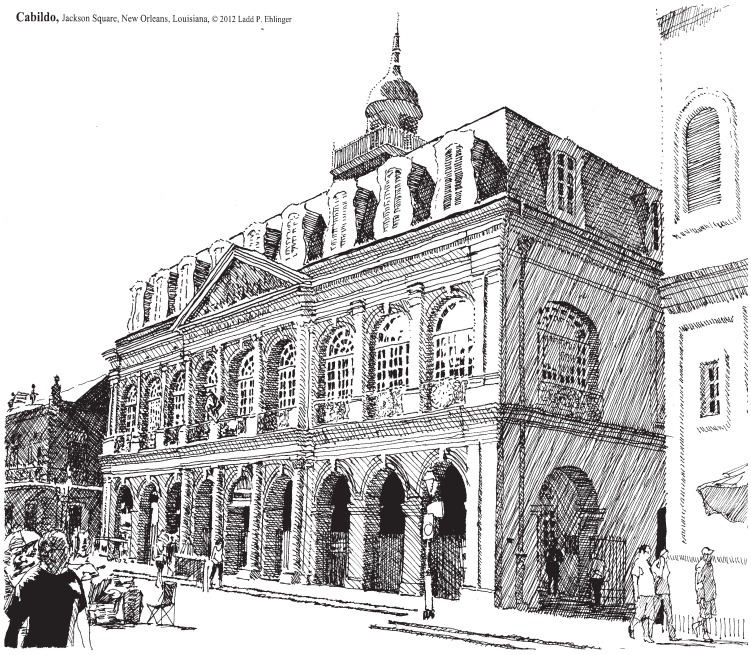
ARCHITECTURE

EHLINGER & ASSOCIATES **SECOND QUARTER 2012**



Cabildo, Jackson Square, New Orleans

Cabildo means "Town Council" in Spanish. This building is where the municipal council met, and served as the seat of the Spanish colonial government during that period in New Orleans. The original Cabildo burned in the great fire of 1788, and this building was built to replace that one in 1795-99. The architect was Gilberto Guillemard, who designed the building in Spanish Colonial style. Spanish Colonial buildings in San Juan, Havana, and Mexico were all built in this same style.

The Cabildo fronts on Jackson Square, originally the Place d'Arms or Plaza de Armas, which was renamed after the War of 1812 in honor of Andrew Jackson. It is situated to the left of the St. Louis Cathedral, and its twin, the Presbytere, sits to the right of the cathedral.

The documents for the Louisiana Purchase in 1803 were signed here in the Sala Capitular, the main meeting room of this building when America purchased 820,00 square miles from Napoleon Bonaparte of France for $15 million. France had reacquired Louisiana three years previously in the secret treaty of San Ildefonso from the Spanish because of Napoleon's control of Spain, and he promptly sold it to Thomas Jefferson of America to raise money for more wars.

The building continued to be used by the New Orleans municipal government. In 1848, the Man- sard roof was added for more space with apparently no concern about mixing a French style with a Spanish style. In 1853, the council moved to the just constructed Gallier Hall, fronting on Lafayette Square, upriver and on the other side of Canal Street. The Cabildo then housed the State Supreme Court from 1868 to 1910, and since 1911 has been the home of the Louisiana State Museum, along with the Presbytere. Originally called the Casa Curial (Ecclesiastical House), the building derives its name from the fact that it was built on the site of the residence, or presbytere, of the Capuchin monks. As with the Cabildo and the Cathedral, construction was financed by Spanish philanthropist and nobleman Don Andres Almonester y Roxas.

The Cabildo displays and exhibits artifacts and the history of Louisiana from inception up through Reconstruction. There is an emphasis on commerce, agriculture, and all of the ethnic groups that participated in the settlement and growth of Louisiana.

The exhibits trace the history of the state from the Native Americans during the French settlement of the 1700s up until after the Civil War. It covers the founding of New Orleans, and chronicles the Colonial rule of both France and Spain, leading into American rule.

The building was declared a National Historic Landmark in 1960. The building was extensively damaged by fire on May 11, 1988, when a careless sheet metal worker was soldering a gutter. The entire Cupola and third floor were destroyed. The restoration was completed in 1994 and the building was reopened to the public.

Materials of the Future

Architecture has a long history of incorporating different materials and systems into construction; from its very beginnings with mud, wood and stone, to the countless myriad of materials available today, including concrete, steel, glass and plastics.

Every now and then, some materials come along worth keeping an eye on for their potential uses in the architectural arena.

Liqui-Glide

If you haven't seen Liqui-Glide yet, take a minute and go to liqui-glide.com and watch their demonstration videos. It's a coating that has the surface properties of a liquid, so that other liquids slide right off of it. As an added bonus, it's non-toxic, made from food grade FDA approved materials, and it sticks to a wide variety of surfaces, including glass, ceramic, plastic and metal.

Expect to see this material coating a wide variety of architectural and household products in the future, simply for ease of maintenance: windows, countertops, sinks, toilets, canopies, wall siding. Expect it to appear on anything that's difficult to clean, or is expected to be clean at all time.

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While Liqui-glide's first use as a liner for condiment bottles might seem a bit inane, imagine water rolling off the siding and windows of your house or business, without streaking or molding, or a toilet that never needs scrubbing, or kitchen counters than can be cleaned with nothing more than a quick wipe with a wet cloth.

VIP

Vacuum Insulated Panels (VIP) have been around for a while; they're use limited primarily to large walk-in freezer and refrigerators, but the quality has improved and cost reduced enough where VIP's are ready for wider use.

They are panels of rigid, porous materials - typically fumed silica, aerogel, or glass fiber. The material has to be strong enough not to be crushed once the air has been evacuated. Finally, the edges are sealed tight against air intrusion.

The lack of air reduces convection and conduction so much that VIP's outperform standard insulation by a factor of 5 for the same thickness. For example, to replace a standard 3.5" thick R13 fiberglass batt insulation, you would only need a 3/4" thick panel.

There are a couple of problems with VIP's that need some working out before people see them in anything but high-end construction. The panels can not be cut, so a design either has to be altered so they fit exactly, or custom panels have to be ordered, which can be pricey.

Another problem is that, even though the VIPs are considered nonporous; eventually the vacuum will normalize, and they will lose insulation value over time. However, the production processes have advanced where that time frame is on the order of 10-20 years or longer, so it's life time is comparable to many other insulation materials.

For high performance insulation in tight spaces or modular construction: this is the stuff.

Home Automation Systems

Since the advent of personal computers, people have been trying to exploit them to centralize automated functions in their buildings and homes, with varying degrees of success. Basically, connecting controls for lights, thermostats, utility meters, etc. to a server computer.

One of the biggest obstacles has been the rapid advancement of the technologies and software. If you started a system in 1992, and ran all of your automated systems on the very latest and greatest, MS Windows 3.1, you would have had serious headaches maintaining compatible parts and upgrading software over the past twenty years.

However, there has been some measure of standardization, if only by the fact that now larger corporations are manufacturing some of the amenities, like GE, and Leviton. Most components are now wireless, talk to standard wireless routers, and most of the software systems support multiple manufacturers, wireless formats and computer/operating platforms.

For the most part, the instant obsolescence concern has been solved. Now, building/home automation is just a matter of cost vs. convenience, and the cost is still a bit prohibitive, but if one starts their system geared towards energy saving, as with air conditioning thermostats and standard water heaters, the payoff may justify it.

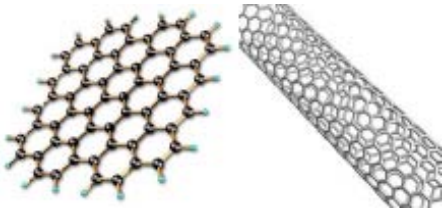
Fullerine Tubes

This next material has the potential to change engineering, architecture and construction on a scale that hasn't been seen since the invention of steel.

Carbon, when its atoms are bound in organized structures, can be amazingly strong. The diamond formation of carbon is one of the strongest, toughest materials. Diamonds, even synthetic ones, require a great deal of energy to produce, so until energy is free, they will remain a limited use item.

There are other forms of carbon with similar strengths to diamond, and eventually, they should prove much less expensive to create.

Fullerine tubes are one of these arrangements. When graphene, a planar arrangement of carbon molecules, is rolled into a cylindrical shape, it has a tensile



Above:*Atomic configuration of graphene (left) and Fullerine tubes (right)*

strength that is nearly 500 times that of steel. Presuming it can ever be manufactured on a macro scale, it has the potential to allow structural engineering feats barely dreamed of.

Currently, the longest suspension bridge's main span is about 2 kilometers, on the Akashi Kaikyo Bridge in Japan, made with steel. What if that span could be 200 kilometers? A Bridge over the Strait of Gibralter, connecting Africa to Europe, or over the Bering Strait, connecting Alaska to Russia, could be more than fanciful television shows.

Fullerine tubes have the potential to form a cable capable of stretching into space without snapping, and still have strength to ferry an elevator directly to orbit.

Unfortunately, those possibilities are still a ways off, as the ability to manufacture Fullerine tubes of significant length or quantity simply doesn't exist... yet.

What's more likely to reach a macro scale of production first is Bucky Paper, a term to describe when short Fullerine tubes are aligned in a random orientation in a planar pattern, creating a black film of paper that is stronger than steel, flame resistant and can conduct electricity.

Currently produced in sheets barely large enough to fold into origami, it may not be long before the sheets are large enough and inexpensive enough to use in the construction realm.

Stretched like a canvas, Bucky Paper could form a new, lightweight cladding that would allow skyscrapers taller than Dubai's to be built. Sport stadiums could be enclosed with a light frame covered in Bucky Paper, capable of enclosing a stadium twice or more the size of the Superdome.

The future still holds some amazing advancements.

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