FEATURE ARTICLE

Legislating the Use of Visual Simulation in the Planning, Review, and Permitting Process
City of Glen Cove, New York
*By Michael Kwartler, FAIA**

"*There will be no more squinting and straining and imagining. Everyone will be able to see the same thing at the same time."*
(Mayor Ralph Suozzi, *Newsday* 31 January 2010)

In December 2009, the City of Glen Cove amended its Municipal Code/Zoning Regulations to require the use of verifiable visual simulations (e.g., verifiable photomontages to photorealistic immersive real-time 3D models of proposed actions) in its planning, regulatory design (e.g. zoning), and land-use review and public decision-making process. The Code amendment (aka Visual Simulation Ordinance), among the first in the country, is based on the Environmental Simulation Center's report, *Using Visual Simulation in the Planning, Review and Permitting Process (*March 2008*).* The report provided the City with an understanding of visual simulation practice and a roadmap as to when, where, and how verifiable visual simulation could be used to inform, enhance, and support an informed and transparent decision-making process. It focused on the procedural steps in the City's discretionary reviews, and recommends ways that visual simulation tools can be integrated into the public review process.

The Ordinance requires visual simulations for: waterfront projects, residential and commercial projects with estimated costs of $10,000,000 and $7,500,000 respectively, projects greater than 60ft in height, Type I actions (NYS SEQRA) and historic preservation for the following actions:

- Major Subdivisions
- Site Plan Review
- Average Density Development
- Waterfront Revitalization
- Variances
- Zoning Changes
- Landmarks Preservation
- SEQRA: Visual Resources

Overview: Issues in the use of Representation and Visual Simulation
It was clear from our conversation with city officials and observing public hearings, that many lay people and decision-makers often have difficulty fully comprehending physical and regulatory changes that will impact the landscape, townscape, or both. The traditional planning, landscape, and engineering methods of representation or visual simulation are either precise, abstract and technical, making them difficult for lay people to assemble into a "picture" in one's minds eye, or conversely, very seductive modes, such as renderings and physical models which typically are "idealized" and often de-contextualized views of the project, and in the case of the physical model, most often viewed as though one was a bird. With the exception of the physical model in which one can move around but not be in, the other traditional methods of representation are static, in the sense that they are taken from a single point of view at a single moment in time, e.g., a rendering using Renaissance perspective or technical drawings e.g., plans, sections, and elevations, which while dimensionally accurate are an abstraction and do not represent the world as people experience it at eye level.

Further, with the exception of the technical drawings and Geographic Information Systems (GIS), traditional representational methods are difficult to verify in terms of dimensional accuracy, viewpoint, and are often not verifiable at all. This last point is particularly critical as the public and lay panels will be forming positions and making decisions based on the representations on the assumption that they are fair and accurate.

Quantifying Change
So far we have discussed visualizing change. In some instances, quantifying the changes in the landscape, townscape and building may be important. Building volume, use (by floor), the building floor area, shadows, cut and fill, retaining walls, number of trees removed, and view sheds and corridors may be required to compliment the visualization of change. In many cases, it may be reasonable, if not necessary to use multiple forms of representation in order to convey a fuller understanding of the projects implications to the viewer.

Front-Loading the Information
The Visual Simulation Ordinance requires all pertinent information regarding the project and its context (e.g., detailed site survey, context building, massing, etc.) be assembled at the beginning of the design and public review process rather than be added incrementally as the design process progresses. Front-loading the information is the equivalent of effective due diligence and helps identify issues and concerns at the beginning of the design and public review process. Front-loading the information gathering tends to be the exception rather than rule because of both the initial upfront cost, and the tentativeness of the project during its early stages. Most importantly, the Visual Simulation Ordinance recognizes that the incremental approach often does not surface substantive issues until the process is well along, and as a result may require the project to "go back to the drawing board."

Visualizing Change
The fundamental question in each type of project review is the type and magnitude of the proposed change proposed as compared to existing conditions and the relative, and where appropriate absolute impact the proposed changes will have on the landscape and cityscape of Glen Cove. Proposed changes from existing conditions may be experiential, quantifiable or both depending on the circumstances.

The major difference between current practice and the Visual Simulation Ordinance is the requirement that the disclosure of impacts occur *throughout* the design, review and decision-making process, rather than near the end of the process prior to the public hearing. Further, early identification of potential impacts can be best addressed during the design process through informed dialogue rather than after the fact when the proposed action has reached a high level of resolution.

Standards for Types of Visual Simulation
The primary focus of the Visual Simulation Ordinance is real-time visual simulation. Real-time visual simulation is a computer generated 3D simulation of the proposed action set within the context in which it is proposed. It allows freedom of movement so that impacts can be assessed from anywhere within the modeled area. In addition, snapshots can be taken from any location with the 3D and printed or used to create verifiable digital photomontages. The 3D digital model is required to have three components: Existing and proposed topography, existing and proposed natural features, and existing and proposed buildings and structures, each at a level of accuracy and detail which corresponds to where the proposed action is in the review process.

The Ordinance addresses the level of accuracy and visual realism required at the various stages in the approval process. In almost all cases there are three levels of accuracy and visual realism corresponding to the stage in the approval process of the proposed action. For example, the level of visual simulation to support dialog during the conceptual design phase is equivalent to a "sketch" or conceptual design, and relates to the preliminary submission and pre-submission conference or its equivalent for Subdivision, Site Planning, Average Density, Development, etc. Planning Board review requires a higher level of resolution of the proposed project or action corresponding to design development, which is required to be at a higher level of resolution. Finally, the public hearing, which includes participation by the public, requires an even higher level of resolution and representation (e.g., photo-real) of the proposed action or project in order to make the proposal accessible and understandable to the public and the lay members of the Planning Board.

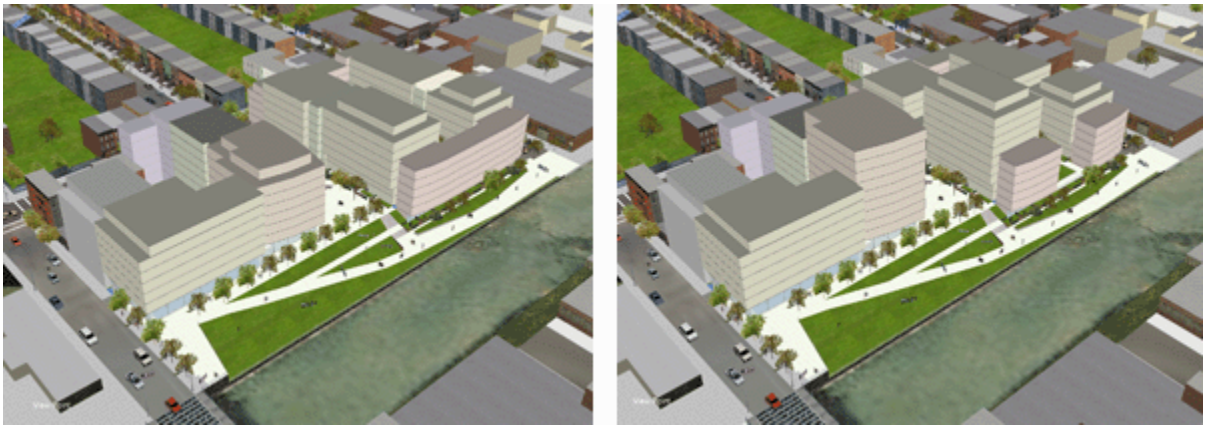
Conclusion
Currently two proposed projects, one entirely residential and the other mixed-are subject to the Visual Simulation Ordinance. The former is undergoing Planning Board review while the latter is at the

conceptual stage. Both projects are being visually simulated by the Environmental Simulation Center under separate contracts and provide the opportunity to road test and refine the language of the ordinance if required.

In summary, the combination of due diligence, disclosure, and greater transparency, verifiability and accountability through visual simulation as required by the Ordinance will enhance certainty for both the applicant and the public, reduce exposure to legal actions, expedite the review process, and help create consensus among all involved, leading to better plans and projects and more liveable communities.

IMAGES & CAPTIONS

Conceptual Design Phase: Example of a hand drawn sketch (in this case a landscape plan) draped over a 3D terrain model. (Image credit: Michael Kwartler & Environmental Simulation Center, Ltd.)



Conceptual Design Phase: Side-by-side comparison of massing models of alternative development concepts at the same density. (Image credit: Michael Kwartler & Environmental Simulation Center, Ltd.)

Final Design Phase: Textured 3D models of two alternative facades in an immersive 3D environment. This level of detail would be used during the final stages of the approval process and the public hearing. (Image credit: Michael Kwartler & Environmental Simulation Center, Ltd.)

ABOUT THE AUTHOR

*Michael Kwartler, FAIA, Principal of Michael Kwartler and Associates, is an architect, planner, urban designer, and educator. He is the founding Director and President of the Environmental Simulation Center, a non-profit research laboratory created to develop innovative applications of information technology for community planning, design, and decision-making. Kwartler directed the design and development of CommunityViz™, the first GIS-based planning and design decision support software to fully integrate virtual reality with scenario design, impact analysis and policy simulation.

For over thirty years, Kwartler's professional practice and teaching have focused on urban design and the theory and practice of legislating aesthetics and good city form. Examples of his work include the performance-based *Housing Quality Zoning Regulations* (1976) and *Midtown Zoning Regulations* (1982), both adopted by New York City, which recognize the power of zoning to determine urban form; the award winning Community Development Plan for the Kona Region of Hawaii (2005) with American Community Partnership (ACP); Main Street LRT Corridor Land Development Model and Performance Report Card and Urban Design Guidelines for Houston Texas (2005), and the Greenwich Street South Urban Design Plan in Lower Manhattan.

His publications include "Legislating Aesthetics: The Role of Zoning in Designing Cities": in *Zoning and the American Dream* (Haar and Kayden, 1990); "Regulating the good you can't think of" in *URBAN DESIGN International* (1999); "CommunityViz: An Integrated Planning Support System" in *Planning Support Systems: Integrating GIS, Models, and Visualization Tools* (Brail and Klosterman, 2001), "Just-In-Time Planning: New York + Houston" in *Architectural Design (2005)*, and *Visioning and Visualization* (co-authored with Gianni Longo).

Kwartler's experience spans the worlds of government (e.g., Senior Positions in NYC Urban Design Council and Department of City Planning) real estate development (e.g., zoning, development plans and analyses for non-profit and for-profit developers), and academia (e.g., former Director of Columbia University's Program in Historic Preservation). As a result, he brings a unique perspective and understanding of the diverse needs and interests of all stakeholders.