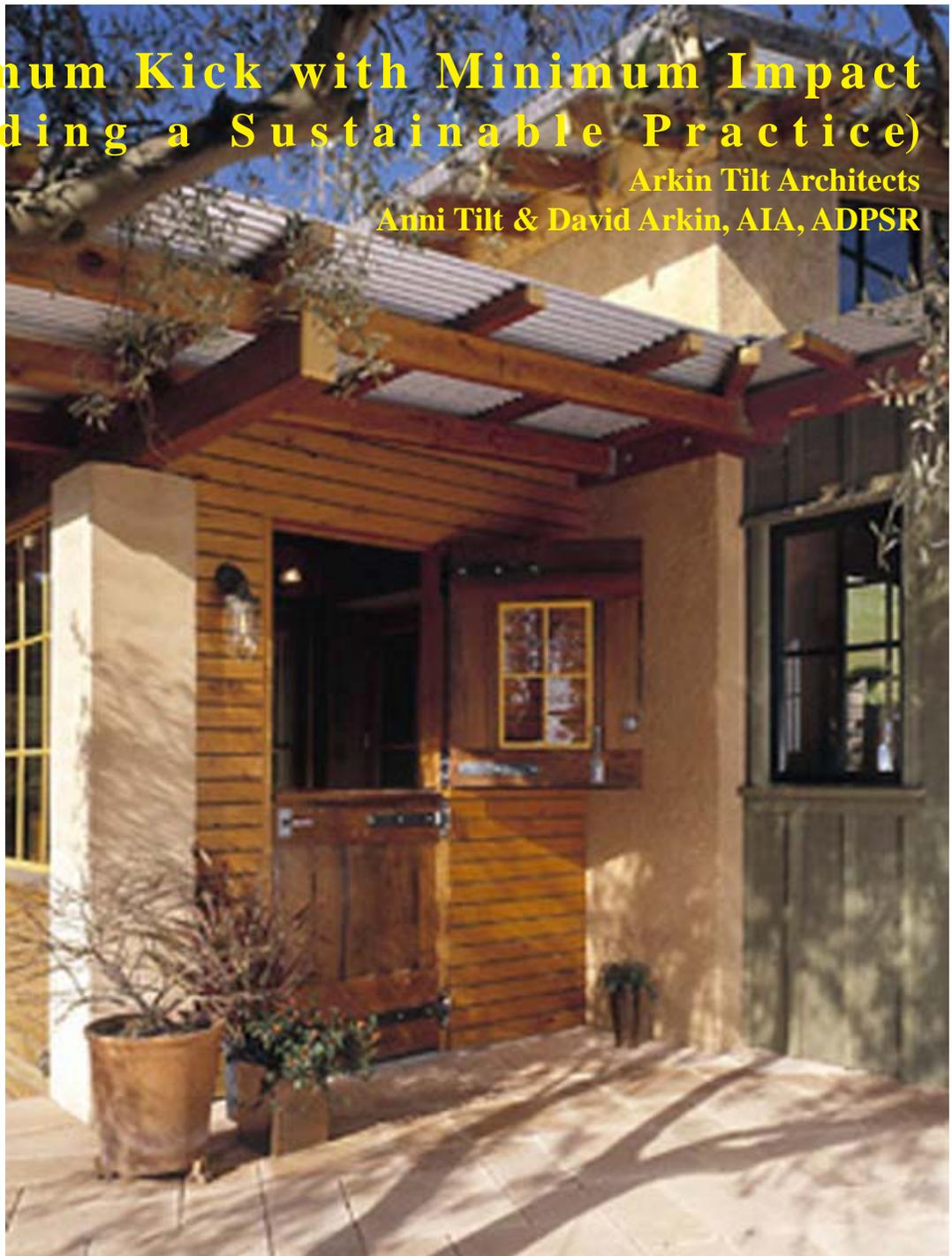


Maximum Kick with Minimum Impact (Building a Sustainable Practice)

Arkin Tilt Architects
Anni Tilt & David Arkin, AIA, ADPSR



Entry featuring reused steel windows and doors from wine tank bottoms

Arkin Tilt Architects was founded 5 years ago with a very specific idea in mind: to be the intersection of ecological design and good design, something we've taken to calling rather cryptically, "maximum kick with minimum impact." We decided to wear "green" on our sleeves; shamelessly marketing our firm as environmentally conscious designers. The stigma of being a "solar" architect—left over from the 70's when technology was the answer and aesthetics seemed irrelevant—is no more. What we have found is that it's not only been a good business decision to be in a growing niche market, but also that clients interested in both ecology and good design are generally fairly decent human beings who are relatively pleasant to work with.



Mary Star of the Sea Church

Of course, there is nothing new about ecological design. As we all know, were it not for modern mechanical equipment and cheap fuel there would be nothing but “ecological design:” if we didn’t pay attention to climate, orientation, local building traditions and locally available materials, we would all be mighty uncomfortable, not to mention out of a job. The issues in present day architecture, however, are so inherently complex that much is done by rote methods and standards, which are so divorced from this basic reality that it is often quite challenging to practice sustainably today.

Challenges

Some projects, such as Real Goods Solar Living Center (with a strong environmental commitment from the client, a somewhat flexible and responsive building department and a conventional but willing builder) come close to doing the sustainable “all.” For the most part and for most projects, however, we have to “pick our battles” and include what we can without burning out the parties involved.

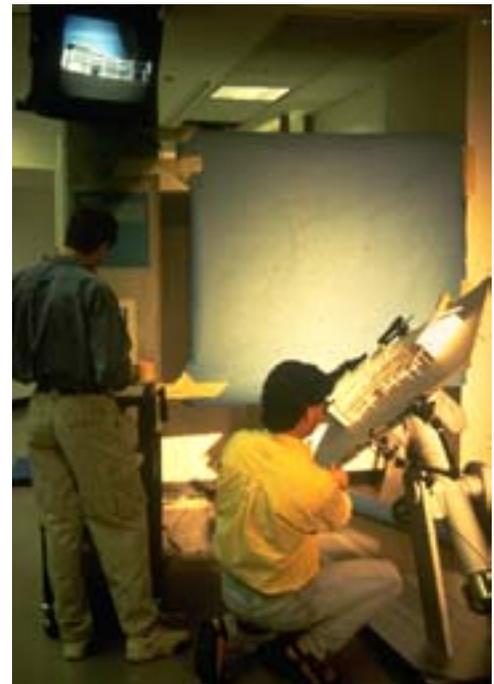


Hidden Villa Hostel and Summer Camp Facility



Palter Residence - reused decking, certified wood doors

Having the committed support and trust of the client is imperative. While most of our clients come to us with sustainability on their agenda, it is important that they have realistic expectations. Delays for building department reviews, materials that are laboriously salvaged, and up-front costs (for long term gain) are but a few “bumps in the road” that should be discussed. Non-conventional heating systems, for example, frequently require more user interaction (like occasionally opening a window), and the client had better understand that before agreeing to it.



Heliodon Test - studying solar gain

An important component of our design process is building a model for testing. In general we evaluate the solar gain on the Heliodon table at PG&E’s Pacific Energy Center in San Francisco. A small video cam records the sun’s path through the day, and has the added benefit of allowing clients to get a sense of the space. Additionally we do computer modeling for thermal performance (with no additional input) aiming for a ± 5 -degree range around 68 degrees year round. Site staking is another simple but vital piece of the process, often neglected by other designers.



Rattai Studio/Workshop with PISE on straw bales

The word 'alternative' is one that some folks—like building officials and contractors in particular—would prefer not to hear. It's usually prudent to meet with the building department early in the process and investing time and money into extra education. Generally we find that Building Officials are very interested in alternative construction techniques such as straw-bale or cellulose insulation, but that they have many legitimate concerns that need to be addressed. We've helped give presentations to associations of building officials, and have found that the time invested pays back not only with the information disseminated, but also with the relationships formed.



Hester McNally Residence featuring old railroad track beam

In one project we proposed using a length of steel railroad track instead of an I-beam to span an opening, and the contractor diligently located it. Apparently the UBC doesn't have values for the dated (1882) track section, so it took three rounds with the City to convince them that it was three times stronger than needed. The final argument was a photo of a train suspended over a river on similar track with the trestle below it washed away!



PISE Application to Straw Bale Wall, Breeze Residence

Contractor relationships vary, many share environmental commitment. Again, education plays a role, but here we've found a welcome reception toward waste reduction, jobsite recycling and ecological methods. Every straw-bale project we've designed has been built by an uninitiated builder, but all have expressed how refreshing it is to be doing something out of the ordinary.



Palter Residence with used doors

Cost is always a concern, both soft costs and the construction itself. Our design budgets are weighted toward the early stages, doing extra research in assessing climate and resources. We find this generally pays later in not having to question or alter earlier assumptions, as well as simpler mechanical systems. While the general sense is that "green materials cost more," we firmly believe that with true accounting, sustainable design is more affordable, not less. With passive and active solar design, there is the obvious energy cost-savings over time. Additionally, careful evaluation can result in a smaller project saving substantial material costs. And, while labor costs on some building systems may be higher, there is the increased opportunity for volunteer labor in the form of straw-bale workshops, or, depending on the owner, in a little sweat equity by prepping salvaged materials.



Caner Beier Residence - certified and reused timber

During construction we make ample use of allowances, in some cases actively coordinating the ‘special subs’ that supply unique products such as recycled glass countertops or custom doors. We regularly visit the local salvage yards, locating items for current or future projects (our own garage resembles an Urban Ore annex). On occasion we’ve actually subcontracted special pieces ourselves; for example, large bi-fold doors at the Hidden Villa Hostel and Summer Camp facility feature windows and doors taken from the previous hostel building. We believe in being tenacious about seeing certain critical details realized, even if it means extra effort on our part.

Developing an architectural product library is a huge undertaking – in some ways it is a good filter to look only for sustainable products. The ADPSR Resource Guide (available at Builder’s Booksource or the ADPSR website – see Support) is a wonderful start in looking for green materials, but even those products require constant reevaluation. One should also question the practices of “standard” suppliers, letting them know that the architectural community is interested and aware will begin to affect change on a much larger level. We have built relationships with many suppliers, most notably in the area of salvaged wood. Joe Garnero of Ukiah-based Recycled Lumberworks keeps us apprized of his latest and greatest finds. These relationships are key to our ability to incorporate these resources on a regular basis.



Caner Beier Residence- vanity top from sink cutout

Tales to Tell

Just as careful examination of a tree branch reveals the story of its setting and life, we find that aspects of our projects often contain rich stories; most often the result of collaboration with our clients and others. We maintain curiosity about existing conditions, and invite opportunities to work with them.

An unintended trend we've developed is the swapping of resources from project to project. Siding from a dismantled garage in Albany made its way to the interior of a San Mateo remodel; a sink cutout from that project became a vanity top in Napa, while scraps of 'Dakota Burl' soybean board are now shelves in Berkeley.



Hidden Villa Hostel- doors and windows salvaged from old hostel

Many elements have stories of their own to tell: the master bedroom door in San Mateo which reads 'Danger...Positively No Admittance', or the doors at Hidden Villa again, where camp staff placed the greatest share of sentiment for the old building, these old doors and windows provide a direct and tangible connection to the past, in addition to the more mundane goals of waste reduction and limiting use of new materials.



Mono Lake Committee Offices model with photovoltaic and solar hot water panels and clerestory daylighting/ light shelves

Opportunities

We're finding that the marriage of ecology and good design is proving to be applicable to nearly any building type (not that we'd want to do an ecological prison). But the most rewarding are the projects—like the Mono Lake Committee—whose built surroundings are beginning to reflect their environmental mission. We have the opportunity to increase awareness of both the natural and built environment, and to demonstrate that buildings can be “both/and.”

Speaking and teaching opportunities - from a design/build seminar at UC Berkeley to regular courses for the Institute for Solar Living.- have become an important component of our practice. These tend to sharpen our focus as well as lead to other opportunities, some to further public outreach, others to building projects.

There are genuine rewards, too, such as recognition from Bay Area Action and the Peninsula Center Conservation Foundation in the area of Sustainable Built Environment. And then there are the surprise benefits, like discovering that bits of straw stuck in your sweater can make a fantastic conversation starter at a party.

Support

Our ability to build a sustainable practice has only been possible with resources and support of certain key organizations, and our colleagues and friends who comprise them. Most notable among these are CASBA—the California Straw Building Association, which we helped to found in 1996 (see www.strawbuilding.org). ADPSR—Architects/Designers/Planners for Social Responsibility, is a national organization (David is Vice President) with an active Northern California chapter that publishes the valuable Architectural Resource Guide (see www.adpsr.org and www.adpsr-norcal.org). EBNet - the Ecological Building Network - is furthering ecological building technologies through research, testing and education (www.ecobuildnetwork.org). Additionally, the green specifications are available through the website, (www.greenspec.com).



Hester McNally Residence with license plate shingles



Caner Beier Residence- PISE and rammed earth, passive solar cool-

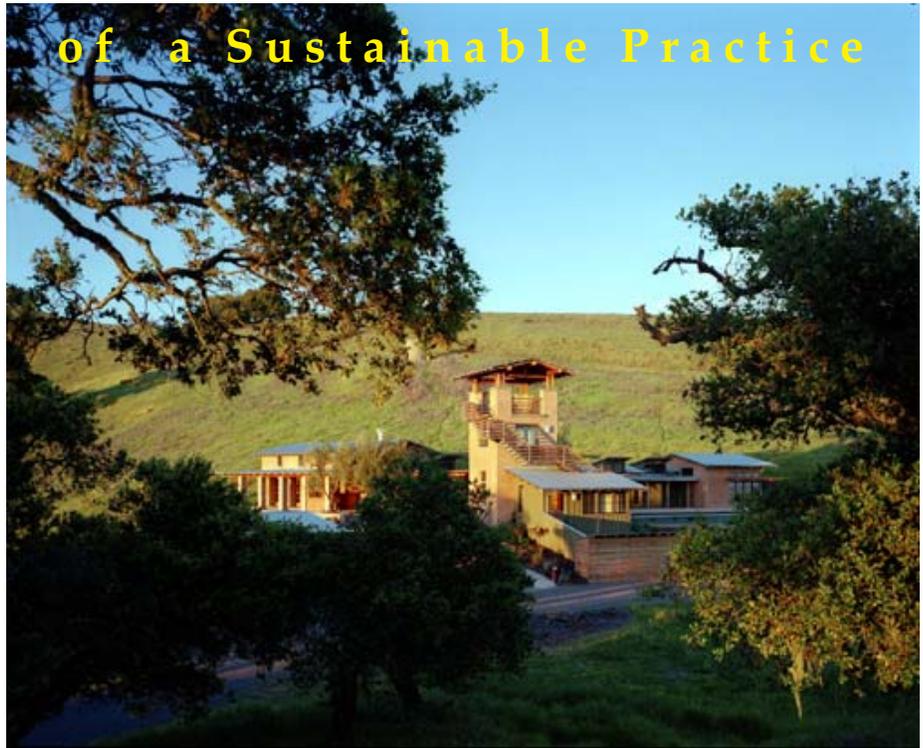
Conclusion

On one hand sustainability is just another layer in the rich fabric of architecture, on the other hand it requires the complete reevaluation of everything you do.

We try to extend our commitment to sustainability to our office culture as well, encouraging bicycling when possible or the office's electric car when not. The bulk of our electricity and hot water are provided by the sun, as is the weekly solar oven cooked snack. Good daylight and natural ventilation make up for the notable lack of wide-open spaces.

All told, our commitment to sustainability has been a very satisfying one. We certainly encourage offices of every size to make a go at being 'green' both for the health of the planet and to increase the level of excellence in architecture.

Five Goals of a Sustainable Practice



Caner Beier Residence

Goal #1: Harmonize with the Site.

The site is the starting point. We assess the site conditions (topography, vegetation, climate, context, local traditions and available resources, etc.), graph the sun path and diagram the site constraints and views. From this information we write a clear, simple statement of the best strategy to meet needs and goals. We also apply Chris Alexander's pattern of leaving the 'best spot' on the site alone; then building in the area most in need of repair. We create usable outdoor spaces, which leads to smaller buildings.

Goal #2: Build as Little as Possible.

This might seem like an odd goal for architects, but for us it saves resources, saves energy, and can also save money. Building less can allow for a greater level of detail within the space provided. We also look for opportunities to work with existing structures and improve them, both in their thermal and passive performance, and aesthetically.



Hester McNally Residence

Goal #3: Minimize Energy Dependence.

In general, buildings should be able to heat and cool themselves and generate their own electricity. Today we have the technology and know-how to meet this goal. Here in California especially there is no reason most buildings can't feature at least some degree of passive heating and cooling. Daylighting plus efficient systems reduce energy demands to a point where renewable sources can be integrated into the design, creating self-sufficient structures. In some cases, buildings with photovoltaic panels even 'sell' surplus electricity to the grid during peak load period, typically sunny summer afternoons.



Boreal Wilderness Ecolodge with tracking photovoltaic arrays

Goal #4: Maximize Resource Efficiency.

Careful material specification yields considerable use of reused and recycled materials, plus resource efficient building systems like straw-bale and rammed earth. In most cases we find that getting these materials or systems into the project requires extra effort on our part: additional research or coordination with suppliers and, in some cases, sourcing or fabricating. In the case of straw-bale or earth construction, we generally plan on additional time spent educating and providing information to building officials, sometimes even conducting tests during construction.



Out-of-plane load test



Palter Residence

Goal #5: Demonstrate the Beauty of Ecological Design.

We strongly believe that for ecological design to take hold, it must illustrate a marriage of good design and environmental priorities. It should be uplifting and delightful and inspire delight in the natural world. Ecology really is the basis of good design – in daylighting and rich materials, in buildings that naturally suit their site and climate.

