arcCA asked AIA California Council members to relate lessons they learned from former employers but didn't appreciate until they, themselves, became firm owners. The following stories represent about a third of what we were grateful to receive; we will share other responses in future issues.

Ted Osborn hired me right out of school. In the interview, he told me that he hired people who wanted his chair: he was looking for people to join the firm who wanted to design, wanted to make it work, and wanted to care about the health of the business. A year or two after I arrived, I was in the position of working directly with Ted on a \$20 million corporate headquarters in Chicago. I probably never was in charge of the project, although I felt that I was. I know that the client was skeptical of my ability, being so young, to handle the role Ted had given me.

One day, Ted was about to get on a plane to go meet with the client in Seattle. Before he left, he asked for a debriefing with me on a series of issues. He asked me about coordination of some civil engineering issues, resolution of some piping challenges, approach to code analysis, and some material proposals. I responded, preparing him for his meeting. Later that day, Ted called me and said, "Michael, I'm here with the client on speakerphone, and we wanted to go over some issues with you." He then proceeded to ask me the very questions we reviewed earlier, knowing that I had information to share.

I learned that as an employer, it's more important to have your team have opportunities to display their competence. My perception of having one's own practice used to hinge on a belief that I had to know everything. I have come to understand how much pride can come from setting expectations, giving people the opportunity to respond, confirming that they are on track, and then giving them the floor to communicate their acquired expertise.

Michael T. Pinto, AIA, Glendale

One of the most potent and magical ingredients in the business and practice of architecture for me is optimism. Optimism can be ingrained in one's personality, but is also infectious and can be handed down. In the collaborative process, anything can happen when optimism permeates



the team. Reflecting upon my mentors, Richard Brayton and Stanford Hughes, I've come to appreciate that they taught this by example. As a business of problem solving, architecture can easily become weighed down. The optimistic spirit works to transcend this.

David Darling, AIA, San Francisco

From Ted Smith: The key concept of a design can't be something that can be cut out for budgetary reasons. It has to be integral to the project.

From Mark Rios, FAIA: Good clients make good projects. Their passion inspires us. From Larry Scarpa, FAIA: It's not whether a problem happens, it's how you deal with it when it does.

From Mike LeBarre: Trying to do everything is impossible, even though we all as designers want to influence outcomes as much as possible. Sometimes it is important to let go.

David Montalba, AIA, Santa Monica

From Robert Goetz, I learned not to sit around and wait for the phone to ring but to go out there and tell everyone you're an architect and looking for work.

Larry A. Paul, AIA, San Francisco

At my last "regular job" before launching out on my own, my boss had the secretary/receptionist open all mail along with the other admin tasks. It was a couple of months before he noticed that his bank statements had not shown up. He thought they must have been lost in the mail and asked for replacements. Of course, it was another couple of months before he remembered; by then a sizeable amount had been embezzled. Ouch! I developed the habit of opening my own business mail as a result. I also learned that, if you're not careful in firing someone (even someone who steals), a wrongful termination claim can add to the financial hurt. OUCH!!!

Michael F. Malinowski, AIA, Sacramento

From George L. Sinclair, AIA: "I am only paying you to draw that line once."

Dianne R. Whitaker, AIA, San Mateo

I was lucky after graduating from architecture school to land a great position with a small architecture firm in Atlanta. My primary responsibility was to act as project architect for a large custom estate in north Georgia, "act" being the operative word in this sentence. As

a recent, proud graduate of the Howard Roark School of Beauxarchitecture, I may have been too confident in my own abilities and underappreciative of others.

Soon after I started this dream job, our clients came to the office to discuss a number of outstanding design issues. We gathered near my desk to look at drawings and a model I had built. I cannot recall the issues exactly, but I do recall contradicting and correcting my boss's words over and over as he valiantly diverted my headstrong remarks into friendlier waters and our clients (who have remained good friends) looked on both incredulously and sympathetically (toward him).

Red-faced, he valiantly patronized, parsed, and persisted. The meeting ended, the clients exited, and Richard returned without a word to his office. All was quiet. I returned to my desk; my colleagues were silent before a dead man. Soon, I received a summons from his office, "MARLATT! GET IN HERE!"

The office in which Richard Taylor held court was a large parlor of an old Victorian townhome. I entered at one end to find him behind his desk, perhaps sixteen feet away, in shadow with his back to the large bay window and the Atlanta skyline in the distant background. An Atlanta legend among architects,

Richard is six-foot-four with large hands and a larger personality. He has won design awards, sought buried planes in Greenland, and owned bars. He is an avid pilot and even owns his own small plane, which we would use to visit job sites, even when it probably made more sense to drive.

“Marlatt! Do you know what they say about pilots?”

“Uh, no, Richard...” (Where was he going with this?)

“There are two types of pilots in the world! Do you know what they are?” (Even I could understand this question was rhetorical.)

“Those who have landed with their wheels up, and those who have not yet landed with their wheels up!”

His eyes alit, he suddenly laughed, emerged from behind his desk, extended his hand, and bellowed, “WELCOME TO THE CLUB!”

While I stood stunned, but with my appendages and employment intact, Richard took his usual place on the sofa and, with Sharpie and paper on the marble coffee table, began a debriefing of our disastrous meeting. At some point, I sat down. Point by point, he reviewed where I was right but acted badly, where I was wrong (and acted badly), which ideas I should continue to develop and which

ones to drop and why. He would speak soon to our clients to explain my impertinence, and the next time we would better prepare ourselves to act as a team. We talked about who is boss, who is not, and why.

I don’t think that lessons are drawn simply and fully from single anecdotes, but this experience clearly set me on a path—upon which I would make many more wheels-up landings—towards understanding that the business of architecture is a team sport. A team player respects his or her colleagues and supports the entire team—including consultants—until there is no alternative. You learn to play your position on the team, or you get off the team. Richard and I were unprepared; we should have practiced what we planned to show and say. Surprising your adversary can be good; surprising your teammate is almost always bad. Time spent watching internal disputes unfold is not billable time. Clients do not need, want, or value posturing and squabbling.

Finally, interwoven with these lessons, Richard’s discipline to keep the client meeting on track when he probably should have just slapped me, and then to quickly turn this entire episode into a “teachable moment,” is an example to which I still aspire in my own business.

David Marlatt, AIA, San Francisco

It was the spring of 1993, the economy was horrid, and the only guy in Raleigh, North Carolina who had any work for a recent architecture grad at the time was a man named Terry Alford. Working for him, I quickly realized that architecture—the business—was a lot more than big sheets of translucent paper and drafting tools and drawings. Night after endless night, I sat at my computer, hunting and pecking through one, two, three, sometimes eight or nine versions of what became lovingly referred to as “documents.” In and out of his office, carrying what I thought was my best work, dripping in fresh red ink, my ears still numb from the volume at which the direction, pleading, and sometimes just plain frustrated yelling was distributed. I lost more than a few girlfriends, who would hang up after the “not going to make it again tonight” call, wondering (I suppose), “Why would an architect need to spend so much time writing?”

Today I am constantly reminded of the value of those long nights. I frequently start my mornings by cranking out contracts, proposals, specifications, keynotes, responses to any manner of questions, etc., only to have “everything else” left to do in the evening. You name it, if it has to be written in an architecture office, I’ve written it: reams and reams of

It seems to me that the normal practice of architecture is a foolish endeavor, where wonder is promised in school only to run up against the sad reality that is normal practice or services for hire. —Ted Smith

8-1/2" x 11" paper that I have filled with little black words in my years.

The digital world has changed the face of paper today, but when you open a Word File or a PDF you see the same thing I do: a rectangular white screen with little black words. Printed or not, it's still paper, and it still says, "You need to read this and know it." Will your message be heard? Or will it become so much junk mail, fading signals, or brilliant statements bellowed into the wind, unheard or forgotten? Thanks to that first, greatest business lesson taught over so many frustrating nights, you can bet I'll write it down, I'll write it to be read, I'll check it for errors, and I'll check to make sure you got it.

Michael J. Schulman, AIA, Culver City

One of the main things I learned from my former employer, Herman Ruhnau, FAIA, was how important it was to develop and maintain a positive relationship with the client. The most important aspect of marketing was not getting the next contract, but keeping our current clients satisfied with our performance. To this day, after almost twenty-six years in practice, that philosophy still holds true. Almost 80% of my work comes from existing clients.

In this challenging economy, we find ourselves being sustained, because we have focused on quality service, not quantity of projects.

David Higginson, AIA, Redlands

My second-year studio professor in architecture school told us that the practice of architecture entailed 5% creativity and 95% implementation. We all dismissed what he said and proceeded to immerse ourselves again in our design pursuits. Somehow, his words stuck with me, although I think he underestimated the 95% figure.

Michael Strogoff, FAIA, Mill Valley

From George Hartman, FAIA: "You get what you inspect, not what you expect."

Mary Griffin, FAIA, San Francisco

What I realize now is how bad my former employer was at running a business. He never sought advice from outside consultants. He felt he could do all of it himself, and when he got overwhelmed he brought in his wife to help out. They weren't trained in business, and consequently their business never reached

its full potential. They made enough money for themselves, but the company never thrived. There was very little reinvestment back into the firm. Things like training were unheard of. People were expected to learn their craft by osmosis. Innovation or change was discouraged. They, like many of their contemporaries, thought they were successful because work just kind of came in the door. This model has been detrimental to our industry in so many ways, including our ability to produce quality work. I look outside our industry for inspiration on how to be a better leader and businessperson. There is almost none in our industry that I want to model myself after.

Nelson Algaze, AIA, Culver City

Out of school, I was ready to be the next FLW. It was in late 1976, an awful time to try to find work. I walked the streets and took the only job I could find. Thrust immediately into the world of what was then known as "handicap restrooms," I nonetheless came to appreciate the fact that the firm I was working for really seemed to know how to do a proper set of working drawings.

One day the "old man" remarked, "If you cost less than others, you will always



have work.” He was good at what he did and respected client resources. A dozen years later, starting my own business, I remembered that comment. Today it still seems apt.

Sometimes I bore myself with the things I remember, but some of those memories become guiding lights. I took the old man’s idea and made it my own with a twist. Heading toward old manhood in my own right, I say to myself: “Never set your rate so high you don’t have time to do the job properly.”

I usually have work.

Donald Wardlaw, AIA, Oakland

Always ask municipal agencies for more than you want and negotiate your way back to where you wanted to be in the first place. I got that little nugget from my first employer, Paul Davis, when I was right out of school. That was at least thirty-three years ago.

Daniel R Curran, AIA, Monterey/Salinas

As a very young intern in my twenties, I was thrilled to have my first job in an architectural office. The first time I went out on a project with my employer Bob McCabe, he introduced himself at the meeting as an “artist.” I was

stunned, because all I ever wanted to be was an architect, and he was one . . . but he called himself an artist. It took me thirty years to understand that being an architect was not the endgame, it is just a vehicle to serve people and contribute to society in many different ways. Bob refused to let the title define him, and it left him open to many business opportunities that were beyond “architecture.”

Bruce Monighan, AIA, Sacramento

Very early on (my first real job in California, back in 1965), the office I worked for in Fremont was very small. One owner, four to five draftsmen, maybe two licensed, but at least two not. One secretary. Very well organized office. One day the boss, Kenney Griffin, said to the drafting room: “I expect that you will all eventually open your own offices. Before you do that, save up at least one year’s salary, because that’s what it will take to get the office working.”

Some years later (in 1976), I opened a new office with a partner, and we had maybe one month’s salary between us. We struggled for five years and eventually closed up because of lack of payments from developers. I knew the risks going in, but my options were limited, so I took the plunge. I think if we’d each had a

year’s salary stashed away, we may have been able to make it really go. In the year after we folded, I did pretty well on my own from the business development we’d done over the five years, but there was no back-up for office overhead, and we never had insurance during that five years. Nor could we afford to join the AIA.

Michael Coleman, AIA, Oakland

From Richard Peters, AIA: “Never do business with people who are mentally ill; never do business with people who have no money.”

Also from Richard Peters: “The customer isn’t always right, but the customer is always the customer.”

And, from George Hellmuth, FAIA: “The three laws of architecture are: 1. Get the job; 2. Get the job; and 3. Get the job.” ●

Tom McCune, AIA, San Mateo



California Prefab: Current Market Report

Paz Arroyo, Lynn Hiel, Jeremy Fisher,
Noy Hildebrand, Olimpia Merry del Val, and
Nicolas Gasztych

Since the financial crisis of 2008, the prefabricated building industry has undergone recession, forcing both well-established companies and venture-capitalist start-ups to reflect on their goals and respond in diverse ways, according to the differing situations of their assets and liabilities.

Historically, affordable manufactured homes have been produced through low cost materials and high volume production. The next generation of prefab companies is applying IT industry approaches to R&D, sustainability and improved quality. Lacking high volume production and still largely funded by venture capital, it remains to be seen which, if any, of the models will succeed.

Six students from the UC Berkeley graduate course entitled “Off-Site Fabrication,” taught by Professor Dana Buntrock, have examined this question. Based on original interviews with management and employees conducted during visits to fabrication plants and constructed projects, the following article is a brief synopsis of three case studies, providing a sample of the current prefabricated building industry in California: Silvercrest Homes, Zeta Communities, and Project FROG. For more on Project FROG, see the following article.

SILVERCREST

When Silvercrest Homes was founded in 1969, most other modular housing manufacturers led a dictatorial marketing campaign focused on high-volume production. Within a market dominated by standardization and uniformity, Silvercrest saw a business opportunity: customized homes to accommodate each market segment’s particular needs. According to Al Whitehouse, Silvercrest/Champion Homes General Manager, Silvercrest at its peak reached a target market ranging from families to the elderly and all homeowners in between.

Silvercrest Market Approach

During the market crisis, the costs of core commodity materials escalated. To survive in these

conditions, Silvercrest fixed the budget they allocated to these variable costs and did not absorb the periodic price increases, which material cost erosion necessitated. Silvercrest had to consciously develop a home series that had a lower material content in one form or another and drop down from their original target. In addition, an uncontrollable retail marketing backlash has forced the company into an even tougher financial situation.

In the Silvercrest production process, the customers pull the system. The company only starts to build a house when there is a buyer, usually a developer. Since the market downturn, the company has closed 68% of its plants in 11 Western states, which has also impacted developers such as Sandalwood Estates, who relied on Silvercrest for decades, according to Sandalwood Estates Community Manager Kathy Fiebiger. Since the closure of the Silvercrest Woodland plant, the over four-fold increase in transportation costs is no longer economically viable for this developer.

The market for Silvercrest homes has also reversed. Originally, Silvercrest was the largest provider of modular homes for large private properties. Today, 70% are installed in mobile home parks, and only 30% are on private property.

As a result of all these factors, Silvercrest has been forced to deviate from its original market stronghold of higher quality and more expensive homes. They have developed a product series equivalent to those of their competitors and are selling these homes at even lower price points.

Currently, Silvercrest is also hoping to diversify its market by working on a variety of commercial projects, including offices, churches and synagogues, veterinary hospitals, and daycare centers.

Silvercrest Production

Six years ago, Silvercrest began implementing Lean Manufacturing methods in an effort to improve production efficiency for the future. According to Mike Hutchinson, Silvercrest/

Champion Homes Quality Control Manager, they invested heavily in training all personnel and adopting policies of “continuous improvement” to change the company culture.

The new Lean production schedule depends on the plant’s activity, backlog size, and product order urgency. If enough orders are ready, a batch of ten houses is released to production.

Silvercrest has not yet realized the potential benefits of Lean management, but their creative approaches to optimize production efficiency and more collaborative relationships with their supply chain and customers will potentially be a tremendous advantage once the economy recovers. Silvercrest may be capable of offering better quality houses for a low target price.

ZETA

ZETA, an acronym for Zero Energy Technology and Architecture, is a venture capital start-up founded in 2007. Their target market is high production, sustainable, and net-zero energy modular building solutions for mass-market adoption in the United States.

ZETA Co-Founder Shilpa Sankaran notes that, observing the collapse of popular “prefab” companies, it became apparent that a business model focused only on single-family homes was not scalable. After their first successful project in Oakland, California, in order to increase production capacity, they leased a 91,000 square foot production plant in Sacramento.

ZETA Market Approach

ZETA’s target markets are not only multi-family and single-family housing, but institutional and educational facilities as well. This scope requires them to be flexible in both their business plan and production system, according to Sankaran. They have adapted their original business plan to include not only design and production, but also funding sources, planning, zoning, code compliance, and state approvals,

in order to facilitate developers throughout the process in adapting to prefabricated systems.

This concept of flexibility raises the issue of standardization vs. customization. Ideally, the product should include as few customizations as possible. The reality, as ZETA General Manager Kara Tarango notes, is different: “You don’t dictate what you are going to build, the market dictates. The only thing you can dictate is how your product will adapt to the market.”

ZETA Production

ZETA originally tried to incorporate IT industry production systems into the modular building industry. However, a modular building company might produce 10 products a day with 10,000 parts, while a computer plant produces up to 10,000 products a day with 10 parts. These fundamental differences resulted in numerous production challenges during the design and construction of their first project. In response, they incorporated traditional factory building expertise and leased a high production capacity modular building production plant.

The new plant consists of a low-tech automated tiger saw, along with insulation, polyurethane glue, and paint spray stations. The rest of the production assembly line utilizes standard construction equipment optimized for labor efficiency. Their designs and materials are high quality, sustainable, and energy efficient. All buildings are “Net-Zero Ready,” allowing customers to add renewable energy to achieve net-zero energy.

Unfortunately, since the production plant was leased, ZETA has not yet utilized their full production capacity; only five buildings have been produced. Due to the fact that ZETA is addressing the residential, commercial and institutional markets, they may have a market advantage over the other companies. Given their flexibility in market approach coupled with a very high production capacity, they are well positioned to be successful.

Project FROG: “Better, greener, faster, cheaper”

Project FROG is a venture-backed San Francisco-based firm specializing in high performance, prefabricated classrooms. Run by business professionals and designers, this company differentiates itself from other modular building companies in its approach and structure, as well as its intended market. From the start, explains Evan Nakamura, Senior Director of Product Development, Project FROG avoided the capital-intensive investment of their own production facilities, opting instead to closely partner with fabricators to develop and produce the building components. The company focuses on developing turnkey buildings with a systematized, pre-engineered kit of parts to achieve efficiency with flexibility.

Project FROG Market Approach

Originally, Project FROG saw its business opportunity in the increasing demand for fast, flexible, and affordable portable classrooms, which until 1998 were required to comprise 30% of the classrooms in California schools, according to the *California Portable Classrooms Study* (http://www.arb.ca.gov/research/apr/past/00-317_v3.pdf). FROG classrooms present a healthy alternative for existing portables, but since “FROGs” are prefabricated but not “relocatable,” they have had to follow the same lengthy funding process as permanent classrooms. Nonetheless, their DSA pre-approved modules expedite the permitting process, and a FROG classroom can be constructed in just seven months. With ten built projects in three states, 40% of their current output is schools, as reported by Project FROG President Adam Tibbs. As local legislations and bureaucracies have historically hampered the funding of new classroom buildings, the future of Project FROG includes programmatic diversification and the development of multi-level buildings.

Project FROG Production: the Kit of Parts

Project FROG is based on the concept of product development, similar to Apple or Boeing, which through design iterations creates a

highly systematized kit of parts, produced by a network of fabricators. One of FROG’s novelties is its implementation of energy and cost modeling to achieve climatic adaptation and precision fabrication through the combination of interchangeable components. The key challenge here is to find the optimal point between manufacturing efficiency and the customization demanded by clients. The kit of parts, which specifies very precise connections and tolerances, requires a carefully managed network of suppliers and transportation schedules. Because of decentralized production, all components are first assembled on the building site, requiring additional costly labor if unforeseen issues arise.

The company has invested significant venture capital in order to explore and implement the customization necessitated by climatic response, clients’ needs, and technological systems. With costs similar to those of traditional buildings, speed and technology seem to be FROG’s primary assets. Selling greenness and technology while keeping prices low remains a tough challenge, especially in this economic downturn.

Conclusion

Since 2008, all three companies have had to reorient their market approach to incorporate greater market diversity and production flexibility. Furthermore, all three are struggling to find the balance between customization and high volume production in order to survive.

While the older establishment has focused on achieving economies of scale more efficiently through the implementation of lean strategies, newer companies anticipate that innovative production tools and IT, as well as higher levels of customization and quality, are key to the future of manufactured architecture.

Another key distinguishing factor is the scope of the companies’ networks in their target market territory. Silvercrest has only limited tools in place for a new market, but can depend on its reputable roots. On the

other hand, the start-ups face a more tenuous future; Zeta is having trouble launching, while FROG seems to be only slightly more successful, with lower capital demand and a more template-based approach. Despite their strong sources of capital and firm expectations that architecture needs manufactured production, will they gain enough leverage to become a viable and sustainable business?

This is a challenging time for the construction industry as a whole, and, in spite of its promise, the off-site fabrication community is not immune to this drastic economic downturn. However, California, more than most states, has long been a leader in off-site fabrication practices. Japan, our seismic sister across the ocean, has demonstrated the value of rapid and large-scale production plants as we were completing this article. Several hundred extremely small housing units were in construction within a week of the March 11th earthquake and tsunami. Will our industry be ready when it’s our turn? ●

Editor’s note: As of press time, GE has led a \$22 million investment round in Project FROG and begun construction of one of its prefabricated environmentally sustainable buildings at GE’s Learning Center in Ossining, NY.



Architecture and Enterprise: Potential and Pitfalls

Lessons and Opportunities from the Experience of Project Frog

Mark Miller, AIA

The Entrepreneurial Accident

Our great architect-as-entrepreneur experiment started out by accident. The genesis of Project FROG, arguably the nation's leading clean modular building technology company, arose from a desire for a bit of PR.

In 2005, we met with the publishers at *Metropolis* magazine regarding the suitability of our firm's work for a high profile issue on education. The increasingly glazed look of the editor indicated that my pitch (for a story about what I thought were the most exciting architectural projects the world needed to know about) was not working. With the tone of her "Got anything else?" I knew I was running low on options. I ventured, "There is a more confidential assignment that we are working on...but it has never been shared." The editor looked up and leaned forward. "We have been working on the problem of 300,000 classrooms in the US, and we have a prototype that looks like this (sketched furiously on a hotel stationery pad)." She was in, granting us good coverage if we published with them first. The only problem: we had no images, only basic research, and a bit of brainstorming by the office over beers on a Friday. We had thirty days before the reporter with a deadline was to visit our office.

The resulting article brought attention and inquiry from around the world. We were excited. We dodged, bought time, researched, and sketched more. The New York 2012 Olympic Committee called, we sketched a bit more. Then came the tsunami in Indonesia followed a few months later by Katrina, and we realized that we were in the center of a global problem with no viable solution.

Top, Crissy Field Center, San Francisco; opposite, Ilima Elementary School, Oahu.
Photos by Project FROG.



Transforming Concept into Company

In 2006, we realized that we were well out of our safe range. Fortunately, we reached out for technological and business advice. On the technology front, our saving grace was the connection with two brilliant Silicon Valley talents: Manley Tantuico, an industrial designer, and Bekir Begovic, a metal fabricator. After they recovered from their amusement at our overly complex architectural approach, they patiently explained the obvious benefits of an industrial design approach: strive for a clean, simple, and repeatable solution made of as few distinct parts as possible, then organize the product into pieces, parts, components, and assemblies. Though obvious to an industrial designer, this was revolutionary to us. Soon to follow was the introduction to relevant software tools that support this methodology.

Financially, we were in even more foreign territory. The “problem” (i.e. the Market) we were addressing was large. We had a mission supported by the passion of some very talented creative minds. But we had the financial

capabilities of a modest-sized, first generation architecture firm. So we did what came naturally to us: we sold units. Within a few weeks, we had two big contracts to build two campuses using our system. The problem was that we had quite a few product elements to finish, very tight project schedules, and understanding yet demanding clients.

We were able to capitalize a new company through a seed funding round of investment capital from a close network of friends, family, and associates. We recruited a very small business team and survived the completion of the first round of contracts. We hung on and were able to raise a large round of funding from Rockport Capital Partners, a Boston and Sand Hill venture capital firm, just as the fall of Lehman Bros marked the country’s decent into recession. I awoke to find myself the CEO of a venture-capital-backed company. The real estate market was collapsing, and we needed to get down to the business of creating project confidence and acting like a proper, growth-oriented, commercial enterprise. My vocabu-

lary had to expand quickly beyond the realm of building to include “liquidation preferences,” “option pools,” “exit strategies,” “pipeline,” “venture debt,” and “optics.” I had to take a Myers-Briggs test, have “key-man” insurance, and see legal fees approach 10% of our annual spending.

We were in a brave new world, but the achievements were compelling, and the enthusiasm of the staff was motivating. Our belief was that we could change the way buildings were built. Energy consumption would drop 40%. Projects could be completed in weeks and months, not years. Schools would be healthier, providing environments that would support and stimulate the brain’s ability to retain and process knowledge. Crissy Field Center (San Francisco), the Watkinson School (Hartford, Conn), and Jacoby Creek (Arcadia, CA) exemplified this vision though the first generation of post VC funding solutions.

The company was growing, as were the issues. The investors determined that a professionally trained business team could best



manage growth and expand funding, so a new CEO was brought in. I began a transition out of operating Project FROG and returned to the leadership team at MKThink.

Strengths of Architects for Innovation

That I am contributing this article, having come full circle from being a consulting architect and dabbling inventor as CEO of MKThink, to serving at the helm of Project FROG, and back again, reflects both the architect's limitations and potential for driving the entrepreneurial experience. First, the potential: consider this outline of key factors of successful innovation, which are shared with architectural training and practice:

- **Industry ripe for innovation:** It starts with our industry, which remains unnecessarily rooted in traditional methodologies. Also, the issues of our era—global connectivity, sustainably economic practices and environmental management—are non-traditional problems that benefit from prescient application of technology combined with social commitment. Other industries have made these connections for huge societal advancement. Broad and deep opportunities exist for industry advancement by applying these lessons to our methods: problem-definition, design process, systems integration, and ultimately architectural product development.

- **The ability to innovate:** Solving problems thoughtfully, effectively, and efficiently through creative means is the basis for architecture and also the basis for innovation. Architects commonly focus these skills on a one-off solution that addresses an individual project and then start again for the next assignment. This same sense of investigation, systematically applied to repeating problems, could transform the building industry.
- **Integration of knowledge:** Successful architectural practice requires skills in integration of broad fields of knowledge into a coherent and useful result. Applying these skills and knowledge creatively for each commission requires innovation on a daily basis. Taking the step to apply these traits to solve problems that are repetitive, rather than individual, is the main shift that distinguishes a good inventor from a good architect.
- **Problem-solving-through-collaboration skills:** Successful contemporary businesses thrive on the collaboration of individuals with solid team-building skills. Leading business schools establish very expensive curricula, and recruiters treasure-hunt for talent with these attributes. Innovation requires a team of dedicated, forward thinking, creative people to work together to achieve a superior outcome.

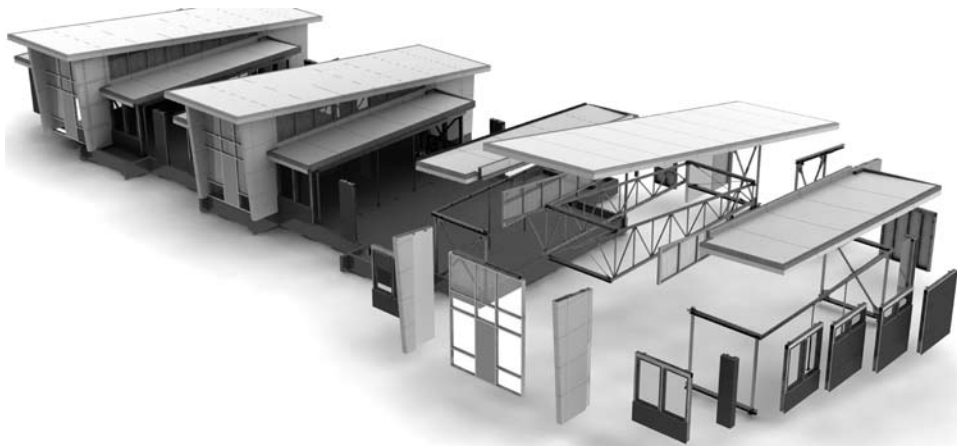
This is how architects already practice. The successful integration of designers, engineers, and policymakers into a financially responsible result is at the heart of what we do.

- **Small business skills:** Successful innovation is an essential primary ingredient for small business enterprise. Tight budgets, managing vision and risk, an ability to be creative and effective on financial fumes, and motivating teammates with non-financial incentives typify successful innovative ventures. Successfully managing a similar recipe also defines the majority of architectural practices.

Limitations of Architects for Innovation

On the other hand, rather than an automatic gateway to new ventures, our training and wiring as architects give us tendencies—and deficiencies—that must be managed to ensure innovative and entrepreneurial success. Many of the major impediments derive from the business facets of such ventures:

- **Limited experience with investment business practices:** Taking the ideas of others and transforming them into commercial success is a profession unto itself. Seldom can innovators, especially new innovators, manage the development of technologies into viable new businesses. There are requirements for



Jim Russell Racing Driver's School, Sonoma; Watkinson School Solarium, Hartford, Connecticut; Project FROG components. All images by Project FROG.

capital, intellectual property issues, and legal and corporate procedures different from a service enterprise. The venture capital industry offers high profile and potentially appropriate means to propel innovation to commercial success. Yet, experience and caution are critical, as this road has a unique set of procedures, tendencies, and patterns, refined to serve the investment partners first and foremost. The VC portfolio approach will sacrifice an individual company for the hard realities of the portfolio as a whole.

- **Credibility and partnership with financial backers:** Our professional world is not one that has established supporters in the financial communities. The recent history of innovation and entrepreneurial success has been in technology fields, particularly those that are low on capital intensity and high on consumer appeal. The long cycles of building and the lack of consistent investment precedent lack the appeal of software technology or social networks. Also, the independent lateral thinking and confident nature that comes from the experience of an architect (which suit creativity and innovation so well) may be at odds with the control and consistency favored by the equally strong willed investment community. They are fond of claiming that for each successful business venture

there are a hundred great ideas, and that the difference between a hit and a failure is in business proficiency. These conflicts commonly characterize involvement with the venture capital process, and may be why so few company founders remain through the growth stages of the companies they found.

- **Financial success becomes the metric for professional success:** There is some validity to the contradictions noted in the last point. Architects tend towards broad definitions of success. Investors have one metric of success: financial return. Having worked with investors who present themselves as socially minded, environmentally minded, or otherwise motivated by ideals, I have found that professional investors do not confuse investment with philanthropy. The presentation of “socially-inspired” investors in practice is more a means to organize investments and knowledge around industries of interest. Perhaps some socially minded investors will accept some degree of the “social return” measured in a few percentage point of flexibility, but the similarities to traditional methods are closer than the differences. Architects do not often calculate this way. If we did, we would be in another field entirely. Thus, success in this area requires an artful balance of

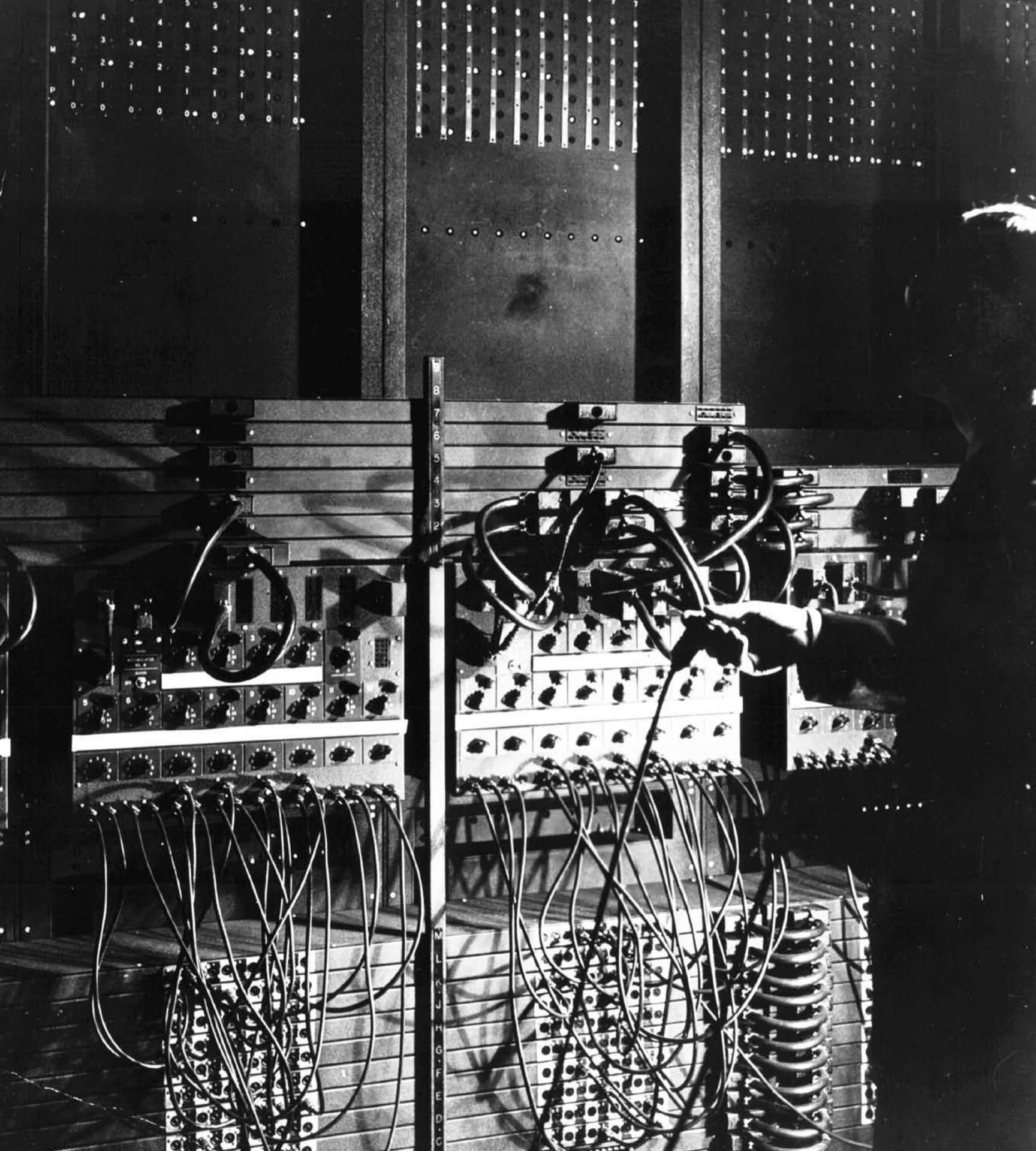
your priorities with an open-eyed recognition of your investor’s goals.

- **Entrepreneurship takes focus and commitment:** The investment community is correct to value not just the innovation, but also the roles that bring those ideas to market. Thus, innovative pursuits by an architect would be difficult if positioned as either the diversification of an architectural practice or a sideline activity. Success through the various obstacles requires total commitment to the end goal while maintaining a willingness to cooperate with very different types of professionals who expect that commitment.

Conclusion

It makes tremendous sense for practicing and trained architects to consider innovation as a structured professional pursuit. There is a need, there is a market, and there is precedent for success. Architects have valuable training and skills. There is an investment and partnership structure available to support certain ideas. If the creative professional has the will and ability to participate with the financial community, there is a reasonable opportunity for success.

As another point of reference: my first initiative upon my full-time return to the leadership of MKThink has been to create a dedicated Innovation Studio, focused on developing next generation building system ideas and technologies into new commercially viable enterprises. ●



Can CAD Be Saved?

Preserving Digital Designs

is Harder Than You Think

MacKenzie Smith, Research Director,
MIT Libraries

In 1963, the very first interactive CAD software—SKETCHPAD—emerged from MIT and enthralled designers across a wide range of industries, quickly reaching architecture and now established as the default tool for modern building design. AutoCAD, Revit, Digital Project, Microstation, Rhino, Maya: the list of software products that architects depend on is long and growing. In particular, 3D CAD parametric modeling was the enabling technology behind a wave of creativity. From Gehry's Guggenheim Museum to Jeanne Gang's Aqua Tower, any complex shape imaginable could be attempted with the help of software that encodes the laws of physics.

But while using 3D CAD may have sparked a revolution in building design and a new era of creativity, it has a down side. Writing CAD software is not something an architect learns to do in school; it requires incredibly sophisticated programming. In fact, there are only a handful of geometric modeling kernels underlying all the hundreds of available 3-D CAD software systems. So CAD is an incredibly powerful tool for architects but creates a new dependency on the companies that create and sell that software. CAD is a highly competitive industry, and therefore highly secretive and proprietary. Having a better, faster technique for translating shapes on a screen into geometric formulas is what sells one software product over another.

An even more insidious side effect of CAD use in architecture is found in the world of architecture libraries and archives. Architectural practice aspires to constant innovation, but begins by understanding the past. Libraries and archives have always stood guard over the collective history of architecture and design, stewarding millions of drawings, plans, elevations, blueprints, images, correspondence, project records, and so on. These archives are used to train each new generation of architects and document the history of the profession. Architectural historians and researchers from a wide range of disciplines depend on these archives. While the need for these libraries and archives is unchanged, their ability to steward the records of the digital era is under enormous pressure.

ENIAC, the first general-purpose electronic computer,
1946. U.S. Army Photo.



top, U.S. Institute of Peace, Safdie Architects,
photo by Timothy Hursley.

bottom, Ray and Maria Stata Center, MIT, Gehry Partners,
photo in the public domain.

When records are digital, preserving them involves saving bits rather than atoms. But successfully saving bits isn't enough, because every digital document depends on software to make use of it. Looking at a twenty-year-old digital article or image is often frustrating, since the software needed to open it is long gone—remember WordStar or VisiCalc? How would you study a SKETCHPAD design if you happened to find one? The challenges of preserving digital documents are as complex as those of creating the software in the first place, especially complex software like CAD.

For many firms, a typical building project archive now consists of a hard drive containing tens of thousands of digital files: 3D models, 2D drawing sets, emails, spreadsheets, images, videos, RFIs, ASIs, and more, all in their original formats and lacking any tags or metadata to help identify the files or relate them to each other. One 3D CAD model might consist of a dozen interrelated files, named by whatever convention the 3D software product happened to use. Figuring out which files belong together and how to open them takes insider knowledge that usually stops with the project architect.

And since the software products are usually upgraded every few years, a CAD model created just a few years ago may not open with the current version of the same software. Even software that provides tools to migrate a model from an older to a newer version may unintentionally introduce changes to the design object. To illustrate what can go wrong with CAD software versions, in 2006 the Airbus A380 airplane was delayed by a year at a cost of \$2.5 billion due to use of different versions of CATIA in the design process by different divisions of the company. The versions were incompatible, so that designs for the wiring system done by one group couldn't be integrated into the 3-D model produced by the other group.

As architecture libraries and archives have begun to get digital records for building projects, they are starting to work on strategies to cope with some of these challenges. At MIT, we conducted a two-year project called FACADE (Future-proofing Architectural Computer-Aided Design) to study the problem of what to keep from the project hard drives, how to tag them for future discoverability, and how to preserve the 2D drawings and 3D models for posterity. With the help and inspiration of the late Bill Mitchell at the School of Architecture and Planning, we collected records for three notable buildings that had made heavy use of CAD as our research collection. The oldest was Morphosis's Caltrans District 7 Headquarters in LA (Bentley), followed by Frank Gehry's Stata Center at MIT (CATIA), and finally Moshe Safdie's U.S. Institute of Peace in Washington D.C. (Revit). These project records collectively provided excellent examples of the digital preservation problems, and with them we were able to work through a number of possible approaches to saving digital archives for posterity.

While the strategies we developed weren't simple, we found that there are things that can be done to improve the chances of survival of these records, and that they're worth saving.

First, keep everything in its original format, and *the software used to create it*. While it's likely possible to find a copy of Microsoft Word 2007 in 2017, copies of specialized 3-D modeling software will be harder to come by. Keep in mind, though, that a lot of CAD software runs on desktop computers and requires a license key to open. Those keys normally expire when you stop renewing your license or when the company publishes a new version and deprecates the old one. So keeping the software is a good idea, but you may have difficulty using that software when you need to open the file.

Next, for really important documents from the project, like the key design files, save copies of them in a standard format. For CAD, the best options are IFC or STEP, depending on which CAD program was used and what export formats it supports. Making these standard-format copies is a manual process, requiring knowledge of both the CAD software and the particular model being exported. The FACADE project employed graduate students from the School of



Screenshots from the FACADE Project.

Architecture and Planning for this work, but many firms have CAD experts who could do this. And while the CAD files are probably the most at-risk and problematic type of files you'll want to archive, don't overlook key files in other proprietary formats. For example, key documents created in Microsoft Office tools like Word, Excel, and PowerPoint can be saved in the Adobe PDF/A (an archival version of PDF) or as plain text files, which are much more likely to last than the undocumented formats that Microsoft uses internal to their products.

Third, put pressure on software vendors to do a better job of supporting long-term archives. CAD companies should help create good standards for archiving CAD models and support those standards in their products, especially companies that specialize in tools for the AEC industry. They should be open to escrowing copies of their software with trusted organizations (e.g. the Library of Congress, National Archives, or AIA). And they should also do a better job of documenting their internal data formats so that new software could be written in the future to read those files.

An interesting twist to this story is BIM. The vision for BIM is that it's a living document, never "finished" and evolving over time alongside the physical building. That's a great vision for the IPD and ongoing maintenance process, but poses the question of what the "design of record" should be for the future architecture student or historian. BIM is, in a way, a database that changes all the time, and in the field of digital preservation dynamic data of that sort is a big problem: what should be kept for the historical record, and how to do that. Should we make snapshots of the model at key points? Will there be standard file formats for those snapshots as reliable as those we've developed for other formats over the years? What if the library or archive doesn't even get the BIM until twenty years after construction? BIM professionals are aware of these questions, but what we have here is a collision of interests: the best technology to preserve the actual building competes with the best technology to preserve the building's history.

A last consideration is the growing use of project information management systems like Newforma. These products conveniently collect together all those project documents we now get on the hard drives, including the models and drawings, but they aren't designed as long-term archives, nor do they typically provide support for exporting project records to digital archives. What was formerly a tedious manual process of combing through files on a disk is now a much harder process of extracting information from a proprietary tool that itself changes every couple of years. So, again, the potential for improved efficiency in building projects may lead to decreased efficiency (or complete inability) in saving the records of those projects for future use.

Why is digital preservation relevant for practicing architects and their firms? Mainly enlightened self-interest. If there's ever a need to refer to an old design, consult a change order or ASI from a completed project, or consider an addition to an old building, you need usable digital archives. The best time to prepare digital records for archiving is while they're young and healthy, not decades later when the firm is closing down. And while libraries and archives will do what they can to save the records they get, developing better tools and processes for the designers themselves to do this may mean the difference between having a historical record of architecture or not. ●

"Meetings are indispensable when you don't want to do anything."

— John Kenneth Galbraith

Number of new licenses issued in California

1989 - 1,339

2010 - 548

www.cab.ca.gov

Number of ARE divisions taken by California candidates

2009 - 11,262

2010 - 5,187

www.cab.ca.gov

Number of out-of-state architects receiving reciprocity in California

2003 - 224 (20 year high)

2010 - 77 (20 year low)

www.cab.ca.gov

Number of licensed architects in California

1995 - 20,367

2010 - 20,433

www.cab.ca.gov

Business structure of California architectural firms

3% Partnerships

6% Limited Liability Partnerships

15% Sole Proprietorships

38% C Corporations

38% S Corporations

www.managementdesign.com/survey.html

Construction types of jobs designed by California architectural firms

49% New Construction

33% Rehab / Renovation

6% New Interiors

6% Renovated Interiors

6% Other

www.managementdesign.com/survey.html

Client type for work done by California architectural firms

25% Private Individuals

21% Government

19% Institutional

14% Commercial

12% Developers

10% Other

www.managementdesign.com/survey.html

Project type of jobs designed by California architectural firms

20% Single Family Homes

17% Education

12% Office

10% Healthcare

6% Retail

6% Housing

5% Civic

4% Hospitality

4% Industrial

3% Master Planning

3% Recreation

3% Transportation

2% Mixed Use

2% Religious

www.managementdesign.com/survey.html

David Meckel, FAIA

Average hourly billing rates used by California architectural firms

\$200 Principal

160 Associate

150 Project Manager

135 Project Architect

130 Senior Designer

90 Junior Designer

www.managementdesign.com/survey.html

Architectural Record 2011 Good Design is Good Business Awards

Trumpf Campus, Stuttgart

Barkow Leibinger, Berlin

Mills College Graduate School of Business, Oakland

Bohlin Cywinski Jackson, San Francisco

The Power House Restoration/Renovation, St. Louis

Cannon Design, St Louis

Eileen Fisher, Inc., Corporate HQ: Irvington, NY

Earl Everett Ferguson Architect, Irvington, NY

Roca Gallery, Barcelona

Office of Architecture in Barcelona (OAB)

300 North LaSalle, Chicago

Pickard Chilton, New Haven, CT

Denver Art Museum Shop, Denver

Roth + Sheppard, Denver

The Ledge, Chicago

Skidmore, Owings & Merrill, Chicago

Mercy Corps Headquarters, Portland, OR

THA Architecture, Portland, OR

<http://archrecord.construction.com/news/2011/>

"Carpe per diem—seize the check."

— Robin Williams



photos by Culvahouse.

Wind Power, Distributed

Tim Culvahouse, FAIA
Editor

I am fond of the *corps de ballet* of the Altamont Pass wind farm, one of three such grand arrays in the state—the other two are Tehachapi and San Geronio—row upon row of giant pinwheels, tracing the ridgelines and spinning in rhythmic counterpoint. Altamont was the first of the three and a pioneering endeavor in renewable energy production. It has its problems—of the three, it has proven the least kind to raptors, whose optical systems (I’m told) don’t process the rotation of the blades, seeing them instead as fixed disks, apparently ideal perches for surveying the landscape for prey. Slower turning turbines or turbines in other configurations will address that problem, as funds are available for replacement.

The big problem, though, is that Altamont is there, and I am here. Like the electricity generated at fossil fuel plants or nuclear plants or hydroelectric dams, the electricity from Altamont must be transmitted long distances to those of us who use it. And transmission involves loss. Transmission and centralized production are also big business, which tends to work against more local solutions.

Which is why I’m encouraged to see wind turbines cropping up singly and in pairs or threes in the Central Valley (those shown here are at a Safeway Distribution Center and Teichert Aggregates near Tracy). Less transmission loss + less dependence on large-scale (i.e., government subsidized) infrastructure should = something folks all along the political spectrum can get behind. ●