

Reprinted from



The Municipal Engineers Journal

Published twice a year by the
Municipal Engineers of the City of New York

"The particular business and object of the Society shall be to promote and advance the various engineering sciences which are employed in the government of the City of New York and to elevate the standard of efficiency of engineers employed in the various departments of the city"

-Constitution, Article 1

Vol. 99

Issue II

2014



From: **Letters from the Editors**

Grand Central Terminal: A Study of Beauty and Meaning by John Stern provides us a very different view of Grand Central Terminal. The photographs contributed by Amy Dienes, including the photo on this journal edition's cover, work hand-in-hand with the poetic and very introspective piece by Mr. Stern. Our heartfelt thanks for his continued contributions!

GRAND CENTRAL TERMINAL: A STUDY IN BEAUTY AND MEANING

Grand Central Terminal: A Study in Beauty and Meaning

By [John Stern](#)

When I was about 12, I remember walking with my father on 46th Street near Park Avenue. He pointed out a narrow space between the outside wall of a building and the sidewalk, explaining that the buildings in this neighborhood had no basements and were supported instead on steel columns anchored in bedrock below the tracks underneath our feet. Why? Because, he explained, otherwise vibrations from trains moving below us would eventually damage the buildings. My father told me we were standing over dozens of railroad tracks that make up the approaches to Grand Central, and sure enough, through a sidewalk grating I could see a few of these tracks and a train moving slowly outbound.



This was my introduction to the mysterious yet orderly world of Grand Central Terminal, a magnificent example of science and art, having one of the grandest interior spaces on the planet. I will comment on its history and its visual splendor in relation to this principle of Aesthetic Realism, stated by its founder, the American poet and critic Eli Siegel: “All beauty is a making one of opposites, and the making one of opposites is what we are going after in ourselves.” It is the oneness of such opposites as matter and space, surface and depth, personal and impersonal, rest and motion, one and many that make for the beauty and efficiency of this much-admired railroad terminal, and these are the *same* opposites we want to make sense of in our lives!

History Is There

In 1970 Mr. Siegel, referring to economics throughout the centuries, explained that “the private-public fight is a big thing in history.” That fight is going on worldwide between private profit for

JOHN STERN

a few people and what is good for the vast public, for living, breathing human beings. It is also the fight that goes on in every person between contempt—the desire to get “an addition to self through the lessening of something else,” and respect—the desire to see what a thing or person deserves and to value it truly.

On the one hand, the men who built and operated America’s railroads wanted to make as much money as possible for themselves and their stockholders. But to accomplish this they *had* to serve the public’s need for freight and passengers to be carried—which they did with increasing efficiency. However, as railroads became indispensable to economic growth, most owners grew arrogant, manipulated their stocks, tried to ruin competitors, ignored legitimate complaints, skimped on safety, and generally did as they pleased. Their attitude was famously summed up by New York Central Railroad president William Henry Vanderbilt when he proclaimed in 1882, “The public be damned!” Meanwhile, that public—including shippers and passengers—rightly objected, and demanded remedial action. And so the federal government was forced to begin regulating the rates railroads charged as well as the safety of their operations.

During the peak years of travel by rail, Grand Central was home to a fleet of fast trains to the Midwest, including the glamorous Twentieth Century Limited to Chicago, which was frequented by celebrities and reached over a distinctive red carpet. But as the ridership on intercity railroads declined after the Second World War, it was only through eventual public ownership and operation by the State of New York that the indispensable suburban commuter services to Grand Central were preserved and substantially improved, and the beautiful Terminal building itself saved and restored.



tion by the State of New York that the indispensable suburban commuter services to Grand Central were preserved and substantially improved, and the beautiful Terminal building itself saved and restored.

The history of Grand Central is colorful, spanning 142 years. The first terminal of that name was erected in 1871 at Fourth Avenue (now Park) and 42nd Street, then close to the edge of the built-up part of the city. It was conceived and built by Cornelius Vanderbilt, who had merged several railroads into the extensive New York Central system, extending to the Midwest.

The new building was its terminus, and also for the New Haven system, which served southern New England. It was an impressive structure, with an ornate façade, and an awesome iron and glass train shed 100 feet high, spanning 15 tracks—then one of the largest interior spaces in America.



However, as travel kept growing, the terminal had to be extensively remodeled.

GRAND CENTRAL TERMINAL: A STUDY IN BEAUTY AND MEANING

A Tragedy Is a Catalyst for Change

The physical layout of Grand Central's approaches in 1900 included outdoor train yards extending from 45th to 48th Street, an open track bed along Park Avenue to 56th Street, and a four-track ventilated tunnel from 56th to 96th Street. Steam locomotives on all this trackage generated copious quantities of smoke, soot, and cinders.

Then in January 1902, in the tunnel at 58th Street, with visibility impaired by smoke and steam, an inbound express train smashed into the rear of a halted local, killing and injuring scores of people. The public was outraged, resulting a year later in laws banning the operation of steam locomotives in Manhattan after 1908.

What was to be done? William J. Wilgus (1865-1949), chief engineer of the New York Central, knew that another remodeling simply wouldn't do. He proposed instead thorough, imaginative, and innovative solutions that function superbly to this day: 1) construct two levels of tracks below street level, the upper for long-distance trains, the lower for suburban trains; 2) eliminate steam locomotives and move all trains by electric power; 3) construct a monumental terminal building; and 4) sell air rights above the new underground train yards, permitting developers to erect buildings there and pay rent to the railroad.

A Masterpiece of Engineering: The Union of One and Many

The 10 years of construction included painstaking engineering for the two levels of tracks and train yards below street level, planned and closely supervised by Wilgus. The work was difficult. Imagine! Extensive excavations for the two new levels of tracks had to be carried on while not disrupting the daily arrivals and departures of hundreds of trains, whose numbers were increasing each year.

It was a feat of meticulous organization, a grand making one of the opposites of one and many: of innumerable and disparate elements all designed to work for one purpose—just as each of us hopes to have all the elements in our lives go for a purpose we can be proud of.

But I didn't feel my life was integrated in this way. When I began to study Aesthetic Realism one of the first things I learned—and it was liberating—was that I, like every person, was in a fight all the time between hoping to respect the world and people, and getting a victory out of being scornful and superior. This fight began to change when, in a class, Eli Siegel made vivid to me the struggle between contempt and respect. He asked:

Do you think you feel more important having contempt for things or respect for them? Do you think it would be better to add 5% to the meaning of people, add no %, or subtract 5%?

I began to see that for my self-respect and happiness it would be better to add 5%. I also learned that this fight affected every aspect of my life, including love, friendship, how I saw my family, and my work as an urban and regional planner. It explained why I was churlish with people, very prone to look for what I saw as their flaws. As I learned that having contempt was the very thing that held up my life, that it made me feel tight, unexpressed, and lonely—I changed. And this included love for Faith Stern, who has been my cherished wife for 44 years.

The fight between respect and contempt affects engineering too. If an engineer doesn't respect fully the rigorous integrity that organization and the laws of physics demand, disaster may result. The long history of engineering records many examples where insufficient respect for the properties of iron, steel, glass, brick, and concrete, and the effects of winds and weights, have caused the falling of bridges, the failure of roofs, the collapse of entire buildings, and the injuring and killing of countless people.

Simplicity and Complexity Are There, Too

William Wilgus's respect for engineering underlay his design for the new rail terminal. The plan he devised was simple and complex at the same time, as described by Kurt Schlichting in his book *Grand Central Terminal*:ⁱ

Wilgus devised a plan to manage the excavation and construction in stages by dividing the old terminal building, train shed, and train yard into a series of bites and having construction proceed one bite at a time. In each bite, work began by demolishing all structures within the bite and removing the existing railroad tracks. Once cleared, work crews excavated to a depth of between 50 and 60 feet. With excavation completed, construction began on the two-story underground structure. As soon as work crews completed the new platforms and tracks, the [railroad's] operating division assumed control and the excavation and construction workers moved on to the next bite.

The quantity of rock and soil that had to be excavated for the two levels of tracks was stupendous—3 million cubic yards,ⁱⁱ an amount of material that would fill about three Empire State Buildings. All this had to be removed in trains of hopper cars run at night, so as not to interfere with the heavy passenger traffic.

Rest and Motion Are Part of Grand Central's Design

While Wilgus's two-level rail terminal was being completed below ground, the monumental terminal building itself was rising steadily into the air above. Its architects were Reed & Stem of St. Paul, Minnesota and Warren & Wetmore of New York. The two firms were unwilling collaborators and argued strenuously over many details, but the final design included ideas from men of both firms.

GRAND CENTRAL TERMINAL: A STUDY IN BEAUTY AND MEANING



For example, the architects had to provide for the free and orderly movement of people into, out of, and through the building. They proposed inclined ramps, by means of which large numbers of people could move smoothly to and from their trains. And that is what we have to-day: broad sloping ramps, plus stairways and escalators, as well as underground passages to nearby buildings.

Rest and motion are the principal opposites in all modes of transportation—for example, a train starts and stops for the same purpose: to reach its destination with ease. In the same way, a person walking in Grand Central moves and pauses as she or he may window shop, buy a newspaper, have a snack, look up with wonder at the high, starry ceiling in what is called the Grand Concourse, catch a train through an ornamented gateway, or simply pass through the building.



When we feel our taking it easy and our activities go for one purpose—a respect for what's around us—we will experience that dynamic tranquility which Aesthetic Realism describes as the feeling of happiness.

Architecture and People; or, Impersonal and Personal

In his historic broadside, “Is Beauty the Making One of Opposites?,” Eli Siegel asks:

Does every instance of art and beauty contain something which stands for the meaning of all that is, all that is true in an outside way, reality just so?—and does every instance of art and beauty also contain something which stands for the individual mind, a self which has been moved, a person seeing as individual person?ⁱⁱⁱ

In Grand Central the personalities of tens of thousands of individuals mingle every day with the impersonality of geometry and space, bringing personal meaning to impersonal architecture, and impersonal meaning to human lives.

I remember listening to a half-hour radio drama broadcast in the late 1940s and early '50s that illustrates these opposites. Titled “Grand Central Station,” its introduction was famous:

[S]hining rails in every part of our great country are aimed at Grand Central Station, part of the nation's greatest city.

Describing the trains rushing down along the Hudson River and “beneath the swank and glitter of Park Avenue,” the introduction concluded:

And then Grand Central Station—crossroad of a million private lives, gigantic stage on which are played a thousand dramas, daily.^{iv}

The Terminal Building: A Oneness of Matter and Space

The principal opposites in all architecture, Aesthetic Realism explains, are matter and space. The way matter encloses space in the terminal building, and matter and space interpenetrate, is part of its beauty and magnificence.

Grand Central provides travelers several ways to reach the Grand Concourse and their trains, and with each a person experiences a mobile, ever-changing relation of matter and space. Whatever approach he uses, a traveler then enters that amazing interior space, the Grand Concourse, measuring 275 feet long, 120 feet wide, and 125 feet high. This great room is bordered by small lunette (semi-circular) windows with concave decorative moldings, located just below the ceiling. The arches in these openings, like those atop the tall windows on the 42nd Street façade and along the east and west walls of the Grand Concourse, are both vertical and horizontal.



These arches, like those in the famous Oyster Bar restaurant in the lower level, have a meaning for us, which Mr. Siegel describes in his book *Self and World*: “[Everyone] has the vertical aspect of himself or herself, and the horizontal. The vertical line is a symbol to the unconscious of the self alone; the horizontal, of the self going out.”^v



GRAND CENTRAL TERMINAL: A STUDY IN BEAUTY AND MEANING



Part of the glory of the Grand Concourse is the way its horizontal and vertical elements work together. Warm-colored, square, vertical columns of artificial stone rise above the north and south sides of this room. These columns support horizontal cornices, which join the columns and also separate them from the high lunette windows and the concave ceiling. The horizontal lines of the cornices are softened by rows of warm electric lights, and are matched by the horizontal lines of the north, east, and west balconies below and the line of ticket booths on the south side.

And the lunette windows high on the south wall welcome the sun's rays, which stream in to illuminate part of the floor, seeming to soften its hard marble.

The glorious blue-green, concave ceiling of the Grand Concourse is studded with constellations of stars, and as a person looks up to it through space and sees other elements of the great room, he or she has a feeling of largeness and pleasure.



At the center of the Concourse is the iconic information booth, with its handsome golden clock: the focal point amid the democratic flow of the multitudes who pass through the terminal each day.



The Terminal Is Saved and Reborn: A Victory of Ethics

In 1964, largely as a result of the demolition of the other monumental gateway to New York City, Penn Station,^{vi} the city passed a landmarks preservation law, under which many buildings, including Grand Central, were designated as landmarks. This event gave rise to a fierce battle between private and public. The private owner of Grand Central, the Penn Central Railroad, desperate for revenue, proposed an office tower to be built using the air rights over the Terminal, which would destroy an important part of the iconic building. Two proposals for the office tower were therefore rejected by the city's Landmarks Preservation Commission. Penn Central tried to have this decision overturned, first through the New York State courts, and finally in the U.S. Supreme Court. Prominent New Yorkers, led by Jacqueline Kennedy Onassis, rallied to save the Terminal. Finally, in 1978, a 6-3 majority of the Supreme Court upheld the city's landmarks law, saving Grand Central from the commercial pressures of potential development. The citizens of New York and other cities now had the right under legal precedent to preserve their historic architectural heritage. It was an important victory for the interests of the broad public over narrow, profit-driven interests of a few.



But the magnificent building urgently needed saving also from years of neglect by the cash-



starved Penn Central. In 1988 its new owner, the state-owned Metro North commuter railroad, commissioned the architectural firm Beyer Blinder Belle to study what had to be done to stabilize and restore the Terminal. Their detailed report covered every square inch of the terminal, and work on the \$200 million dollar^{vii} restoration began in the early 1990s. The work needed affected every part of the Terminal, including the monumental outdoor sculpture and its ornate clock facing Park Avenue; cleaning the great

vaulted ceiling in the Grand Concourse; building new underground pedestrian access from 47th and 48th streets; replacing or modernizing almost century-old electric power, heating and ventilation, and communications systems; upgrading retail shops throughout the terminal; meticulously repairing widespread water damage; remodeling the lower level commuter concourse to include an extensive food court; and eliminating the abundant advertising that for five decades had increasingly intruded on walls, balconies,^{viii} and even on the floor of the Grand Concourse. The Terminal was rededicated in 1998. The results thrill everyone who passes through Grand Central and looks around.

GRAND CENTRAL TERMINAL: A STUDY IN BEAUTY AND MEANING



In his prize-winning poem, “Hot Afternoons Have Been in Montana,” Eli Siegel asks, “...What is it man can do?”^{ix} One answer is Grand Central Terminal, that consummate masterpiece of science and art, which has welcomed so many millions of people these one hundred years and more.

Endnotes

ⁱ Kurt Schlichting, *Grand Central Terminal* (Baltimore: Johns Hopkins University Press, 2001, p.67)

ⁱⁱ Schlichting, p. 70

ⁱⁱⁱ Eli Siegel (New York: Terrain Gallery, 1955)

^{iv} John Belle and Maxinne R. Leighton, *Grand Central: Gateway to a Million Lives* (New York: W.W. Norton & Co., 2000, p.94)

^v Eli Siegel, *Self and World* (New York: Definition Press, 1981, p.118)

^{vi} Pennsylvania Station boasted a monumental waiting room with a barrel-vaulted ceiling soaring 150 feet atop Roman columns. The train concourse was sheltered by a canopy of glazed glass vaults supported on spidery columns of steel, through which one could see the sky. The engineering required for the approaches to the station was complex, comprising twin single-track tunnels through the rock of the Palisades in New Jersey and under the Hudson River, tunnels across Manhattan, and four single-track tunnels under the East River to Long Island City.

^{vii} Belle and Leighton, p.124

^{viii} Before ads blocked the Lexington Avenue balcony, I remember a full-size replica there of the DeWitt Clinton, an early 1830s locomotive with two stagecoach-like passenger cars.

^{ix} Eli Siegel, *Hot Afternoons Have Been in Montana: Poems* (NY: Definition Press, 1957, p. 4)

JOHN STERN

About the author...

John Stern was born in 1927, graduated from Columbia University, and is a consultant on the faculty of the not-for-profit Aesthetic Realism Foundation. He has had lifelong interests in architecture, history, geology, cities, and transportation—the [Electric Railroaders Association](#) calls him a “transit legend” for his photographs of mass transportation systems in the 1940s and ‘50s. For many years he was a senior planner with the Tri-State Regional Planning Commission, which studied the housing, transportation, and economics of the New York metropolitan region. Since 1970 he has been married to Faith Stern, his dear friend, colleague, and fellow consultant.

Since 1968, he has studied Aesthetic Realism ([AestheticRealismFoundation.org](#)), the education founded by the noted American poet and critic Eli Siegel, who stated its central principle: “All beauty is a making one of opposites, and the making one of opposites is what we are going after in ourselves.” It provides the means of understanding and relating the world and ourselves factually, practically, and comprehensively. For example, in the present paper Mr. Stern shows how the opposites Grand Central Terminal puts together—one and many, rest and motion, science and art, personal and impersonal—are the same opposites we want to have closer in ourselves. In other articles he has shown how this principle is valuably true as to such icons as the NYC subway system (published in Vol. 96, Issue II of this Journal), the Woolworth Building, the High Line (co-authored with Faith Stern), and the Brooklyn Bridge (co-authored with art historian Carrie Wilson). These papers and others are on Mr. and Mrs. Stern’s New York City website, [beautyofnyc.org](#).

In Mr. Stern’s careful opinion, Aesthetic Realism is the finest education there is about the multitudinous world and our own, intimate selves. It is taught at the not-for-profit Aesthetic Realism Foundation in public seminars and dramatic presentations; in classes open to the public in such subjects as music, anthropology, poetry, painting, marriage, education, and the drama; in individual consultations; and in outreach programs given at professional conferences and senior centers in many states.

The Aesthetic Realism Foundation is at 141 Greene Street (off Houston), New York, NY 10012, tel. (212) 777-4490.