Impact of Zoning Is Pretested on Computers
By DAVID W. DUNLAP
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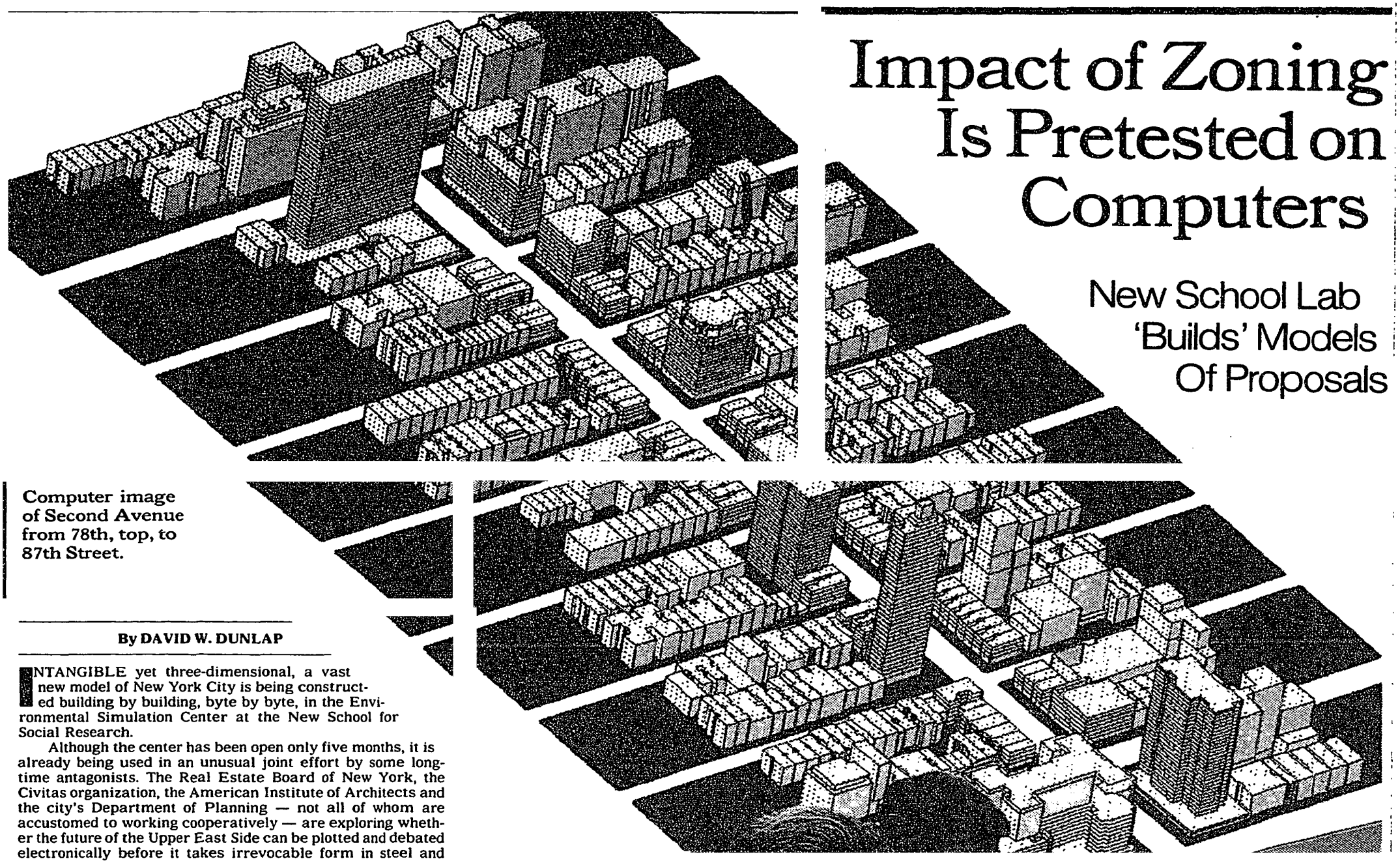
New School Lab 'Builds' Models Of Proposals



Computer image of Second Avenue from 78th, top, to 87th Street.

By DAVID W. DUNLAP

INTANGIBLE yet three-dimensional, a vast new model of New York City is being constructed building by building, byte by byte, in the Environmental Simulation Center at the New School for Social Research.

Although the center has been open only five months, it is already being used in an unusual joint effort by some longtime antagonists. The Real Estate Board of New York, the Civitas organization, the American Institute of Architects and the city's Department of Planning — not all of whom are accustomed to working cooperatively — are exploring whether the future of the Upper East Side can be plotted and debated electronically before it takes irrevocable form in steel and concrete.

"This has to change the way urban design will be done," said Michael Kwartler, director of the simulation center, which some users refer to as the "sim lab." The center has also developed a computerized model of the Riverside South site and the Grand Central Terminal area, toward the ultimate goal of modeling the whole city.

Just as its name suggests, a computerized model permits the examination from any angle of the structures — existing, proposed and hypothetical — that are part of it. The difference, of course, is that the observation is done on screen. Eventually, viewers will be able to "walk" through the model's streets and avenues, varying their pace or craning their necks or peeking around corners to get a different perspective.

For the Upper East Side rezoning project, the center made a model of Second Avenue, from 78th to 87th Streets. "It had all the conditions," Mr. Kwartler said. "Two wide streets. A hodgepodge of zoning. A succession of buildings over a long period." Using that as a base, the center has translated the

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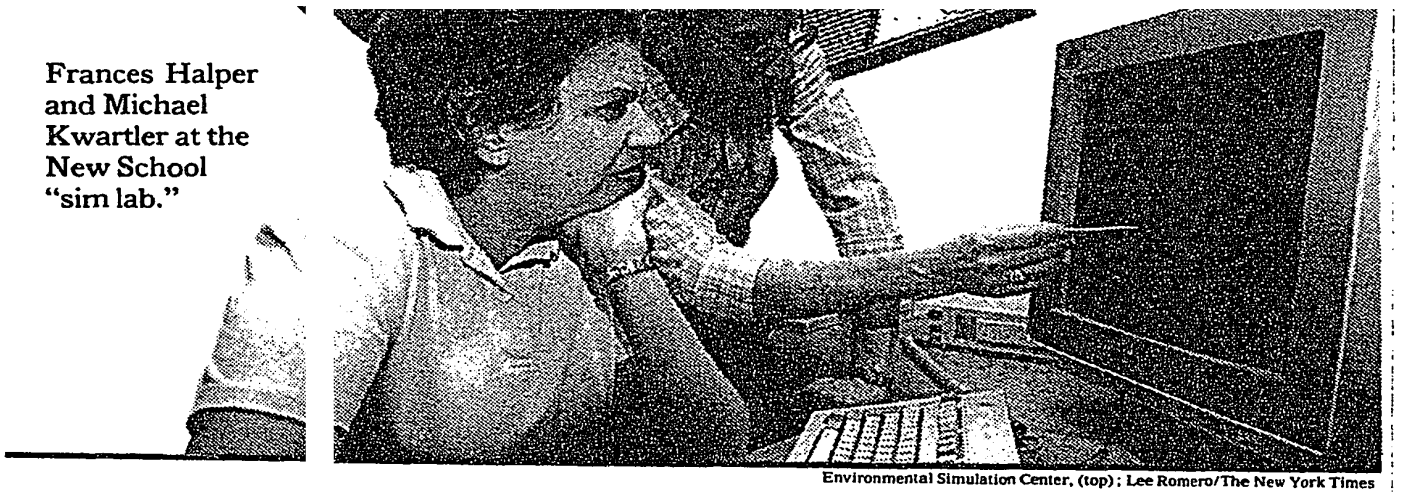

Frances Halper and Michael Kwartler at the New School "sim lab."

Environmental Simulation Center, (top); Lee Romero/The New York Times

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different zoning objectives of each participating group into building plans, elevations and axonometric projections. These are accompanied by a detailed list of the structures' key characteristics, including heights, floor sizes and the ratio of interior space to the size of a lot.

Developers, urban designers and community leaders have been struggling for several years over what constitutes the best zoning for York, First, Second and Third Avenues: tall towers set off in plazas or shorter buildings that line up with their neighbors?

"We're analyzing the proposals for everybody on a level playing field," Mr. Kwartler said. "What they're finding is that they have a lot in common."

"The 'sim lab' has provided a uniform background where one can test proposals," said Michael Slattery, the senior vice president for research at the Real Estate Board. "I think that will probably be one of its major contributions — to see how different proposals look in comparable settings."

"People who are technically proficient in understanding architectural drawings may not need all the technology the 'sim lab' has," said Genie Rice, the president of Civitas. "Nevertheless, it's a basis on which to have discussions and a basis on which the community might be more able to understand it."

"IT'S a consensus-building tool," said Douglas Woodward, an urban designer in the City Planning Department. "Rather than a contentious back-and-forth about whose information is correct, the simulation center acts as a clearing house, so that we can get agreed-on parameters for study."

Participants in the project are hoping that if they cannot reach a single consensus by fall, they can at least boil four different proposals down to two. Failing that, Mr. Kwartler said, "Everybody will pick up their marbles and go home."

"At least they will have more information to base their decision on," said Frances Halper, associate director of the center. "Hopefully, the process will be less emotional and more realistic."

The representative of the American Institute of Architects, Bruce S. Fowle, of Fox & Fowle, said he was "optimistic that we'll see some good results."

"The whole thing is very exciting — just the fact that these groups are having very civil discussions," he said. "It amazes me that we've tried to do it all these years *without* the computer."

Actually, at the Berkeley campus of the University of California, such work has been done for 23 years. Berkeley's Environmental Simulation Laboratory served as a prototype for the New School center.

Today, the computerized model of New York City contains some 100 blocks, with hundreds of individual buildings. There are 18 blocks along Second Avenue; about 40 blocks on the Upper West Side, from Donald J. Trump's Riverside South site to Amsterdam Avenue, 57th to 74th Street; and about 40 blocks around Grand Central, from Third to Fifth Avenue, 40th to 49th Street.

The model is built in layers of data, paralleling somewhat the physical construction it mimics. Staff members and interns at the center begin by entering the coordinates of the ground plane, which shows the outlines of the blocks and lots, the width and height of the sidewalks and the radii of the curbs.

To that is added the buildings' "footprint," their shape at grade level. And to that is added the buildings' overall bulk, showing any setbacks or towers. Within this envelope, each floor plate is individually plotted.

At the tops of the buildings are shown parapets, mechanical penthouses and elevator towers. Water tanks are not included, to Mr. Kwartler's regret, because they are not recorded in standard reference sources.

Finally, there is a facade file in the computer which shows some level of architectural design but not as much detail as would be permitted by a physical model.

Computerized models are most useful for broad planning and zoning initiatives, where building bulk, view corridors, sun and shadow are more important than architectural detail. To study areas where details are critical, such as historic districts or retail strips, a physical model would be used.

The only physical model now at the center was built five years ago at Berkeley. It shows Broadway, from 79th to 84th Streets, on a scale of 1/16th of an inch to a foot. On this model, photographs have been pasted to cardboard forms, reproducing a level of detail — every brick, window sill, cornice and shop sign — that would be too expensive and complex to create with a computer.

A camera mounted on an overhead crane can be run along this 7-inch-wide boulevard, to reproduce a trip through the area.

The "walking tour," like those generated by the computer, can be recorded on videotape to reach an audience beyond those who are able to spend time in the center itself, at Fifth Avenue and 14th Street.

In the future, Mr. Kwartler imagines city officials and members of local community boards taking home videotapes overnight to review the implications of the latest land-use proposal. If the physical impacts of future development can be meaningfully envisioned before zoning rules are rewritten or special permits are granted, it may be possible to avoid planning blunders.

"It's often difficult for people to visualize the potential changes in the built environment that would come from public actions," said Richard L. Schaffer, chairman of the City Planning Commission. "It seemed to me that it was very important to have a vehicle that could analyze various proposed land-use changes and help people understand the physical, visual and related impacts."

Mr. Schaffer pushed for the creation of the center when he was dean of the Graduate School of Management and Urban Policy at the New School, a connection that ought to be useful to the center in establishing itself as a credible player in land-use debates.

If the center turns up at the eye of major land-use storms in coming months, it will be fulfilling exactly one of its intended roles.

"When we're not at the center of controversial issues and hot topics and difficult choices, we're not doing our job," said Jonathan Fanton, president of the New School.

"There are now on the table a whole host of policy issues having to do with cities and the people who live in cities, with new policy agendas being created," he said. "I want this school to be a participant — a major participant — in the national debate."

That eagerness for debate is clear from the choice of the first areas to be modeled. But the center is to take no position in these controversies. "We view the center as an academic enterprise," Mr. Fanton said, "with all the protections of academic and intellectual freedom that flow from being part of a university."

"FOR this to be acceptable and work effectively, it *had* to be neutral," Mr. Kwartler said. One reason it took so long to establish a simulation center in New York, he said, was that the Berkeley laboratory had been used in New York by partisans in some critical civic debates.

In 1985, Prof. Peter Bosselman of Berkeley produced a film titled "Times Square" for the Municipal Art Society, which criticized what it said was the impending over-development of the theater district. The next year, for Civitas, Professor Bosselman produced "No More Tall Stories," narrated by Paul Newman, which called for rezoning of Upper East Side avenues.

"It was very, very effective agitprop," Mr. Kwartler said. "But there was antipathy toward it because it was used in an adversarial manner."

"Independence for this center is critical," Mr. Schaffer said. "The notion is that a developer would come to the center with a project and that it would be up to the center to decide with what angles and views the project should be visualized. It would be critical that the center made those decisions, as opposed to the applicant."

Mr. Fanton sounded confident that the center would maintain neutrality, even as it accepts money from organizations with a vested interest in the outcome of projects. The New School "has a very clear track record of not allowing sources of funds to influence the outcome of the research and teaching we do here," he said. "It would be a waste of money for someone to try to influence us through a donation."

An official statement of objectives issued in February said, "All information produced by the center will belong to the New School for Social Research and will be subject to full public disclosure."

The start-up of the center, which cost $1 million, was underwritten by the J. M. Kaplan Fund and the Charles H. Revson Foundation. Through Civitas, the Kaplan Fund also contributed $7,500 toward the Upper East Side project, which has cost $20,000 so far.

In the Riverside South project, financed by Mr. Trump, the center produced a series of 45 studies showing the shadow patterns on the surrounding area at five times of day on three days of the year under three different development scenarios. One series shows what would happen with nothing built. One shows what would happen if Riverside South were built but the elevated West Side Highway remained in place. And one showed Riverside South with the highway moved inland to create a waterfront park.

THE center also produced a series of 72 views looking westward along the side streets, from the neighborhood across the project side, under the various development scenarios. These illustrations and the shadow studies are part of the environmental impact statement.

The Grand Central project was begun at the request of the City Planning Department, which has proposed a new zoning subdistrict in the area. Four different sites have been modeled in three different ways: one showing the existing condition, one showing what could be built under current zoning, one showing what could be built under proposed zoning. The center is now working on a "walk-through" along Vanderbilt Avenue.

It has also expanded the model to account for a counter-proposal by the Penn Central Corporation, which owns the terminal's air rights and would like to be able to sell them over a much wider area of mid-Manhattan. The cost of adding the extra blocks to the model was picked up by the corporation.

The next project for the simulation center is a model of lower Manhattan, from Bowling Green to Chambers Street, Broadway to the Hudson River. Since the streets in this part of New York were laid out by Dutch settlers in the 17th century, they are remarkably eccentric. Varying street widths could have a significant effect on building "footprints" and therefore on the accuracy of the overall model. Contemplating the effort ahead, Mr. Kwartler said simply, "That's going to be a corker." ■