

**EDRA 2005  
Vancouver, Canada**

**FULL DAY INTENSIVE**

**Designing and Making Livable and Sustainable Places**

**Organizers:**

Kyriakos Pontikis (Intercollege, Cyprus), Organizer, Chair  
Intercollege  
46 Makedonitissas Avenue  
P.O.Box 24005  
Nicosia, Cyprus  
[kpontikis@cytanet.com.cy](mailto:kpontikis@cytanet.com.cy)

Yodan Rofe (Ben-Gurion University of the Negev, Israel), Organizer  
2 Hebron Street  
Tel-Aviv – Jaffa, Israel  
[yrofe@012.net.il](mailto:yrofe@012.net.il)

**ABSTRACT**

Traditional environments with livable and sustainable qualities arose out of a unified building process where users, designers and makers participated actively in building production. This helped to create well-adapted neighborhoods, buildings, gardens, details and ornament that had a high degree of wholeness and life. In most contemporary building production this is not the case. Christopher Alexander's theoretical framework sets forth a building process that attempts to create buildings with humane qualities. He proposes that "order" and "wholeness" exist in the built environment and their quality is dependent upon the process that generates them. The more integrated planning, design and construction are the higher the building quality will be. This approach to making buildings is not often used in contemporary building production. This group of presenters, who have studied and/or worked with Alexander using this methodology, are getting together to present, discuss and analyze recent developments in their work and engage in critical reflection and open dialogue on shared experiences and new directions in this field and ways in which they can advance this area of design. These academics, researchers, and practitioners will present their work on projects that range in scale and will ask the following questions: 1) how can modern production and assembly methods be modified in order to create wholeness in building geometry as well as meet current sustainability criteria? 2) in what way do the insights of process and wholeness help create community in a building or a cluster of buildings? and 3) what are the obstacles and the processes, through which wholeness can be created at the larger urban scale? The following people will make presentations at this event: Pontikis, Kyriakos (Intercollege, Cyprus), Rofe, Yodan (Ben-Gurion University of the Negev,

Israel), Wachtel, Seth (University of San Francisco, CA), Walsh, Robert (University of Michigan, MI), Ingham, Susan (KASA Architecture, WA), Tumlin, Eileen (Design Studio, CA), Theis, Bob (Bob Theis Architect, CA), Gutsche, Christopher (EcoSmith Design and Consulting, WA), Smith, Kathleen (EcoSmith Design and Consulting, WA), Andrews, Christopher (Christopher Andrews Architect & Town Planner, CA), Gonzalez, Demetrius (Holistic Building Institute, CA), Mannik, Henri (Tipping Mar + Associates, CA), Portugali, Nili (Bezalel Academy of Art & Design, Israel), Cowan, Stuart (Sustainable Systems Design, OR) and Langstaff, Katy (Sustainable Systems Design, OR)

**KEYWORDS:** Designing and making, construction technology, professional practice, urban design, sustainability, ecology.

## ABSTRACT

### ON THE ART OF MAKING: THE ROLE OF GEOMETRY AND TECHNOLOGY IN THE CREATION OF THE BUILT FORM

**Kyriakos Pontikis**

In designing buildings with humane and sustainable qualities the architect is primarily preoccupied with two important issues. First, to create geometry of space that is harmonious and supportive of human life. Second, to use the appropriate building construction technology to bring to life this geometry. The successful integration of the two creates a meaningful and expressive building form. Most traditional buildings were very successful in integrating the two while most contemporary ones are not. Traditional master-builders employed a dynamic process of design and construction and created well-adapted spaces, details and ornament. Most contemporary architects though employ a static design and construction process, they do not participate actively in the making process, and they use technology that can be inflexible and not user friendly.

Therefore, the author in this paper will discuss and analyze building geometry and technology and the importance for their integration. Furthermore, he will present some examples of this kind of work, which he built by himself in Cyprus and with his associates in California. The aim of this work was to determine the extent to which the successful integration of geometry and technology can contribute towards the humane quality of buildings. The outcome of the research indicates that this approach of building can create structures of high quality. It also stresses the importance of the architect/modern day master-builder in getting actively involved in the making process to create harmonious buildings.

Kyriakos Pontikis, Ph.D.  
Assistant Professor  
Intercollege  
46 Makedonitissas Avenue  
P.O.Box 24005  
Nicosia, Cyprus

Director of:  
Cyprus Architectural Center  
4 Themistokli Dervi Street  
Hawaii Tower, Office 502  
1066 Nicosia, Cyprus  
[kpontikis@cytanet.com.cy](mailto:kpontikis@cytanet.com.cy)

## **ABSTRACT**

### **STRUCTURES AND SUSTAINABLE BUILDINGS**

**Henri Mannik**

Structural systems in buildings account for a significant portion of a building's mass, yet guidelines for designing sustainable buildings have minimal recommendations for structural engineers. These guidelines often address architectural and mechanical systems, and structural engineers are often merely advised to strive for designs with recycled materials or with materials with low embodied energy.

A more comprehensive rule would be the design of permanent structures with a minimum lifespan of 500 years. This simple concept applies to a broad range of buildings from houses to high-rises, and the design of such buildings can lead to both livable and sustainable structures. However, the execution of the rule can be technically and practically challenging. Although many regions have a history and precedent for this simple idea, the implementation of the notation is not entirely widespread in the United States. In seismically active regions, a building exposed to earthquakes for 500 years requires special considerations to protect it against the repeated physical abuse and economic loss from seismic forces. Curiously, current seismic building codes encourage throwaway seismic resisting lateral systems.

The paper will outline several characteristics of lasting structures, which range from practical items, seismic issues, and qualities relevant to making livable places.

Henri Mannik, CE, Architect  
Tipping Mar + associates, Structural Engineers  
2926 Hillegass Avenue  
Berkeley, CA 94705, USA  
[henri@tippingmar.com](mailto:henri@tippingmar.com)

## **ABSTRACT**

### **TOWARDS 100% RECYCLABLE, ZERO WASTE CONSTRUCTION: RECENT INOVATIONS IN DESIGN, PRODUCTION AND CONSTRUCTION OF STEEL HOUSES**

**Robert Walsh**

The use of light gauge steel frame construction is becoming more commonplace in the construction of single-family homes. Many people are familiar with the use of flimsy light gauge steel partitions used in framing non bearing walls in office buildings, but in recent years the use of this material has diversified and developed, taking advantage of unique characteristics that make this material an excellent choice in terms of performance and sustainability. In some environments, such as Hawaii, steel framing is becoming the favored material of choice, due to its resistance to the positively ferocious termites that live there. It is becoming more widely used in other parts of the country as well. Light gauge steel roof trusses easily span 75 feet, a length unheard of in wood frame construction. Light gauge steel studs can be manufactured to any length or depth in varying gauges with virtually no waste. Furthermore, jobsite waste is virtually 100% recyclable, reducing the impact of home construction on landfills, and many steel studs incorporate a large percentage of scrape steel that is being recycled from cars. Curving twisting geometries not easily obtainable in wood can be easily done in light gauge steel. And a house framed in light gauge steel weighs about a third less, which has advantages in earthquake prone regions.

Beyond the obvious advantages of resistance to insects, mold, fungus, or earthquakes, what are the other characteristics that make steel a wise choice? What are some of the challenges in working in steel? How does it behave differently than wood based stick construction? In what ways is light gauge steel consistent with sustainability?

By looking at examples of steel homes under construction, recent research and different methods of construction, my intention is to familiarize people with the unique characteristics of this emerging material and some of newest working methods related to the design production and construction of these buildings. In addition expanding the creative range of possible design solutions, and performance advantages I will conclude by focusing on which aspects of these recent developments are encouraging in terms of the issue of sustainability.

Robert Walsh, Architect, Ph.D. Student  
Taubman College of Architecture and Urban Planning  
University of Michigan

Mailing Address:  
2200 Fuller Court, Apt. 1107B  
Ann Arbor, MI 48105  
[rmwarch@umich.edu](mailto:rmwarch@umich.edu)

## **ABSTRACT**

### **BALANCING TECHNOLOGY AND AESTHETICS IN WINDOW DESIGN**

**Susan Ingham and Eileen Tumlin**

As key elements of every building, windows serve a multitude of purposes. Functionally, windows provide light, air, and sound to interior spaces. Windows also provide both a connection to and a separation from inside and outside spaces: a connection through views and sounds, and a separation through weather protection - reminders of what the walls of a building are shielding its inhabitants from. Windows also have many qualitative associations. They strongly define the individual character of a building, particularly from the exterior (the “eyes” of the building), but also from the interior in helping to shape the quality of light in a space. At night, windows often transform a building into a lantern, allowing the indoor life to be read from the outside, creating a connection between the larger outside world and the individual inhabitants of the building (the reverse connection occurs during the day). Through their shapes, materials, uses, and details, windows also act as identifiers of place and culture, firmly anchoring a building within its societal context.

Over the past twenty years, windows in the US have gone through major technological changes. State energy codes and performance requirements have forced window manufacturers to greatly improve the performance of glazing and window components. Through the use of double and triple-pane glazing, tinted coatings, and tighter window assemblies, windows are now expected to perform like walls in terms of insulating the interior environment from heat gain and loss. The main positive result of these changes is the development of a range of window units and glazing options that are several times more effective at slowing the transfer of heat energy than their traditional single-glazed window counterparts. Another result of these changes is that the newer, more efficient windows have thicker assemblies in the overall depth of the window, as well as in the window sash and frame, and the size of mullions and muntins. There are several negative aesthetic aspects of this result. Windows are now heavier and bulkier, contrasting less with the walls that surround them. Often, the outside pane of glass is almost flush with the exterior siding, further blurring the distinction between window and wall. Secondly, delicate tracery and thin divisions between small window lites are structurally much more difficult to construct due to multiple panes of glass that must be supported. The resulting loss of gradation in scale from heavy wall to light window is quite noticeable when compared to traditional single-pane examples. Thirdly, the added bulk, thicker divisions, and greater insulating qualities of new windows increase the visual and audible separation between inside and outside spaces, making inhabitants more isolated from their larger surroundings.

Is it possible, then, to design and create technologically advanced code-compliant windows that also share some of the aesthetic and transparent characteristics of single-pane windows? The challenge is to find a balance between windows that contribute to both a livable and a sustainable built environment. How can a window allow for the flow of life and light while also providing sufficient thermal insulation to keep interior spaces comfortable? Is it possible to utilize the

newest window technologies and create structures that emanate life and create articulated window and wall constructions? This paper will explore these questions and propose some ways of improving current window configurations and assemblies. Both new and traditional windows will be analyzed, and new ways to detail and design windows that can incorporate both the technological advances of modern windows with the aesthetic characteristics and transparency of single-pane windows will be proposed.

Susan Ingham, Architect  
2016 26th Avenue East  
Seattle, WA 98112  
[sfingham@yahoo.com](mailto:sfingham@yahoo.com)

Eileen Tumlin, Architect  
37 Green Street  
Martinez, CA 94553  
[etumlin@yahoo.com](mailto:etumlin@yahoo.com)

## **ABSTRACT**

### **DESIGNING FOR VOLUNTEER CONSTRUCTION**

**Bob Theis**

As labor costs have represented an increasingly large percentage of construction costs over several centuries, the response of the industry has been to maximize the use of factory made components and industrialized processes. This process has gradually removed individual creativity from the building process.

There is an international response to this trend that has largely escaped the notice of the design and construction industries, in which people are actively exploring technologies that minimize environmental impact, but more centrally, maximize the use of materials that they and their friends can enjoy installing themselves. The best -known of these materials, straw bale and cob construction, have in the last decade developed worldwide networks of advocates, generating an expanding body of literature and research into the technical capabilities of these and similar materials

Those who dismiss this trend, generally called “Natural Building”, as romantic indulgence in pre-industrial materials miss the extent to which work in this realm utilizes industrial materials and processes, but screens them for their integration into natural cycles and their ability to remove drudgery while maximizing creative human labor.

Just as importantly, the use of these materials and processes redefines construction in a significant way, in that the fundamental accessibility and pleasure in the use of these materials makes possible the extensive use of volunteer labor. Maximizing the appeal of construction to weekend volunteers creates entirely new criteria during design, with fascinating potential for bringing back rich human environments and local economies.

The author, an early member of the straw bale revival, has designed scores of projects using straw bale and other user-friendly materials.

Bob Theis  
Architect  
6435 Claremont Avenue  
Richmond Heights, CA 94805

(510) 235-0616  
[bob@bobtheis.net](mailto:bob@bobtheis.net)

## **ABSTRACT**

### **TALK ON TEACHING STUDIO 3 THE BUILDING PROCESS: CONCEPT TO COMPLETION**

**Seth Wachtel**

Understanding the fundamental processes that go into designing and making a building is critical for knowing how to assess project need, work with a client, create workable designs, get permits, estimates and finally build the project. This studio is an introduction to the architect/client relationship, municipal interaction, design and construction documents and drawings, building systems and intuitive structural behavior. Knowing how buildings work is critical to knowing what is possible in design, and how choices in structural system influence the appearance of a building and its cost, longevity, sustainability, and livability. Students will learn through modeling, how various construction systems work and where each has advantages and disadvantages depending on use and location in the built environment. Students will be given a modest building design problem and take it from design concept to building completion in scale model form.

#### **The Process**

Students will follow a simulated real world sequence of moving a project along from the first client call, through design, construction and finally the final inspection and issuance of the occupancy permit by the city. The sequence will contain: Project Vision, Design Development, Construction Documents, Consultants, The Municipality, Project Construction.

Seth Wachtel, Assistant Professor  
Architecture and Community Design  
Department of Visual Arts  
University of San Francisco  
2130 Fulton Street, XARTS  
San Francisco, California 94117-1080  
[slwachtel@usfca.edu](mailto:slwachtel@usfca.edu)

## **ABSTRACT**

### **BUILDING FOR A POSITIVE FUTURE**

**Christopher Gutsche and Kathleen Smith**

Building for a positive future is the manifestation of a vision of sustainability in a physical environment that supports life. All acts of creation are about process. Processes that support life must be sound, healthy, respectful and fun. Social structure describes our relationships and interactions with each other. Ecologic structure describes the natural forces that sustain life and the technologies that enable greater benefit from these forces. Economic structure describes the resources at hand to realize a vision. Physical structure -- the stuff of our lives, the spaces and places we inhabit -- becomes a living, sustainable habitat when true synergies are created between social structure, ecologic structure, and economic structure. These principles and processes are illustrated in built examples of Cohousing projects; the Living Classroom in San Francisco, California; the Life Expression Chiropractic Clinic in Pennsylvania; the Agate/Amazon Married Student Housing in Eugene, Oregon, and the Berea Ecovillage in Berea, Kentucky.

Christopher Gutshe, Architect, and Kathleen Smith, Sustainable Designer/Consultant  
EcoSmith Design and Consulting.  
353 Wallace Way NE #5  
Bainbridge Island, WA 98110  
206-780-7913 phone/fax  
[kathleen@ecodesign.org](mailto:kathleen@ecodesign.org)

## **ABSTRACT**

### **MAKING LIVABLE AND SUSTAINABLE URBAN STREETS- THE CASE OF BEGIN BOULEVARD IN TEL-AVIV**

**Yodan Rofe**

This paper tells the story of the struggle to create a new major urban street that will help livability and sustainability in the city of Tel-Aviv. Begin Road, formerly called Petah-Tikvah Road, used to be a major inter-urban road linking the center of Tel-Aviv with its eastern suburbs. With the construction of the Ayalon Freeway, the new suburban rail system sharing the same corridor, and the future light rail subway that will run underneath it, it is in the process of being transformed into the future main street of Tel-Aviv CBD. The public agency responsible for the Ayalon Freeway project presented a project for a series of underpasses along, and crossing this road, as a way of facilitating traffic. This design was criticized by the transport ministry, and planners and urban designers working for the company that is planning the Tel-Aviv light rail system, on the grounds that it was not meeting the needs of pedestrians and public transportation using the road. In 2004, the ministry has asked us to prepare an alternative plan that gives priority to pedestrian and public transit. One of the alternatives we proposed is a multi-way boulevard, proven to be a street type that allows multiple and diverse uses of street space, which allow high volumes of through traffic, public transportation, and local and pedestrian movement to coexist in the same space.

The story of the debate shows how pursuing the single-minded goal of automobile access erodes civic space, and the inter-connectedness between overall sustainable solutions for urban transportation, and the detailed design of major urban streets. It also illustrates the difficulty of maintaining a holistic urban vision of the street, in the face of the fragmented professional and regulative environment.

Dr. Yodan Rofe

Unit of Desert Architecture and Urban Planning, Man in the Desert Department

The Jacob Blaustein Center for Desert Research

Ben-Gurion University of the Negev

Israel

Mailing Address:

2 Hebron Street

Tel-Aviv – Jaffa, Israel

[yrofe@012.net.il](mailto:yrofe@012.net.il)

## ABSTRACT

### NEW URBANISM VERSUS THE GENERATIVE BUILDING PROCESS: AN INQUIRY INTO THE GOALS AND METHODOLOGIES OF TWO SCHOOLS OF ARCHITECTURAL DESIGN AND URBAN PLANNING

**Christopher Andrews and Demetrius Gonzalez**

Andres Duany, one the most prominent of the New Urbanist architects and urban designers cites “A Pattern Language” by Christopher Alexander et al, as an essential text, as an inspiration for their architecture and town planning work. The Congress for New Urbanism also lists “A Pattern Language” as part of the “core curriculum” for the group.

Alexander has acknowledged the on the ground accomplishments of the New Urbanists, but has questioned their methods, including their adherence to a master planning approach over a generative, sequential process of designing and building large scale projects.

These two design models, the “New Urbanist” and the “Generative Building Process” seem to have significant commonality. What are their shared values, and how do they diverge? How can they be utilized together to create real and vital places?

Examples of built and unbuilt projects will be compared, as well as designer’s experiences working within these two models.

Christopher Andrews Architect & Town Planner  
2531 9<sup>th</sup> St.  
Berkeley CA 94710  
[chrisandrews@sbcglobal.net](mailto:chrisandrews@sbcglobal.net)

Demetrius Gonzalez  
Holistic Building Institute  
PO Box 491,  
Valley Ford, CA 94972  
[demet@snic.net](mailto:demet@snic.net)

## ABSTRACT

### **THE INTERRELATION BETWEEN THE CREATION PROCESS AND THE SPIRIT OF THE PLACE - A HOLISTIC APPROACH TO ARCHITECTURE The Interface between the Orient & the West: A Case Study**

**Nili Portugali, Architect A.A.Dip. R.I.B.A**

When religion and nationalism are cynically used by fundamentalists and by extreme mist right and left groups to cause cultural conflicts, and when architects are prompted by aggressive political motives, there is a real existential threat to the physical and human environment we live in.

There is no doubt, that the great art (and architecture) creations throughout history evolved in societies that drew their strength from their cultural and spiritual traditions and from the places they belonged to. These sources, which one might take as the factor that separates cultures and peoples, are exactly the ones that link them together in harmony. The same tree that symbolizes life in the Cabala appears in Tantra Asana art; the same red thread the people of Tibet wear on their wrist are put on baby's Pram in the Jewish tradition. In present state of affairs there is a need for a new worldview that by its very nature crosses cultures, replacing current conceptions and approaches.

The worldview presented here is an attempt to identify the universal codes and patterns common to us all as human beings, the "innate patterns" of language in Chomsky's terminology, without ignoring the uniqueness of each culture separately. These codes and patterns have been knowingly and bluntly disregarded in contemporary architecture. The result is a morphologically rigid environment that by no means intended to serve us but instead forcefully dominates us.

The first part of the presentation will present the interpretation I gave to this holistic approach (that has been at the forefront of science for many years) both in theory and in the process of architectural work, a process fundamentally different from customary ones. The second part will include a presentation of selected projects built by me in Israel in which this approach was implemented in relation to their cultural and physical reality. This reality being a unique interface between the orient and the west. In all projects there was an attempt to cope with the challenge of the 21<sup>st</sup> century and that is, how new architecture based on the potential inherent in modern scientific-technological society can create a human and friendly environment while preserving and respecting the spirit of the existing one, whether urban or natural.

Nili Portugali, Architect A.A.Dip. R.I.B.A  
23 Ben -Yosef St., Tel-Aviv, Israel 69125  
[nili\\_p@netvision.net.il](mailto:nili_p@netvision.net.il)  
[www.niliportugali.com](http://www.niliportugali.com)  
[niliportugali@hotmail.com](mailto:niliportugali@hotmail.com)

**ABSTRACT**

**To be submitted**

**Stuart Cowan and Katy Langstaff**

Stuart Cowan, Principal  
Katy Langstaff, Principal  
SUSTAINABLE SYSTEMS DESIGN  
2047 N.E. Davis Street  
Portland, Oregon 97232  
(503) 230-7772  
[wildgoose@sustainablestems.org](mailto:wildgoose@sustainablestems.org)