

## The University of Notre Dame Graduate Urban Design Studio

### Notre Dame School of Architecture:

- The only architecture program in the world that has classical and traditional architecture and urbanism embedded in and the foundation of its curriculum
- Classical and traditional architecture is governed by concerns for
  - durability
  - comfort
  - beauty
  - decorum (civic formal hierarchy)
- Traditional urbanism focuses upon walkable mixed-use environments that are beautiful and environmentally sustainable
- Students learn to be architects and urban designers 1) by doing, and 2) by studying good places and the work of good architects that provide standards of excellence which we encourage them first to emulate and eventually to surpass
- We believe that the most successful and enduring innovations---i.e., genuine *progress* is more important mere innovation---comes from people who are steeped in a tradition
- We aspire to make places that people will love.
- We favor sustainability, but are not anti-growth---we favor growth in a beautiful sustainable way.

### The ND Graduate Urban Design Studio generally works with existing pre-1945 communities whose historic urban environment is threatened by sprawl

- Purpose of the ND Urban Design Studio is pedagogical:
  - primarily for our students
  - secondarily for our “client”
- We view this as an educational opportunity for Notre Dame students; we hope it will also be an educational opportunity for the community of Northampton
- Studio format: early-September charrette / mid-October review / mid-December presentation (with book)

### A word about the “charrette”: what it does and why we do it

- An extended community design workshop that designs, educates, and builds consensus *because* it is *formal*, i.e., it is building a community consensus around *drawings* of what the community wants itself to be
- a picture is worth 1000 words, because without shared images everyone imagines something different and are unhappy with what gets proposed

- The charrette process is political, but the Graduate Urban Design studio is a-political / proto-political / pre-political
  - “politics” comes from the *polis*: our concern is with the formal order of the *polis* within which politics take place
- The studio moves from building consensus about form toward strategies for implementation; but the big community decisions will come after we have completed our semester’s work and you have to decide what (if anything) to do with it
- The students are only students---but we hope they are particularly well-educated students, and this urban design exercise is an important part of their education

**What we need from Northampton:**

- An invitation
- A place to work: ideally, centrally located
- Community participation in the charrette
- Travel related expenses and an institutional / studio overhead fee

## **What Is A Charrette?** by Bill Lenertz of the National Charrette Institute

A charrette is a rigorous and inclusive planning process undertaken by an inter-disciplinary design team over a brief time period. The term "charrette" is derived from a French word meaning "little cart" and refers to the final intense work effort expended by architecture students to meet a project deadline. This intense burst of activity is similar to the environment of the charrette process described below.

The result of the modern-day charrette is not just momentary, but profound change. After a charrette, people have been heard to say: "I have been practicing transportation engineering for 20 years and until today I never knew why the fire department needs 20 feet of street clearance," or "Now I understand why alleys are so important," or "This is the most exciting professional experience I have had since college," and "I may not agree with the entire proposal, but my concerns were listened to and considered; I like how I was treated." Achieving such change requires a carefully planned and orchestrated process that starts well before the actual charrette and continues long after it.

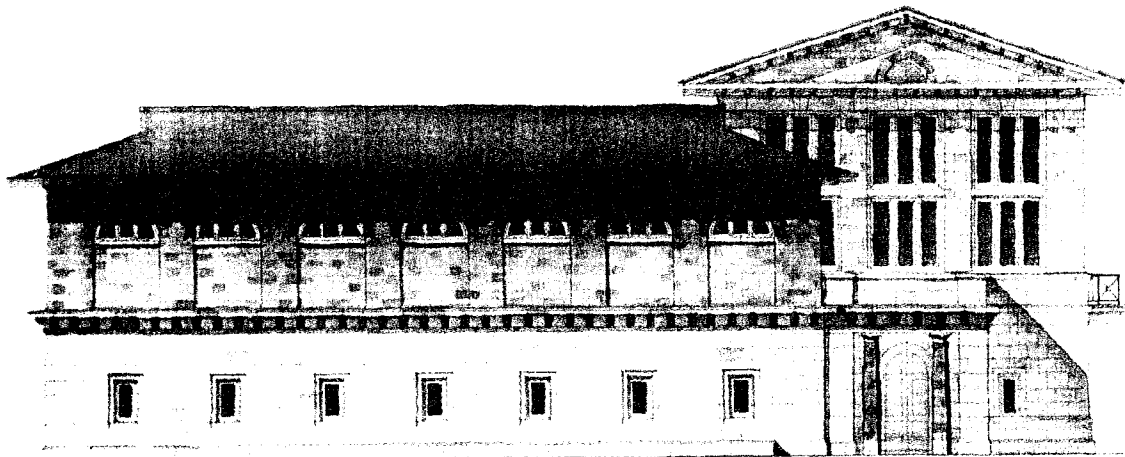
There are four guiding principles for a charrette that brings about real change:

**1) INVOLVE EVERYONE FROM THE START:** That is, anyone who might build, use, sell, approve or attempt to block the project. When involved at the inception, people are more likely to contribute their unique talents and viewpoints for the betterment of the project. Local citizens, officials, and approval board representatives meet and work with the design team throughout the charrette to create a plan, which incorporates their concerns. The charrette process gives the plan mutual authorship and a vision shared by all participants. This is especially important for those who will officially review the plan for a public agency or body. Having contributed to it, they are in a position both to understand and to support its rationale. This approach is initially more work, but, in the long run, it will save time in rework and most certainly produce a higher quality product with a greater chance of implementation.

**2) WORK CONCURRENTLY AND CROSS-FUNCTIONALLY:** All design work must be done concurrently by a cross-functional team that usually includes architects, planners, engineers, economists, market experts, staff, and citizens, incorporating user input, so that decisions are measurable and realistic every step of the way. This cross-functional team working together from the start, further assures elimination of rework because the design work is continually reflecting the wisdom of each specialty. During the charrette, the collaboration of the design and development disciplines also helps to produce a set of finished documents that address all aspects and phases of a project. Detailed designs are undertaken individually or in small groups. At other times, larger caucuses occur, and often there are simultaneous meetings. Periodically everyone gets together for a briefing, discussion or presentation.

**3) WORK IN SHORT FEEDBACK LOOPS:** A feedback loop happens when a design is proposed, reviewed, changed, and represented for further review. The shorter this cycle, the greater the level of influence and buy-in by the reviewing parties. In conventional planning processes, the design team presents plans to the community and input is gathered through various methods such as surveys, or small discussion groups. The designers then retreat to their office and return weeks later with a revised plan. Often during these weeks, some degree of misunderstanding occurs in the community. People who attended the meeting come away with different understandings. People, who don't like to speak in public, speak to others in the parking lot afterwards. The result is often a crystallization of opinions against the plan that send the design team back to step one. In a charrette, the participants are told to come back the next evening to review the changes. The misunderstandings are resolved quickly before they have had a chance to crystallize. With conventional planning methods the design and feedback cycle can last up to four to six weeks. The charrette shortens it to 24 hours. During the day, and often late into the night, the charrette studio is a forum for ideas with the unique advantage of this immediate feedback. At the same time that someone is designing a street, another is locating a tree, and an engineer is determining the effects on drainage. Questions to design problems are answered on the spot. Most importantly, simultaneous brainstorming and negotiation during a Charrette can change minds and encourage unique solutions to problems. The number and variety of solutions and ideas generated and considered is far greater than those under conventional planning methods. A better product results from this creative effort.

**4) WORK IN DETAIL:** True buy-in can only be achieved by designing in detail. This way the critical issues surface and are addressed. This can only be accomplished by looking at details (building types, block sizes, public space) and the big picture (site circulation, transit, land use, and major public amenities), concurrently. Studies at these two scales also inform each other and reduce the likelihood that a fatal flaw will be overlooked in the plan.



Sustainable public realm building.

Image credit: Ricardo Arosemena

# Why We Teach Classical and Traditional Architecture and Urbanism

By MICHAEL LYKOUKIS

With today's headlines and news stories focused on issues of global warming and peak oil production, how architects and urbanists will respond to the challenge might make all the difference as civilization unfolds. The classical curriculum at Notre Dame is based on the idea that traditional architecture and urbanism have been, and still are, innately and inherently environmentally friendly compared to more recent practices that feature sprawl and shoddy buildings with short life spans. Traditional urbanism relies on polycentric cities and towns with pedestrian accessibility, mixed-use neighborhoods and mass transit. Traditional architecture ensures the longevity of the built environment necessary for projecting a community's aspirations into the future. Classical and traditional architecture and urbanism have a significantly smaller carbon footprint than the current models of land use and construction which are based on maintaining high levels of fossil fuel consumption.

On a cultural level, we could think of classicism as the projection of society's highest aspirations into the future, thus ensuring the continuation of the best and perhaps the most sustainable aspects of a culture. Tradition is not duplication but rather a process that is always innovating upon itself. It is the inventive quality of tradition that allows each generation and region to shape the future in its own manner, and it is tradition's projection of the past forward that provides the sense of stewardship that is required for sustainability.

The Congress for New Urbanism (CNU) has been highly effective in bringing traditional urbanism into the mainstream because it made the case for the principles of the traditional city as real and pragmatic solutions to environmental and socio-economic problems. At Notre Dame, architecture and construction are subjected to the same scrutiny. The curriculum is structured to examine the built and natural environments as an interrelated, interconnected and inseparable spectrum of principles. This spectrum, which consists of urbanism, architecture and construction, provides a clear outline for establishing environmentally sustainable criteria at each level:

**Urbanism** is about how we live together with a shared purpose. In traditional urbanism; streets, squares and blocks make up the infrastructure of the city that

makes possible our lives in the public realm. It is at the urban scale that much of the conservation or waste of society's resources is made.

**Architecture** provides shelter and mediates between our private and public natures and between how we live together and how we build. Traditional building typologies also resolve technical problems that arise at the architectonic scale. Traditional buildings are designed for a purpose that often outlives the specific function a building was originally built to serve. This attribute of traditional buildings facilitates their longevity.

**Construction** is about how we build. Traditional construction materials can reduce waste and embodied energy with methods of construction that reflect local availability of materials and craft. Walls, openings and roofs make up the focus of this part of the spectrum, and classicism is the idealization and representation of these elements elevating the craft of building into a codified artistic form.

Without attention to these three scales, we will not be able to optimize our efforts towards sustainability. Combined, the building industry, and the built environment and its dependence on mechanical transportation, consume about 70 percent of our energy resources. By changing how we live together and how we build, we could make a radical difference in the accommodation of the crises that lie ahead. While we recognize that other aspects of green and modern architecture are a necessary part of the solutions to these problems, we also emphasize to our students that they could think of traditional architecture and urbanism as the foundation of sustainability. The principles guiding the culture of our studios and classes are designed to reflect this spectrum of sustainability, as follows.

## URBANISM

Traditional urbanism is the foundation to being "green." Traditional towns and cities emit a fraction of the greenhouse gases and consume a small part of the energy than that of modern sprawling suburbs. Traditional urbanism is based on a pedestrian scale. It is organized in such a manner so that within a 10-minute walk one can find

all of life's necessities. Its basis is in mixed-use neighborhoods. In traditional towns and cities, all citizens, including the young and old, do not rely on automobiles but can walk from their homes to commercial and civic centers, thus ensuring that all are included in the life of the city. These neighborhoods reinforce the relationship between public and private life. The interconnected networks of streets allow access to all the parts of the city, without labyrinthine or physical barriers common to suburban sprawl that require automobiles and other transportation using large amounts of fossil fuels.

The densities of traditional communities allow commerce and public life to thrive on neighborhood street corners and squares with economies of scale and without reliance on energy-driven transit. The density necessary for a traditional city requires the positioning of buildings to be aligned along streets and squares such that they define the public corridors and spaces of the public and private realms. The resulting urbanism enables people to watch over their children and their neighbors as well as to participate in the affairs of the community. The most sustainable communities are those we care about. We care about those communities where we become, and are a part of, the daily life.

The traditional city grows by multiplicity. New neighborhoods grow adjacent to older ones with their residential areas around commercial and civic centers. Through mass transit these neighborhoods are integrated into larger villages, which become towns and cities, which are transformed into major metropolitan areas based on sustainable urban principles having smaller carbon footprints than today's megacities. This growth model provides for more compact, dense cities and encourages the preservation of farmlands, forests and the countryside.

Because of its dependence on large amounts of energy to support its structure, suburban sprawl wastes energy and contributes significantly to global warming as consumers drive their fossil-fueled cars for miles to buy the smallest item. By contrast, the traditional city, with its dependence on pedestrian proximities and emphasis on mixed-use neighborhoods, conserves energy and emits only a small percentage of the greenhouse gases of the modern suburb. In an age where climate change is an accepted fact and the passing of peak oil production has many concerned about the future, traditional urbanism is a basic common-sense strategy that, overall, costs less to build than its suburban counterparts and requires not much more than good planning.

## ARCHITECTURE

Principles of traditional architecture are inherently green and complement traditional urbanism's ability to be sustainable. Traditional buildings are built with durable methods and materials that do not rely on petroleum and other high embodied-energy industrialized products. Traditional buildings typically rely less on mechanical means of air-conditioning and heating than their modernist counterparts.

The massing and organization of traditional buildings is a prerequisite for a durable building. Roofs protect a building from its primary enemies, water and sun. Traditional roof systems require floor plans that have widths with simple geometries and clear hierarchies such that the slopes of the roofs can be reconciled to allow water to drain off effectively. The use of interior courtyards can reduce the effective width of a building so that the floor plans and roof spans are reconcilable and the water can drain outside rather than through interior drains. This approach to roofing not only disciplines the floor plans and massing of buildings, but adds significantly to their life spans.

In contrast to the amorphous ground-scrappers of suburbia, the narrower floor plates and interior courtyards of traditional buildings facilitate effective roof designs that allow light to penetrate the usable areas of the building so less electricity needs to be used for lighting. The use of operable exterior windows and transoms over interior doors permits the natural flow-through ventilation in the building that requires less reliance on mechanical heating and air-conditioning systems, which saves energy. Traditional buildings, with party walls that abut one another, save energy used for heating and cooling as they limit their outside wall perimeter.

The massing and organization of a building determines much of its ability to be adapted to new uses long after its original functions have become obsolete. Designing for the long-range purpose of a building rather than its specific function allows for future recycling of that building through renovation. Embodied and life-cycle energy are conserved as fewer resources are used to rehabilitate a building as opposed to demolition and replacement construction.

## CONSTRUCTION

Communities flourish when there is optimism for a bright future. The durability of a city or a neighborhood's buildings make that promise to its citizens. It is one gen-

eration's gift to the next. Traditional buildings do not have to be replaced often, and they conserve embodied energy and resources necessary in a sustainable world.

Traditional architecture uses the most resilient materials and methods in the most vulnerable places of a building such as the exterior walls, openings, and roofs, and the weakest materials in areas where they are protected from the elements. In wet climates pitched roofs keep water and snow off. Trabeated and arcuated construction has proven to withstand the test of time for much more than the 30-to-40-year life span of most contemporary buildings.

Masonry construction is the most enduring method of building we know. Potentially it can have the lowest level of embodied energy when its use is extended over long periods of time. Locally available stone or locally made bricks have low embodied energy with respect to being transported, and in the case of bricks that need to be fired, the embodied energy in the brick can last for long periods of time. When joined properly with lime-based mortars, masonry can be separated and be re-used again and again.

Masonry walls have other environmentally friendly properties. They absorb heat in the summer days and radiate it back out at night. The deep-set cornices, windows and doors provide shade and minimize the heat gain in the summer, when the sun is at its highest, and allow the sun in the winter to heat the interior of the buildings.

Wood may be a less permanent material for construction, but we know that woodlands have lasted in place for hundreds of years. Today we avoid first-growth timber, but if we develop and use sustainable harvested, properly raised wood, we also contribute to the absorption of the world's carbon footprint created elsewhere during the lifetime of these trees. Wood's inherent environmental and economic potential and natural insulative properties make it a viable building material in a sustainable built environment. Some of

the same elements of classicism that are found in masonry such as cornices also work in wood construction.

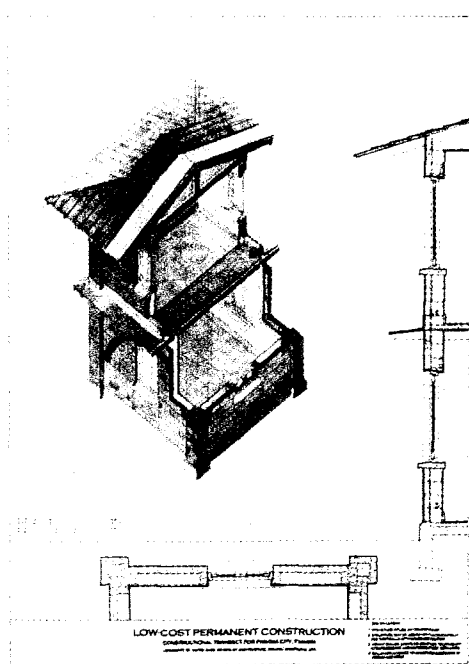
## SUSTAINABILITY IN THE NOTRE DAME CURRICULUM

The principles outlined in this spectrum are implicit in the school's studios and lecture courses and seminars. Each year stresses a specific theme. In the first year of study, the liberal arts program common to all Notre Dame students examines the continuities found in knowledge and between disciplines. This emphasis on the unity of knowledge becomes the basis on which principles of construction are related to architectural form in the second year, which is focused on how we build. The third year, which the students spend entirely in Rome, explores traditional urbanism and how traditional architecture facilitates an environmentally sustainable and civil way of life. By the fourth year, sustainability is tied to issues of regionalism and cross-cultural values that are examined through the typological understanding of the city and its architecture developed during the previous three years. By the fifth year, the students have forged individual viewpoints about architecture and engage a diversity of issues that culminate in their spring thesis studio. Invariably sustainability and the good city become synonymous in their minds.

The fossil fuel era has brought about the most egregious misallocation of resources in human history. Through suburban sprawl and consumerism we have squandered so much, and so little time remains to correct what we have done. The models of architecture and land development taught in architecture and planning schools for the last half-century have been based on the premise of unlimited energy sources and infinite possibilities. As we are now faced with limited options and difficult choices, the cities and buildings of yesterday that faced similar constraints have something to teach us today.

The knowledge of the traditional city and its architecture applied to modern times can facilitate significant conservation of energy and emit into the air a fraction of the greenhouse gases of our modern sprawling suburbs. Traditional urbanism and architecture are and will continue to be the basis for the most effective circulation and transit systems, passive solar heating/cooling and energy saving practices that we have. By studying the lessons they offer and incorporating them into our culture along with all that we have learned about sustainability and green building in modern times, we could have the best of both worlds.

As teachers in the architectural academy it is our role to prepare our students for the challenges and opportunities they will face in their lives. We are not only preparing future architects to enter the profession, but empowering citizens of the world to value their opportunities to contribute to the public realm and give back more than they have received. Our society is better today than those of generations past. The way we build and live together should be a reflection of that. Our cities should be reflections of our highest hopes and aspirations and a gift to the generations that follow us. It is this sense of stewardship we hope we impart to our students.



Sustainable construction methods and materials.

Image credit: Ricardo Aronson

credit: Ricardo Aronson

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