



ARCHITECTURE

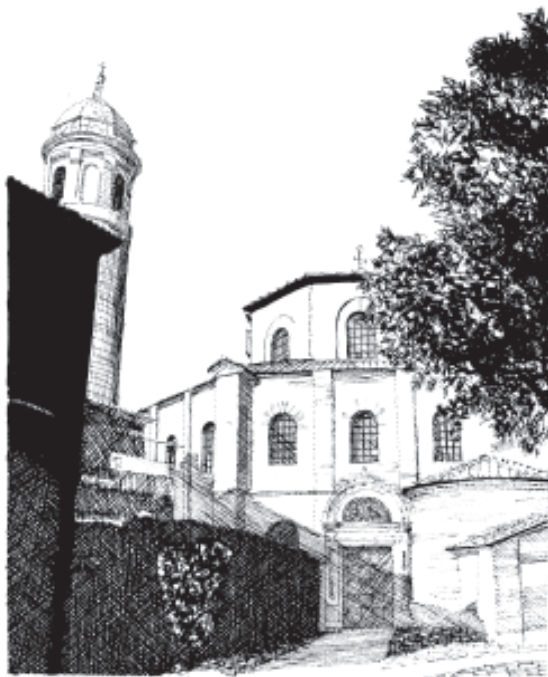
EHLINGER & ASSOCIATES

FOURTH QUARTER 2007



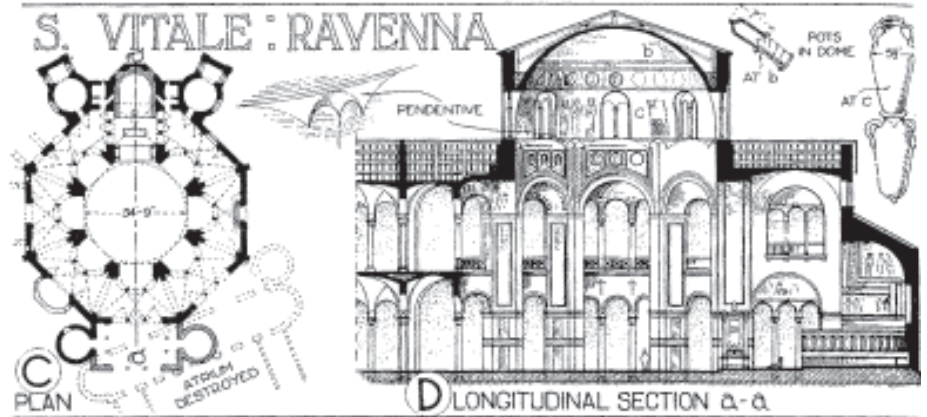
Ehlinger & Associates extends Seasons Greetings to all of our friends who receive the newsletter. Merry Christmas, Happy Hanukkah, and Happy New Year.

S. Vitale, Ravenna, Italy © 2007 Ladd P. Ehlinger



S. VITALE, Ravenna, Italy

This issue's limited edition print is of a Ladd P. Ehlinger sketch of S. Vitale in Ravenna, Italy. This church is archetypal and a paradigm of centripetal plan churches that were developed during the Byzantine empire during the reign of the Emperor Justinian and his Empress Theodora. S. Vitale was commissioned by the Episcopate of Ecclesius about the same time as S. Sergius and S. Bacchus were in Constantinople (present day Istanbul) in



526 AD, and was completed in 547 AD. It is hard to fathom that this church is almost 1,500 years old, yet looks like it was built maybe twenty years ago.

Centripetal plan churches were a radical departure from the original Christian basilican plan churches. Basilican plan churches were an adaptation of the Roman Basilica, a building type devoted to legal and public affairs. When used by the Romans, the rectilinear plan was entered from the middle of the long side. The entry was changed to the middle of the short side when the building form was adapted as a church and the length of the rectangle was lengthened as well to emphasize the processional aspect of one's spiritual journey through processional rituals associated with Mass and other services such as Stations of the Cross.

In the centripetal plan churches, the emphasis shifted to expression of the unity and oneness of the spirit of all beings and of God, and architectural forms were sought to express that. This began at first in the eastern rite churches, where the emphasis today is still predominately centripetal plan churches. Square plans, round plans, octagonal plans (the next best thing to a circle) were incorporated with domes providing the roof enclosure to complete the space and emphasize the central focus that is in harmony with the unity of God.

S. Vitale has an inner octagon of 52' span and an outer octagon of 115' with an apsidal chancel for the main altar opening off one of the eight bays, while the other seven have apsidal shapes formed by columns to give an undulation and feeling of expansive movement to the central space. This is a precursor to the Baroque movement in architecture. The lower columns support the second level gallery while the upper columns support what are called squinches that meld the walls into the circle required for the drum and dome it supports in turn. The dome is unique in that it is constructed of fired clay pots nested one into the other and laid horizontally in the upper part to lighten the structure. The dome is roofed over with a timber roof unlike what the Romans did, that presages this medieval practice.

The interior is very rich and sculptural in the carvings of the capitals and other components, and dazzling in the array of polished marble, granite, and precious metals. This is in stark contrast to the almost barren, plain and unadorned exterior treatment. The only decorative elements on the exterior are the main doorway and the top of the campanile (bell tower).

The vacillation between centripetal plan churches and basilican or processional plan churches continues today in the design community and in the various religious communities. It really does depend upon the orientation of the congregation: spiritual processional journey or spiritual unity.

Ladd P. Ehlinger

Emerging and Reemerging Technologies

Always keeping my eyes open for new ideas and materials to incorporate in designs, I thought I'd share a couple.

Thin-Film Solar Cells

Electricity producing solar cells (photovoltaics) have been around for a long time, but they're very pricey. Generally, they're composed of large, delicate panels that aren't aesthetically appealing, and are usually "stuck" on a building as an afterthought.

Thin-film solar cells, however, aren't crystalline, and can be applied to different materials by printing directly on them, including glass and fiberglass, as well as flexible materials, like plastics. The predicted costs of thin-film with the new manufacturing prices are 35% less than traditional crystalline solar cells, which will put it precisely in the range where it's truly competitive with standard energy costs, at less than \$0.10/kwh, without government subsidies.

If it holds true to these promises, thin-film may revolutionize individual power production beyond the borders of California. Perhaps your office building needs a new low-slope roof? Then maybe you'd like to integrate thin-film into that new single-ply EPDM roof, and cut your power bill in 1/2? You already have a nice standing seam metal roof... perhaps you're interested in easy-apply rolls of solar cells that adhere between the seams? Need new windows? Instead of tinting the glass, why not get solar-filmed glass and let your windows earn you money?

All of these applications exist right now, but they probably won't be price competitive for the next 3 to 8 years as the manufacturing plants come on line.



Thin-Film Solar on a Metal Roof



Cisterns

While certainly not a new technology, and probably of little concern to our New Orleans' readers, the ongoing drought across the Southeast has raised the issue of incorporating water collection in design, harkening back to colonial days.

When faced with mandated water use restrictions, cisterns can be a nice backup for maintaining a healthy lawn and garden, keeping a swimming pool full, or even for doing laundry or filling up the flush tank in your toilet.

There are, surprisingly, a number of rain-barrel and cistern manufacturers, some even with aesthetically pleasing designs. Most come with overflow controls, screens and filters to keep bugs out of the water, and standard hose bibs. If you need a lot of water, barrels can be chained next to each other so overflow from one fills the next. Just one inch of water falling on a 1,000 S.F. area can yield up to 600 gallons of collected water!

In many areas of South Australia, cisterns are actually mandatory. They're used to fill toilet tanks for flushing, and often hooked into laundry machines for washing, as well. Low water costs and infrequent restriction concerns probably don't justify these measures in the U.S., but they still might appeal to the more environmentally conscious.

Just for supplementing your gardening/lawn care during the worst drought months, they can be a perfect and inexpensive addition.

LED Lighting

Light Emitting Diodes use very little power, and last a long long time. With life expectancies 30 times longer than incandescent bulbs, and up to 5 times that of fluorescents, and costs of about 50% of these bulbs over time... there can be only one reason why people haven't been demanding them in their homes... the light quality is awful.

White LED's are a relatively new development. If you need red, green, or yellow lighting, LED's are definitely your thing. For accent lighting on buildings, or to produce neat neon-like effects, LED lights are perfect.

For indoor lighting, though, white LED's aren't quite there, yet. Often tinged with an eerie blue color, the brightness of the bulbs are also weak. Where an incandescent or compact fluorescent would get you 600-1200 lumens, depending on wattage, the best a typical LED white light can manage is 60-120 lumens for the same size, even though the wattage draw is an order of magnitude smaller still.

A newer type of LED might be the breakthrough. Called simply "High Power LED", a better arrangement of mounting and heat dissipation through ceramic encasement allows more current so that twice the light can be produced. This allows LED's in typical bulb arrangements to produce light in the 500-600 lumen range, which is nearly the same as a standard 60 watt incandescent bulb, or a 25 watt compact fluorescent.

The drawback: cost. A High-Powered LED bulb currently costs \$67. Even though it uses only 9 watts and lasts 30,000 hours, it only saves about \$40 in power over its lifetime compared to a compact fluorescent, which means its relative cost to a \$2.99 bulb is about \$17.99. Even if the price drops to under \$40.00, where the bulb would actually cost less over its life-span, it'll take some convincing to get me to switch.

R. Perrin Ehlinger

