

# **The Building of a Symbolic Image**

## **The Juxtaposition of Giambattista Piranesi's *Vedute Di Roma* with Photographs Taken 250 Years Later**

*Randolph Langenbach*

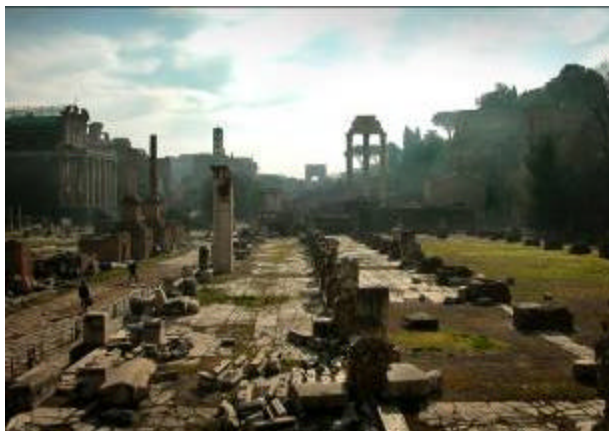
Etchings and engravings by Giambattista Piranesi, ca.1750

Photographs and overlay images by © Randolph Langenbach, 2003

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### **Introduction: The History of a Ruin as a Ruin**

A visitor arriving today at the site of the ancient Forum in the center of Rome looks out over a ruin that is a veritable symbol of an entire civilization whose origins extend back more than two millennia. What is seen in this and the other archeological sites within Rome is but a tiny fragment of what was actually constructed by the ancient Romans, yet the fragments that are visible in Rome, or likewise in Athens, Cairo or other sites of great ancient cities, form complete visual and cultural artifacts in their own right — in much the same way that the granite cliffs of the Sierra Nevada mountains, eroded by time, form a single image of sublime beauty where they face each other across the Yosemite Valley. One wonders: Could the vandals and lime burners who pillaged the ancient temples of the Forum be said to have inadvertently left behind a singular work of art? Does the Roman Forum's value as a cultural artifact depend on keeping its ruins in as unchanged a state from their current condition as possible?

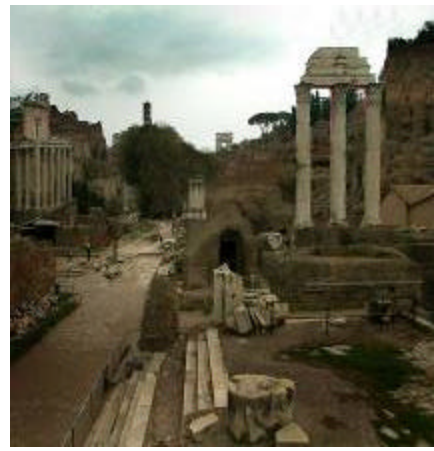


**Figure 1** : Roman Forum looking south, 2002

For centuries the remains of classical Rome were not valued for their cultural or artistic attributes, at least not by those in the position of power to determine their fate. Indeed, they were systematically quarried for lime and building stone over the centuries under permissions and directives granted by the Catholic Popes who then had complete control over the city. Even Bernini's remarkable Baldacchino under the dome of St. Peter's is believed to have been, in part, fabricated from the bronze ceiling dismantled from the proanostyle of the Pantheon and melted down by Pope Urban VIII. Fortunately, in the eighteenth century this pattern of destruction changed, for had it gone on much longer,

nothing would have remained as a physical record of classical Rome – a magnificent imperial city of two million population that was not to be exceeded in size until nineteenth-century London and Paris.

The fact that this pillaging stopped around the time that Giambattista Piranesi's famous *Vedute* of the ruins of ancient Rome together with the Renaissance city were disseminated throughout Europe was no mere coincidence. While other artists had also illustrated these ruins, it was Piranesi's work that most profoundly elevated these ruins into the consciousness of many Europeans. This wide dissemination of the prints helped launch the "grand tour" to Italy, which then led to the future archeological investigation and conservation of these ruins. As observed by French novelist Marguerite Yourcenar: *"the very circulation of his [Piranesi's] works, counts among the elements which have gradually changed the public's attitude, and finally that of the authorities themselves, and which have led us to the labeled, scrubbed, and replastered ruins of today, object of state solicitude and a national treasure of organized tourism."*<sup>1</sup> In effect, therefore, his illustrations helped transform the views of the ruins in and around Rome into symbolic images that continue, even today, to influence the way that people look at and see the archeological sites themselves.



**Figure 2a:** Giambattista Piranesi, *Campo Vaccino* (cow pasture) in central Rome. **b:** Photo of same view, 2003.

In order to fully grasp the cultural meaning of the Roman ruins as artifacts, it is important to acknowledge that the Roman archeological sites have been in ruins for a considerably longer time than they ever existed as intact buildings. It is as ruins that they have become symbols of the classical Roman civilization in contemporary history, literature, and art. For this reason, it is important to recognize their history as ruins. This is a vital aspect of the power of the images created by Piranesi and his contemporaries, and it is part of the reason why the fragmentary remains of the ancient ruins became recognized in the eighteenth century as the icons of a great, but now vanished, civilization. And, it was this very recognition that finally put a stop to their use as quarries and landfill sites after more than a millennium of such abuse.

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<sup>1</sup> Marguerite Yourcenar, 1962 (Richard Howard, trans. 1980), *The Dark Brain of Piranesi and other essays*, Farrar, Straus, Giroux, New York, p123.

## Giambattista Piranesi (1720–1778) and the *Vedute di Roma*

Giovanni Battista Piranesi was born and raised in Venice, a center of artistic ferment at the end of the Baroque Era. His early work reflects the influence of the theatrical and scenographic imagery for which Venice was famous. Although trained as an architect, Piranesi is known to have designed only one completed building, Santa Maria del Priorato, the Priory Church of the Knights of Malta, constructed in 1765. As an artist, however, Piranesi was extraordinarily prolific, producing approximately 1,200 engravings over the course of his life.<sup>2</sup> Both in his time and since, he has been recognized as “one of the greatest artists in the history of etching and the *Vedute genre*” and as someone who “would permanently alter how people emotionally perceive the ancient world and the city that, in Piranesi’s opinion, best represented it – Rome.”<sup>3</sup> French novelist Marguerite Yourcenar, in her essay *The Dark Brain of Piranesi*, observed:

*The genius of the Baroque has given Piranesi the intuition of that pre-Baroque architecture created by Imperial Rome; it has preserved him from the cold academicism of his successors, with whom he is sometimes confused, and for whom the monuments of Antiquity are no more than scholarly texts. It is to the Baroque that Piranesi, in his Vedute, owes these sudden breakdowns of equilibrium, this very deliberate readjustment of perspective, this analysis of mass which is for its period a conquest as considerable as the Impressionists’ analysis of light later on.*<sup>4</sup>

Piranesi designed his images to capture the entirety of complex environments of architectural ruins and represent the experience of the Roman landscape to people who more than likely would not have had a chance to come to Rome at all. He produced images of large-scale artifacts that could capture the entirety of the ruined structures – even those not possible to view from a distance – and thus his images could themselves become symbolic images of those artifacts. In so doing not only did he frequently, as Marguerite Yourcenar said, adjust his vanishing points with lateral shifts of viewpoint, but he also sometimes combined views from widely separated station points into a single plate.

What makes Piranesi’s topographical art so compelling is that he managed in some of his most expressive prints to capture the sense not only of the buildings as such, but also of the enveloping space that surrounded the subjects that he documented. No longer are the subjects of his art simply archeological or architectural artifacts on display. The larger

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<sup>2</sup> Luigi Ficacci, 2000, *Giovanni Battista Piranesi, The Complete Etchings*, Taschen, Köln. This number has been arrived at by taking the number reproduced in this volume and adding approximately 10% to account for others lost or not included. Piranesi used both acid etching and direct engraving in the making of his plates, often with both on the same plate, especially in later states. For the sake of simplicity, the use of the term “engraving” will refer to the final product of either etching or direct engraving.

<sup>3</sup> Ibid, p 11-12.

<sup>4</sup> Yourcenar, P97

visualized spaces have become the subject, inspiring the viewer to seek them out on the ground in order to complete the experience.



**Figure 3a:** Giambattista Piranesi, *Pronao del Tempio della Concordia*.



**b:** Photograph of same view, 2003.

Piranesi, however, was not creating images for a mere tourist brochure. In his writings, Piranesi described a very different didactic purpose for his work:

*“When I first saw the remains of the ancient buildings of Rome lying as they do in cultivated fields or gardens and wasting away under the ravages of time, or being destroyed by greedy owners who sell them as materials for modern buildings, I determined to preserve them forever by means of my engravings.”*

Piranesi succeeded in this endeavor to a remarkable extent. When his views became famous throughout Europe, they helped to stimulate the “grand tour, giving birth to modern-day tourism to Rome and the rest of Italy.” Increasing numbers of people came to Rome during the 18<sup>th</sup> century to see the ruins in the urban landscape under the Italian sun. As the number of visitors to Rome grew, the systematic pillaging of the monuments ceased. The publicity that Piranesi and his contemporaries brought to Rome and its ancient monuments can, therefore, be classified as one of the most successful examples in the history of Europe of preservation activism advanced by the creation and publication of images.

Piranesi’s work continues to be influential, but time and change, and, ironically, the influence of photography, has tended to separate it from its original subject matter – the ruins of ancient Rome. Tourists are sometimes familiar with his work, but rarely take his images into the field to relate them to the actual sites, and the images only rarely show up in guidebooks. A number of modern-day photographers, however, have undertaken to document the sites of his views photographically, but this has proved not to be an easy task, as they have found that his compositions do not lend themselves to easy replication with a camera. The attempts to capture the Piranesi views with photographs have been frustrated not only by modern changes to the landscape, but more profoundly by the inability of a camera – even with the widest of flat-field lenses – to encompass the full scope and breadth of Piranesi’s compositions, many of which encompass a horizontal spread of as much as 180°. Thus, rarely have photographic juxtapositions with Piranesi’s

views succeeded in capturing the Piranesi views in their entirety, much less their dramatic impact. Such photographs also rarely possess the kind of taut energy that characterize the Piranesi prints, in many instances contributing to the belief that Piranesi somehow manufactured these views.

Herschel Levit, an American photographer and art professor who undertook such a project that was published in 1976, admitted in his preface that “*it is frequently difficult, and in some cases impossible, to correlate the views. Piranesi used a complete panoramic sweep of 180°. In drawing his sketches, he turned his head to the left and to the right. The camera cannot duplicate this without catastrophic distortions, such as those produced by a fisheye lens.*”<sup>5</sup> David Brooke, who later undertook a similar project with a view camera with swings and tilts<sup>6</sup> while on a Rome Prize Fellowship at the American Academy in Rome in 1991 also stated that at the outset he “*did not consider fish-eye or ultra-wide panoramic lenses or multiple-image photomontage appropriate for this work...In some cases, no single lens of any kind would encompass what Piranesi included in his image.*”<sup>7</sup>

### **Photography in the Footsteps of Piranesi**

For a modern-day photographer working in Piranesi’s footsteps, the choices are different than they were for Piranesi. Most documentary photographers usually avoid the use of super-wide-angle lenses for the representation of normal subjects, because of the visual distortions that result – distortions that have been used to good effect by Diane Arbus and other art photographers who have deliberately departed from the making of classic topographical images of the kind that Piranesi produced. In addition, standard multi-image photographic panoramas that cover scenes that spread well beyond 90° in width usually look curved or faceted as the camera is revolved around its axis at the station point.<sup>8</sup>

As photographer David Brooke correctly determined for his 1991 Rome Prize project, the option of using a fisheye or panoramic lens, or making photomontages in the darkroom for modern-day reproductions of Piranesi’s views in the darkroom, would not be as likely to produce images from the same sites with the artistic quality that he achieved with his view camera, which possessed the swings and tilts necessary to rectify the images. However, with the invention of digital imagery and computer-based editing software, the technical landscape has changed and a different art form has become possible.

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<sup>5</sup> Herschel Levit, *Views of Rome Then and Now*, New York: Dover, 1976

<sup>6</sup> Levit used a fixed lens camera for his images.

<sup>7</sup> Steven Brooke, *Views of Rome*, New York: Rizzoli, 1995.

<sup>8</sup> The first known patent for a panoramic camera is 1843, at the dawn of photography itself, and panoramic cameras, particularly the Kodak “Cirkut” Camera, were popular in the turn of the 20<sup>th</sup> century. Different types of panoramic cameras have been produced in recent decades, but computer software designed to merge individual images into panoramas, or entire spherical images such as Apple’s Quick Time Virtual Reality (QTVR). (<http://www.cirkutpanorama.com/cameras.html>)  
<http://www.edb.utexas.edu/teachnet/qtvr/>)

During the academic year 2002–03, while on a Rome Prize Fellowship,<sup>9</sup> I was inspired to follow in the footsteps of both Piranesi and these photographers to again photograph the views that Piranesi had etched and engraved on copper in the middle of the eighteenth century. What started as a means to document 250 years of continuity and change in deeply historic landscapes became, in addition, a voyage of discovery into Piranesi’s compositional methods and his use of perspective, all of which had evolved prior to the invention of photography. This paper describes what I learned as a photographer working directly with the images created by a consummate artist 75 to 100 years before photography emerged on the scene.



**Figure 4:** (A) Stockport Viaduct, Lancashire, England. (b) The Amoskeag Millyard, Manchester, New Hampshire, USA before the demolition of the canal buildings on the right and filling of the canal for roads and parking as part of a government “Urban Renewal” project.

My prior work as a photographer had included extensive experience documenting the landscapes of the Industrial Revolution and the architecture of textile mills and cities in New England, Great Britain and India with a large format view camera in the 1960’s to 1970’s. Just as Piranesi was inspired to draw attention to the value of the ruins of Rome, I undertook the documentary photography of the factory towns as an effort to inspire the preservation of their monumental mills from the wrecking ball. The shift from documentation of Industrial Archeology to the Classical archeological sites of Rome is not as great a difference as one may think, at least not from a visual and artistic point of view.

I arrived in Rome fellowship in 2002 without the equipment for large format photography. Instead, I had small format film cameras, and a digital camera, and ended up working exclusively with the new digital camera. This proved to be flexible and suitable, considering the current impediments against the use of tripods and large cameras at many of the sites (and as it turned out – the need to hold the camera high on a pole over my head in those cases where the excavations since Piranesi’s time had changed the

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<sup>9</sup> 2002-03 National Endowment for the Arts Rome Prize in Historic Preservation at the American Academy in Rome.

ground level substantially). Digital photography and computer software, most notably Adobe Photoshop, enabled a degree of flexibility and image manipulation that would have been difficult or impossible with silver halide photography, both in the field and in a photo lab.

In ways that turned out to be both inspirational and productive, this was not a preconceived project, but rather one that emerged slowly out of the experience of living and working in Rome for the year. My own decision to abandon the single-point perspective of traditional photography and explore Piranesi's art through the use of digital image montages, which embody varying perspectives, was neither a single artistic decision or intended as an art-historical analysis. It emerged as it became increasingly clear that there was no other method to bring the images separated by a quarter of a millennium into visual register, while at the same time, the aesthetic and documentary results of doing the montages became increasingly fascinating as the project expanded. In its final form, the video The Piranesi Project, A Stratigraphy of Views of Rome included overlay images with Piranesi's *vedute* as well, as the work of other eighteenth and nineteenth century artists and 19<sup>th</sup> century photographers. In addition, I used the techniques learned on this project to document views for which there were no *vedute* in Rome, and, later, in other parts of the world as well. The working title "*Piranesi Project*" remained appropriate even for this other work in Rome, because of the technique of doing the overlays and the shaping of the images using Piranesi's compositional techniques and perspective manipulations helped to inform this other work.

### **Time and Change in the Symbolic Images**

The reason for photographing the *vedute* in Piranesi's footsteps was not to examine the history of optical and artistic representations, or even the work of Piranesi *per se*. Instead, the purpose was to explore how a quarter of a millennium had changed what was already a potent landscape of the ruins of a past civilization. Piranesi's place in art history is as unusual as it is profound. His name is now an adjective, within the English language: "Piranesian" – a metaphor for the kind of heroic, but partially torn and ruined, spaces that he had invented, as well as what he had documented – all of which were inspired by what he found within the ruins of ancient Rome. Piranesi's *vedute* stood out as the basis for such a project over his contemporaries such as Vasi or Panini because of the strength and evocative quality of his work, work that also proved to be remarkably accurate in its detail and rendition of the subject matter, regardless of shifts in viewpoints and perspective.

Taking his *Vedute di Roma* into the field to their sites transformed them in my own experience from disembodied works of art on their own in galleries and books, to pieces that were seamless with the landscapes they illustrate. Suddenly they extended beyond their frame both in time and space. The 250 years of changes, from the massive archeological diggings to the stripping of the vegetation from the standing remains, became a potent part of the story of the ruins themselves.

While the usual interpretive information focuses on the speculative reconstructions of what the archeological sites may have looked like in ancient Rome two thousand years earlier, bringing Piranesi's images to their sites, I found, had a far more evocative impact. In particular, the archeological excavation of the Roman Forum, and the almost universal stripping of the vines, shrubs, and even trees from the standing remains, is documented by these before and after views – but the story of these changes is itself of historical importance.

Between Piranesi's time and our own, the Roman landscape has been transformed not only with the intrusion of the modern city into the still remarkably intact building fabric from the Renaissance and Baroque periods, but also in the presentation of the ruins themselves. No longer is the site of the ancient Forum the *Campo Vaccino* (Cow Pasture) at the edge of the city of Piranesi's time; it is again the "*Foro Romano*" – an archeological site with gates, guards, and regulations for tourist access at the very center of the modern city. Over the course of the 19<sup>th</sup> century as much as 12 meters (40 feet) of alluvium and debris have been removed to reveal the plinths of the former civic buildings, markets and temples that made up the complex, exposing some of the only remaining marble cladding. The only reason this ancient marble had not been burned for lime was because the river had covered it with alluvial clay during frequent floods, at a time when the population of Rome collapsed from about 2 million to less than 50,000 after the collapse of the Roman Empire.

The other change that affected all of the monumental ruins, including the Forum, is the stripping of the vegetative overgrowth. Arriving in Rome as he did at the end of the Baroque era, the manner in which Piranesi captured the sense of time and decay presages the Romantic era. After the use of the ruins as convenient quarries had ceased, the ruins had been largely neglected and allowed to become overgrown. Since Piranesi's day, this vegetation has been systematically stripped off, changing their appearance in a profound way. The current presentation of archeological remains – denuded of any vines, flowers or trees intermingled with the structures – is so accepted today as an inevitable and necessary part of their conservation that it is surprising to learn that there was a heated debate over their removal.

The transition from Piranesi's documentary images to the present-day experience documents this change. This is especially so because it was this vegetation, together with his evocative human figures that Piranesi used to enliven his views with a romantic vision that also captivated his literary contemporaries and successors. As French novelist Gustave Flaubert (1821-1880), wrote in 1846: *'I love above all the sight of vegetation resting upon old ruins. This embrace of nature, coming swiftly to bury the work of man the moment his hand is no longer there to defend it, fills me with deep and ample joy.'*<sup>10</sup> Others who witnessed the change felt that the denuding of the ruins wreaked havoc on their aesthetic value, including American lawyer and author George Stillman Hillard (1808-1879), who wrote in his book, *Six Months in Italy*, in 1853:<sup>11</sup>

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<sup>10</sup> From a letter to a friend quoted in: Christopher Woodward, *In Ruins*, Pantheon, New York, 2001, p 72.

<sup>11</sup> George Stillman Hillard, *Six Months in Italy*, (Boston, Ticknor, Reed and Fields, 1853).

*The mantle of earth, which for centuries had been slowly gathering around the ruins, had become a graceful and appropriate garb. Trees and vines and green turf had concealed the rents and chasms of time; and a natural relation had been established between the youth of nature and the decay of art. But the antiquarians had come, and with their pickaxes and shovels, had hacked and mangled the touching landscape as surgeons dissect a dead body. . . The antiquarians had felled the tree that they might learn its age by counting the rings in the trunk. They had destroyed [so]...they might interrogate.<sup>1</sup>*

Thus, there are now two different ways to view these ruins. One is as the remaining pieces of the former temples, halls, and palaces that existed on the site. The other is as artifacts that are complete in and of themselves when viewed in their current state. These two views are in constant tension with one another: one motivating archeologists and conservators towards a complete digging up and reconstruction (at least on paper) of the remains of the lost buildings, and the other placing greater value on the preservation of the ruins exactly as they are found.

It soon emerged that Piranesi had managed to contribute to both sides of this dialectic. On the one hand, he produced a remarkable series of reconstruction drawings of Roman engineering works based on his own considerable research of the sites, at what was then the dawn of modern archeology. On the other hand, he also produced his multiple sets of *Vedute* that established the ruins in the consciousness of Europe and the world with a symbolic presence and power not unlike that of the Pyramids of ancient Egypt.

### **The Piranesi Project**

By 2002, digital photography had been available for only a few years. It is this more recent invention in the history of the medium that has provided a remarkable opportunity to *reverse* the rigid optical geometry inherent in photography, and thus take the imagery created by the camera back into the perspective system used, in this case, by Piranesi before photography was possible. In so doing, it became clear that what some might identify as “mistakes” in the proper use of perspective, were in fact artifices used by Piranesi to accomplish his mission – that of describing his subjects in single flat images with a visual power that comes from a breadth of coverage, together with enhanced foreshortening that is impossible to capture in single photographs. Thus, the work on the composite photographic overlays opened up an avenue of artistic analysis that provided both, an opportunity to explore the methods used by Piranesi and other artists in their compositions, and, in addition, learn a new way of making and composing of photographic images.

A photograph, being the result of the convergence of light passing through a lens onto the film plane of a camera at the instant that the shutter is released, is an objective rendition of reality at a given moment in time. It is, however, as much a two-dimensional abstraction of the original three-dimensional subject as is an artist’s handmade image on a copper plate. In fact, this seeming objectivity of the camera can on occasion be a handicap, as the image produced can lack much of the sense of reality experienced by a

person in the particular space, especially when compared to that conveyed by the most creative and observant artists in their paintings and engravings before the invention of photo-sensitive materials. One only needs to look at many of the postcards sold at historic sites to witness some of the limits of photography to fully capture the essence of a subject.

Joel Snyder in his paper, *Picturing Vision*, (Mitchell, 1980), states:

*“Some critics believe the camera image is not only an independent and scientific corroboration of the schemata developed by realistic painters from, say, the time of Giotto onward but is a correction and fulfillment of those schemata...This is quite simply false...To the extent that we believe cameras automatically give natural images, we have lost the sense of what these tools are and have forgotten that they are instruments at all...Cameras do not provide scientific corroboration of the schemata or rules invented by painters to make realistic pictures. On the contrary, cameras represent the incorporation of those schemata into a tool designed and built, with great difficulty and over a long period of time, to aid painters and draughtsmen in the production of certain kinds of pictures.”<sup>12</sup>*

Before the age of photography, painters and engravers were called upon to provide realistic views of the built and natural environment. Because of the documentary nature of the arts before the invention of photography, the images that artists produced often had to encompass an entire view of a subject into a single work. Artists would compose their images so as to best represent their interpretation of the experience and the meaning of the place within the confines of the single flat image, even if it meant adjusting the perspective of certain parts of the image. While some artists before the advent of photo-sensitive materials used a “*camera obscura*” to compose their views, even those who are known to have used the device, such as Gaspare Vanvitelli (Gaspar Van Wittel, 1652-1736), did not necessarily feel entirely bound by the results. In the case of Vanvitelli, this became clear as my work on photographic overlay images of some of his views of Rome progressed.<sup>13</sup>

Today, the demand for illustrations of the environment is largely fulfilled by photography. The ease and speed of photography allows one to take several views to illustrate a site that historically would have been compressed into a single painting or drawing. While photography can be very effective at documenting a complex site with a series of images taken from different vantage points, the camera can prove to be limiting when called on to illustrate a place with a single image, and yet, the public has come to believe in the “truth” of photographs when compared to artist’s paintings and drawings. This is especially the case where the composition of a painting, particularly in the use of perspective, deviates from that produced by a photographic lens. Yet, as the Piranesi

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<sup>12</sup> Joel Snyder, “Picturing Vision,” *Critical Inquiry* 6 (1980), republished in W.J.T. Mitchell, ed., *The Language of Images*, University of Chicago Press, Chicago, 1980 pp219-246.

<sup>13</sup> Cursi, Lia Viviani, *Gaspare Vanvitelli e le origini del vedutismo*, Rome, Viviani Arte, 2002; and Lüthy, Christoph, “Hockney’s Secret Knowledge, Vanvitelli’s Camera Obscura,” *Early Science and Medicine*, Volume 10, Number 2, 2005, pp. 315-339.

Project progressed, it became clear that departures from single-vantage point linear perspective enabled Piranesi to succeed in capturing his sweepingly wide-angle views without extreme wide-angle distortion.

### **The *Terme Grande* and the origins of the Project**

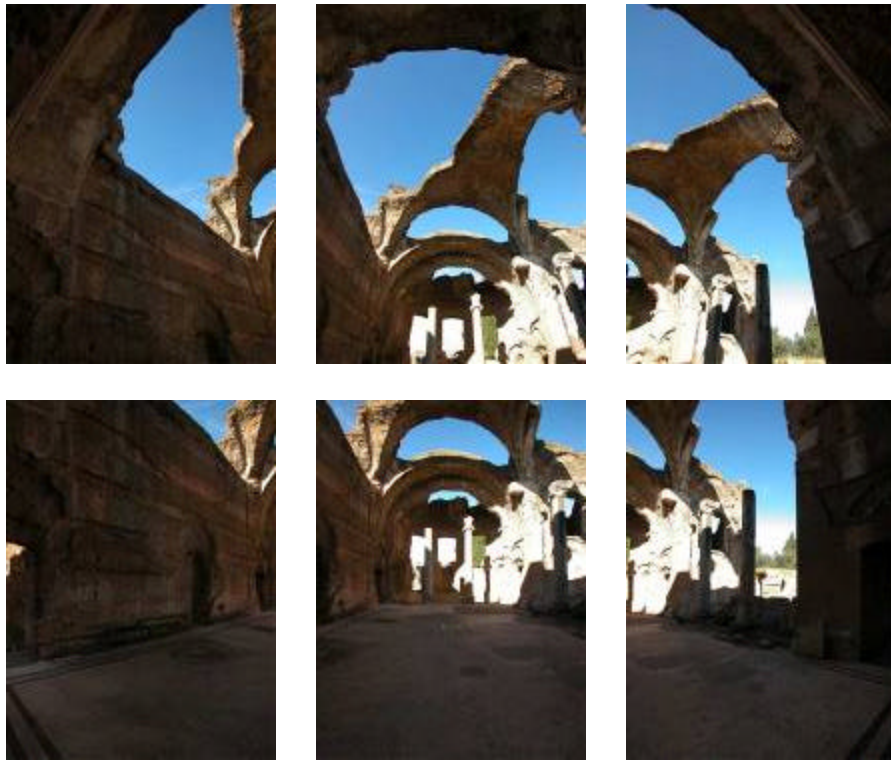
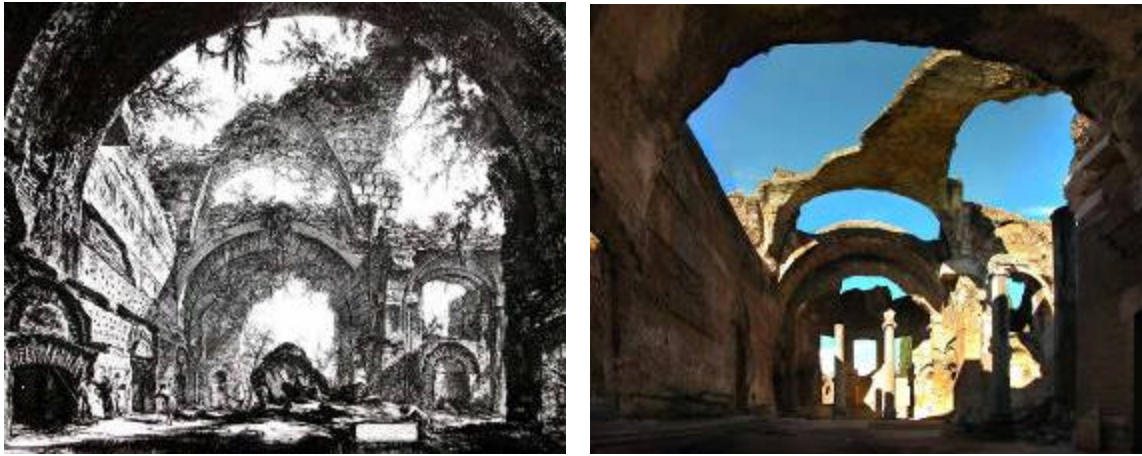
The Piranesi Project was first inspired by Piranesi's view of the *Terme Grande* (Large Baths) at Hadrian's Villa, one of his most powerful and compelling images of the archeological ruins. While visiting Hadrian's Villa in November of 2002, I was fortunate to find a copy of Piranesi's famous engraving of the ruins of the *Terme Grande* on the interpretive sign, rather than a drawing showing a reconstruction of it at the time of Emperor Hadrian. This view proved that the ruined structure had survived the additional quarter of a millennium from Piranesi's time, essentially in the same state of partial collapse as when he saw it, except that it has been stripped of its picturesque cloak of vines, shrubs, and layers of accumulated debris that had formerly raised the level of the ground well above the original floor, which was now re-exposed.

On finding the Piranesi view reproduced on the interpretive sign outside of the site, I photographed it with my digital camera so that it could be seen on the camera's monitor. This allowed me to take the image into the ruined grand room, to the very spot where Piranesi would have stood to sketch his view 250 years earlier. Thus, with Piranesi's view at the site itself, it became readily apparent that the view that he documented could not be taken in a single photograph – simply because it encompassed a full 180° sweep of vision.

Six wide angle photographs<sup>14</sup> were necessary to capture with photography the entirety of the *Terme Grande* that Piranesi captured in his print. I discovered that Piranesi had modified the true linear perspective of his wide-angle view by compressing the extreme edges of the scene, so that they would not look stretched and distorted in the print, while avoiding the curvature or warping that is characteristic of a photographic panorama. With this compression of the sides, Piranesi was able to make the end of the room that forms the center of the image proportionally larger. Had Piranesi followed the rules of linear perspective and used a single vanishing point, his image would have looked like it were viewed through the wrong end of a telescope. Even then, the arch that frames the image in the foreground would be missing, as, in reality, it is directly overhead from the only station point that Piranesi could have used.

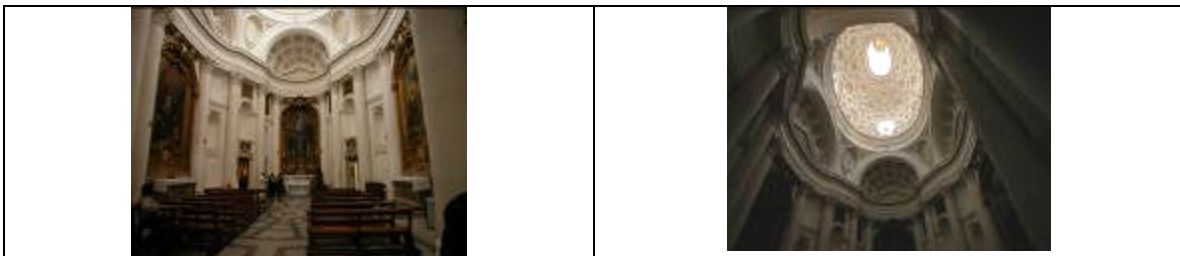
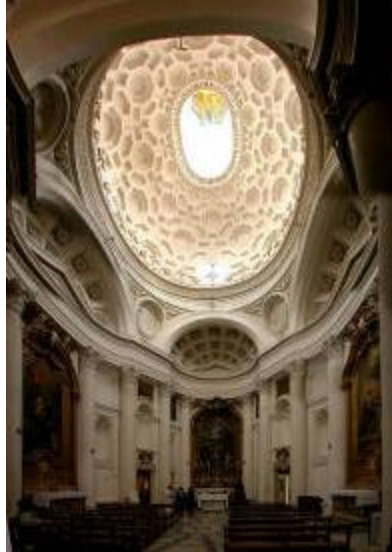
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<sup>14</sup> A 19 mm lens (35mm equivalent) on a Nikon 5000 digital camera.



**Figure 5:** The *Terme Grande*, by Piranesi, together with the six individual photographs taken with a 19 mm lens (35mm equivalent) and the composite image constructed from them by Randolph Langenbach.

And so I found that while the camera could be turned to record the scene in separate photographs, it did not come close to fitting within a single photo. Piranesi's compression of such a wide field of vision into the frame of his etched image is so subtle and convincing that the viewer is unaware of any alteration of the geometric rules of linear perspective when looking at his print. In effect, Piranesi had recomposed a view that, with a camera, can only be taken with a fish-eye lens or multiple photos into a seemingly undistorted flat image that realistically conveys a visual sense of being in the space.



**Figure 6:** This view of Borromini's S. Carlo alle Quattro Fontane shows the two original photographs used to build the composite image above. This very small, but tall and elaborate interior is extremely difficult to photograph using conventional means, and in art books, it is often shown using several photographs showing the dome separately from the lower interior. As can be seen, the dome is viewed by looking almost directly overhead. This "built" image is as yet unfinished, and still shows the intersection anomaly with the column on the right.

To accomplish the overlay image of this view, I had to learn how to "build" on a computer screen a composite image from the six raw photographs, all taken at radically different angles. While this construction of the composite image was not a simple task

with a computer, it would not have been possible in a darkroom.<sup>15</sup> Each of the images had to be “rectified” so that the vertical lines of the subject would be parallel. The next challenge was to merge them into a single image by introducing a similar foreshortening of the sides, and increase in size of the far end of the room at the center of the image as Piranesi had done to avoid wide-angle distortion. As it turned out, the *Terme Grande* image proved to be most difficult overlay image of the entire project. For most images, while only 10 to 20 minutes is needed to take the photos of a single *vedute*, the overlays would take several hours and, on occasion, an entire day.

The photography and work on the overlays served to expand my perception beyond that gained from years of architectural photography with a large format view camera, which itself teaches the rigors of working with images that are up-side-down on the ground glass. For the Piranesi Project, establishing the relative size of elements and setting the angles of perspective recession proved to be more difficult than it would seem at first glance. More than any other experience, this project taught me how different what one sees in the field is from a flat image of the same subject.

### **Perspective and visual perception in the creation of flat images**

When taking a wide-angle photograph, the visual recession can be very extreme – making most foreground subjects look out of scale and distorted. For example, a human face becomes fish-like when photographed with a wide-angle lens at close range (See Figure 7). Interestingly, the limits of the human cone of vision and wide-angle distortion was analyzed in detail as early as 1482 by Piero della Francesca. In his analysis, he noted that “*the eye...can only take in ninety degrees at once*,” demonstrating with geometric diagrams that elements on the side will appear to be stretched horizontally if linear perspective is used for a view that exceeds 90°, but not if the view stays within a 90° cone of vision.<sup>16</sup>

Moreover, in wide-angle views that conform to the rules of linear perspective from a single viewpoint and direction, a subject in the middle distance, such as a building or the space between buildings, is very small in relationship to the foreground, which may contain less meaningful objects. This problem results from the geometry of the view independent of the use of lenses or cameras, and thus was evident to artists prior to the invention of photography, just as it was to Piranesi when he laid out the composition for

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<sup>15</sup> The principle software used was Adobe Photoshop and the resulting images were exported initially to PowerPoint to develop the sequential series showing the transitions.

<sup>16</sup> James Elkins, *The Poetics of Perspective*, Cornell University Press, Ithaca, 1994, p69. It is interesting to speculate on what method Piero used to arrive at 90°. My own findings on these limits comes up with a less geometrically fixed limit, but full binocular coverage is approximately 90°, with the ridge at the top of the nose setting the inside limit of the eye coverage. The outside limit for the two eyes added together is significantly greater than 90°, with each eye covering a cone of about 90°, which overlap in the center with the cone of binocular vision described above. Acute foveal perception, as will be discussed below, is much narrower, being well less than 1°, and the full scan of one’s eyes side-to-side with the head held fixed in one position is somewhat less than 90°. A good example of the limits to the width of human eyesight perception can be demonstrated by the fact that people usually do not find their vision noticeably confined by spectacles, which allow about a 90° cone of vision.

the *Terme Grande* above. To offset this effect, Piranesi enhanced the foreshortening of the sides, which served to pull the far end of the room at the center of the image closer in relationship to the foreground portion of the space, which increased its relative size.



**Figure 7:** Self-portraits of the author demonstrating wide-angle distortion from photographs at close range. (a) With camera held at arms length, about 60 cm (24"), (b) With camera at about 30cm (12"), (c) With camera about 15cm (6") from the plane of the surface of the glasses. Portraits generally look best when taken with longer focal length lenses at greater distance than at arms length, whereas human binocular vision makes this distortion less apparent in real life even at very close distances because of the separation of the eyes allows the viewer to see around both sides of the head, even at 6" .

In making these artistic manipulations, Piranesi must have recognized that the creation of non-distorted and realistic views in two-dimensional graphic images of topographical subjects does not rely on rigid adherence to the rules of perspective. He had also found that the relative size of the elements in a two-dimensional composition of a three-dimensional subject can be varied for visual effect without a loss of realism. Rudolf Arnheim describes this as a psychological as well as a visual phenomenon in Film as Art (1960-p 13).

*Physically, the image thrown onto the retina of the eye by any object in the field of vision diminishes in proportion to the square of the distance<sup>17</sup>...However, we do not in real life get impressions to accord with the images on the retina. If a man is standing three feet away and another equally tall six feet away, the area of the image of the second does not appear to be only a quarter of that of the first...This phenomenon is known as the constancy of size. It is impossible for most people – excepting those accustomed to drawing and painting, that is, artificially trained - to see according to the image on the retina.*

<sup>17</sup> Euclid (C. 300 BC) in *Optics*, the earliest surviving work on geometrical optics and perspective, has demonstrated that this statement becomes less accurate the closer that an object is to the viewer, but the truth of his geometric theorem does not refute the psychological point that Arnheim is making. (<http://www.cartage.org.lb/en/themes/BookLibrary/books/rarebooks/Authors/E/Euclid/cc/c2/04.html>) (J.B.Calvert, 2000: [www.du.edu/~etuttle/classics/nugreek/contents.htm#conts](http://www.du.edu/~etuttle/classics/nugreek/contents.htm#conts))

Piranesi overcame this inconsistency between the mechanics of human optics and visual perception by consistently compressing his views to bring the distant subjects forward, as if – had he been using a camera – they were viewed at a distance through a telephoto rather than a wide-angle lens. Unlike photography, however, his perspective shifts were exercised at his discretion, rather than by the application of a single geometric rule as if he had simply moved the station point backward. In other words, it is not possible to see the views with the same perspective and composition that Piranesi used simply by stepping backwards, even where stepping back may be physically possible. Instead, the layout of the individual key elements in his composition were more consistent with a wide-angle view, while the perspective applied to those elements would be of longer focal length.



**Figure 8:** (a) Piranesi, Island Enclosure, Hadrian's Villa, preliminary sketch. (b) Same view, 2002, (c) Composite panorama showing entire context. (This 3-image panorama was constructed so as to preserve an undistorted view showing the circular curvature of the space – a difficult process in views which cover, as this does, approximately 180° cone of vision. Piranesi's view of this space is unusual among his views for the narrowness of its cone of vision, but as can be seen, he has enlarged the apparent size of the distant element on the left for dramatic effect. (The colonnade, fallen and buried in Piranesi's time, and therefore missing in his sketch, has been re-erected.)

Piranesi's creativity is evident in how he managed to make his subjects look realistic and undistorted, even while expanding his horizontal coverage sometimes to 180°, double the "90° rule" of Piero della Francesca. To test the concept of "realistic view" at the psychological level, German psychologist Alf C. Zimmer compared a Piranesi view of

the Forum (then the *Campo Vaccino*) with a modern photograph by Herschel Levit from the same vantage point. He found that when tracings from each of the structures and spaces common to both were shown to 32 different ordinary tourists in Rome who were asked which “*depicted most correctly the real scenery*,” 23 selected the tracing from the Piranesi print, while only 2 selected the tracing from the photograph (7 were undecided). (Zimmer, 1995)<sup>18</sup>

The perspective correction and manipulation of images of topography and buildings can be broken down to show the difference between the handling of vertical and horizontal lines and surfaces. Whereas the vertical lines are most realistically shown as parallel in the images, the horizontal lines vary according the angle of view and perspective recession. In both cases, straight lines in space are most realistically represented with straight lines in the image (a caveat that is difficult to adhere to when making photographic panoramas.)

When the human eye traces its way over a scene, it behaves exactly like a lens of a camera, so the convergence of both vertical and horizontal lines is constantly changing as the center of the image seen moves so one may ask: *Why do paintings, drawings and photographs of exterior or interior architectural subjects usually look less distorted if vertical lines are parallel (unless the view is acutely up or down)?*. The image in reality is not rectified by the eye any more than it would be with a fixed lens camera.

The answer to this quandary lies in the fact that the human mind interprets in the brain the visual data that the physical eye records. This process of interpretation is different for images reproduced onto a flat surface than it is for the original three-dimensional environmental space being drawn or photographed. For the three-dimensional space, the conceptual “rectification” of the image scene is automatic, as otherwise people would not be able to look at a structure in the middle distance (beyond the distance for binocular three-dimension discernment) and interpret the difference in shape between a Roman military fortification, with its non-vertical battered wall, and a structure with precisely vertical sides. Flat images of the same subjects are necessarily seen differently. The spatial cues are missing, so converging verticals conflict with the norms that the mind has learned to expect in such subjects.

Thus, rather than being an exact rendition of what the eye sees, such vertical rectification of the imagery by the artist is a manipulation designed to make an optically accurate image look more realistic than it would be if the line of sight were to be placed at the geometric center of the image rather than exactly horizontal. Mathematician Anthony Phillips made the observation: “*Far from being natural, perspective is a calculated illusion, giving the brain false clues so it will construct a virtual reality.*”<sup>19</sup> So

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<sup>18</sup> Unfortunately Zimmer chose a view done from the vantage point of the Mayor of Rome’s private office in City Hall, which is inaccessible to the public, and he used for comparison a Piranesi print where Piranesi’s adjustments were more subtle than in most of his other views, but his observation is likely to be germane to many of the other Piranesi *vedute*.

<sup>19</sup>book review of *The Invention of Infinity: Mathematics and Art in the Renaissance* by J. V. Field (Oxford Univ. Press, 1997), *Notices*, Journal of the American Mathematical Society, January 2000, Volume 47, Number 1.

fundamental is the acceptance of maintaining the verticals as parallel lines in architectural views that few question this, but in fact it is part of the “*calculated illusion*” that allows the visual construction of a virtual reality. In other words, the works of art demonstrate how artists and photographers have attempted to recreate how the eye/mind combination sees and interprets an image, not just how the eye sees it.

The universal acceptance of rectified images with parallel vertical lines in paintings and drawings since the Renaissance may explain why so soon after the invention of photography, cameras were constructed with a rising front lens board that enabled the film plane to be precisely vertical while the lens was shifted so that the view captured on film could show the top of objects that otherwise would be cut off if the lens were fixed. This continues to be the accepted practice for almost all professional architectural photography, as well as for the drafting of perspective presentation drawings of design proposals for new buildings, but it leaves open how horizontal perspective is to be represented.

Like his colleagues, Piranesi also followed the convention of rectified images, but his work demonstrates that different perceptual rules are at work for the horizontal planes. However, the reasoning behind his horizontal manipulations is fundamentally the same as why vertical lines were (and continue to be) adjusted to remain parallel in representational art. While converging verticals appear to conflict with the human mind’s effort to normalize verticals as parallel lines, the introduction of variations in the vanishing points for the horizontal lines do not trigger the same response. On the other hand, stretched objects at the perimeter of a view do often appear distorted and incorrect. In effect, Piranesi realized that the stretched distortion at the fringes of a wide angle view is perceived as less realistic than are the subtle shifts in the vanishing points, which are used to correct it.

Similarly, with the photographic overlays for the Piranesi Project, rectifying the vertical surfaces was the first editing adjustment carried out. (In this case the corrections were made with the software rather than with a rising front on the camera.) The photographs were then assembled, and the horizontal perspective adjustments were made to match those of Piranesi, not the rules of linear perspective.

### **Piranesian Perspective**

Working with Piranesi’s images at this level of detail raises many of the crucial issues of recent art historical theory on the “discovery” and use of linear perspective during and since the Renaissance. Intellectual and artistic debates over the correct application of perspective have dominated the discussions of two-dimensional art of Western civilization since the Renaissance. The introduction and proliferation of photography in the 19<sup>th</sup> and 20<sup>th</sup> centuries has narrowed that debate by adding a new and more limited truth – that of the optical correctness of what the lens can record onto film in a single increasingly short moment in time. This is what has been referred to in scientific and art historical debates as the “snapshot” view. Art historian Sir Ernst Hans Josef Gombrich, (1909-2001), in his essay, *Standards of Truth: The Arrested Image and the Moving Eye*, observed that art history “*has been written by critics (ancient, Renaissance, and later)*

*who have accepted the snapshot vision as the norm and who could not but notice how rarely it was adopted in the past. The images of great civilizations such as those of Egypt or of China were never constructed on these principles, and so their essentially different approach was seen as a deviation from a natural norm.*"<sup>20</sup>

Gombrich goes on to point out that human visual perception is not only limited at any one instant to approximately 90°. It is only the center of the eye – the “foveal” area – that records and communicates with the mind the level of perceptual acuity capable, for example, of producing readable text. *“Things are not just blurred outside of the foveal area, they are indistinct in a much more elusive way.”* The cone of foveal perception can be easily noticed by focusing for a moment on the title on the spine of a book on a bookshelf. While keeping one’s eye on a legible title, it can readily be seen that legibility is lost even for the next volume on the shelf until one shifts one’s eyes to that other volume. Thus, while people see and experience a wide field of view, the mind decodes and interprets that view essentially by scanning it with one’s eyes, rather than recording it in a single “snapshot” as a camera does. This means that each and every scene looked at by a person is experienced as a composite image “constructed” from information that contains not one, but many different perspectives with differing vanishing points seen in sequence over time.

While this observation initially may seem peripheral to a discussion on the use of perspective in two-dimensional images, it is actually central to the varieties of departures from fixed viewpoint linear perspective undertaken by Piranesi, as well as a number of other artists from the same era. The photographer Herschel Levit said that Piranesi did his drawings based on what he saw by turning his head – which a camera, other than a swivel panorama camera, cannot do in a single photograph. But, not only did he turn his head and observe the panoramic view he wished to draw, he also managed to interpret what he saw and compose his images in ways that avoided the signature distorted look of a two-dimensional panorama. Piranesi’s compositions are thus a product of his understanding that visual experience is an amalgamation of body and eye movement integrated by a complex cerebral synthesis of the perceived visual information. Cameras utterly lack this synthetic capacity.

For this reason, bringing the modern-day photographic images together with his eighteenth century views sometimes required as many as nine separate photographs taken in the field to form a mosaic three images high and wide, and it necessitated an elaborate disassembly and reassembly of the photographic images on the computer.<sup>21</sup> Only then could the resulting image even begin to cover the breadth of Piranesi’s view without “catastrophic” wide-angle distortion or panorama curvature. In many of these multi-photograph assemblies, the images on the sides would have to be rectified based on a vanishing point nearer the center of the composite image, but each side of the resultant image would usually have a different vanishing point from the other, resulting in a

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<sup>20</sup> E.H.Gombrich, *Standards of Truth: The Arrested Image and the Moving Eye*, in W.J.T. Mitchell, Ed., *The Language of Images*, The University of Chicago Press, Chicago, 1980.

<sup>21</sup> The one general rule I followed in “building” the overlay images was to make the changes to the photographs, rather than the Piranesi images, except for cropping to overlay certain details rather than entire images.

perspective recession that would be slightly splayed, which is not perceived by the viewer as a distortion. At the same time, the side elements are foreshortened more than they would be had a single viewpoint and direction of view been used for the image, but this also proved to be subtle enough to appear as a realistic two-dimensional image of the three-dimensional space.

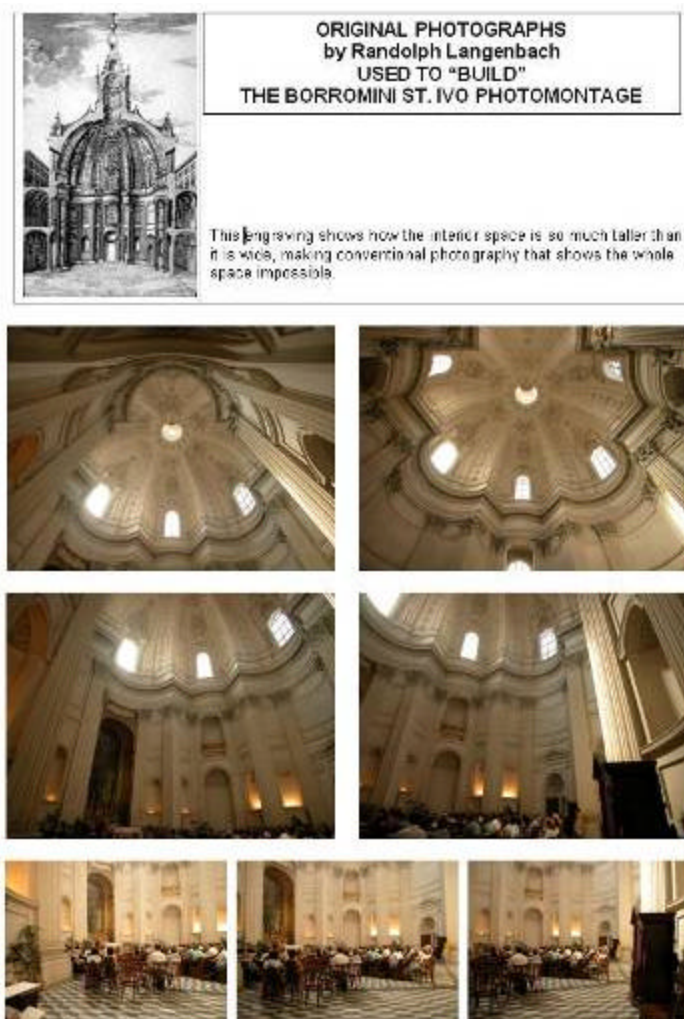


**Figure 9:** Photo-montage of the interior of St. Ivo della Sapienza by Borromini.

Piranesi's compositional devices were not limited to his use of wide-angle views with an enhanced foreshortening. In another example, Piranesi's view of the firewall of the Forum of Augustus was composed out of views from more than one station point, yet, as with the *Terme Grande* interior, the resulting image was a realistic view of the place, even though the entire length of the firewall is in fact not visible from a single viewpoint. To see the length of it requires walking along a path of over 100 meters along a narrow

lane in between buildings that were there in Piranesi's time, as well as in the present. These buildings block the view of the wall along the lane where it jogs around a corner.

This scene provides a good illustration of another aspect of human perception of importance to artists such as Piranesi – the element of *time*. At the site, the wall in all of its magnitude can only be perceived as a sequence of vignettes while walking along it, whereas Piranesi has collapsed this into a single flat image. In my own experience, it took a visit to the site with Piranesi's image in hand to realize that his image could not be photographed from a single station point, regardless of the angle of view even though I was already familiar with this same side of the wall. My prior experience of viewing the wall had coalesced in my mind into an image of the wall as a single artifact consistent with Piranesi's illustration, which, as it turns out, convincingly shows the magnitude and extent of the wall that no single photograph can convey.

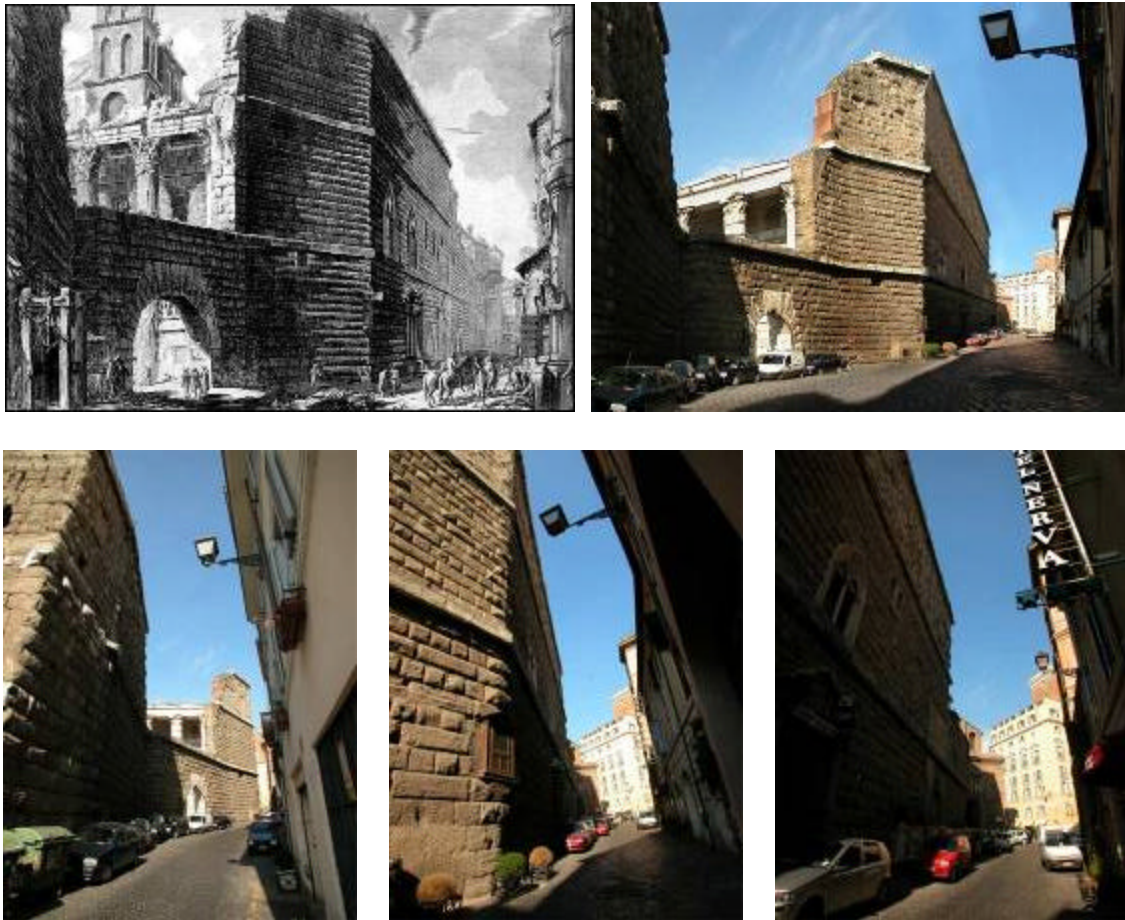


**Figure 10:** The seven original unaltered photos of the interior of St. Ivo showing how the dome can only be seen looking almost straight up. The period engraving shows how small the footprint is in relationship to the height of the space. The composite image was probably the most difficult and time consuming to construct into a realistic view that is representative of this complex interior since undertaking Piranesi's *Terme Grande*.

Just as A. C. Zimmer had shown in his tourists' responses to the comparison between Piranesi's *Campo Vaccino* print composition and Levit's photograph of the same view, the image of this static subject in my mind could only be assembled from visual information gained over the time sequence of walking along the wall. This composite

visual memory seemed consistent with Piranesi's image, which was both more compelling and more realistic than was possible with any single photograph taken in that congested space.

One of the important reasons why a composite image can look more realistic than a simple unmanipulated photograph of the same site is that the three-dimensionality of the actual subject space can only, in fact, be experienced on site by moving one's eyes and turning one's head, even if it does not require walking from one viewpoint to another. This simple phenomenon – the fact that we must move our eyes and turn our heads to see the world in front of us – may be the one most important reason why Piranesi's seeming violations of the fixed geometric rules of linear perspective often (but not always, as some of his views do look visibly distorted) have resulted in images that, as A. C. Zimmer demonstrated, appear to people to be more “realistic” than unaltered photographs of the same scenes.



**Figure 11:** The Augustinian Firewall, by Piranesi, together with the three individual photographs taken with a 19 mm lens (35mm equivalent) and the composite image constructed from them by Randolph Langenbach. The photo on the left is taken approximately 100 meters from the one in the center, which is 30 meters from the one on the right. The width of the street was the same in Piranesi's time as now.



**Figure 12:** (a) Interior of the Pantheon constructed from nine photographs (taken with a 19mm lens). This view covers an approximately 180° horizontal sweep, and the dome introduces a level of complexity that leaves some unavoidable distortion, but there is no other way using photography. (b) Image showing the individual sections of the montage. Each section is from a different photograph, except for the re-oriented oculus. The oculus, which can only be seen at the site by looking up, is distorted when the rest of the image is rectified to make vertical lines parallel. The shape of the surrounding coffers still shows this. (c) Photo from the internet<sup>22</sup> showing interior taken with a fisheye lens. Only an extreme wide angle or fisheye lens can capture the dome and the floor in the same a horizontal format image. Of the approximately 250 images of the interior of the Pantheon that can be found on a Google image search, there are no vertically rectified photographs of the interior that show the oculus, but many pre-photographic prints or paintings that do, including ones by Piranesi.

<sup>22</sup> <http://www.monolithic.com/thedome/pantheon/pictorial8.html>

## The Meaning of “Truth” in Art and Photography

These observations about the making of photographs that are edited to match Piranesi’s compositions with different perspective systems in the same image raise the question: *Are these composite photographs false?* Answering such a question, of course, raises the equally troubling inquiry as to what constitutes “truth” in representational art? In fact, for Piranesi’s art this is not a new question. Over the past two centuries, as the work and fame of Piranesi spread throughout Europe, some of the people who came to Rome sometimes expressed disappointment when it seemed to them that Piranesi’s interpretation of the Roman ruins had embellished what they found on the ground. Johann Wolfgang von Goethe (1749-1832), said in his *Italian Journey* (1788), “*The actual appearance of the ruined baths of...Caracalla, of which Piranesi has given us so many a rich imaginary impression, could hardly satisfy even our artistically trained eye.*”<sup>23</sup>

With the advent of photography, what is accepted as truth has shifted because the lens of a camera imprints the three-dimensional scene onto the film with an optical geometric accuracy. This type of literal accuracy, however, rarely has been the primary objective of the pictorial or topographical artist. A more important goal for the pre-photographic era artist when documenting a real, rather than an imagined, landscape or architectural subject is capturing the spirit of the place — in other words, capturing its symbolic image so that the meaning or interest that the artist has found in the subject is conveyed through his or her work to the viewer. Piranesi touched upon this phenomenon when he wrote:

*These ruins have filled my spirit with images that accurate [architectural] drawings...could never have succeeded in conveying. ...Therefore, having the idea of presenting to the world some of these images, but having little hope that an architect of these times could effectively execute some of them...there seems to be no recourse than for me...to explain [my] ideas through [my] drawings and so to take away from sculpture and painting the advantage...they now have over architecture.*<sup>24</sup>

The question of what is “truth” in artistic documentation is one of the most vexing issues to emerge during the creation of the Piranesi Project. The experience of working with the multiple photographs to “build” single images itself raises the question of whether the resulting images that are constructed to approximate Piranesi’s views of the same scene are themselves “false” because they no longer conform to the unretouched reality of what was exposed through the camera. In response to this question, one must recognize that a photograph is itself an abstraction. The camera’s rendition of the three-dimensional scene into a two-dimensional photograph is no less a transformation of the actual scene than are the results of the further transformations done on the computer to bring the images into

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<sup>23</sup>Johann Wolfgang von Goethe, *Italian Journey (1786–1788)*, trans. Heitner, (New York: Suhrkamp, 1989), p 363.

<sup>24</sup> Giambattista Piranesi, *Prima Parte*, *Prima Parte di Architetture e Prospettive* [First Part of Architecture and Prospect Views] (Fratelli Pagliari: Rome: 1743).

register with Piranesi's compositions, or for that matter, Piranesi's compositions themselves.

As the Piranesi Project progressed, and more images were made and modified into overlay images with Piranesi's and other artists' works, the fundamental question of what constitutes a realistic image began to take on some interesting variables. Digital photography and computer-based editing software has made it possible to manipulate images in ways that are difficult to detect – placing people together who have never actually been introduced, for example, but the topographical imagery that I was creating out of the photographs of Roman ruins were not intended to combine scenes to create fantasy views. These composite images were intended to reproduce real and familiar spaces. The editing changes made were done only with the elements already in the photographs taken at the site, but the perspective, foreshortening, station points, and boundaries of the images had been changed.



**Figure 13:** (a) Piranesi, Cryptoporticus at Hadrian's Villa. (b) photo-montage of same view, (c & d) Two of the unedited images taken at the site. The final montage combines two photos taken a few feet away from each other so to be able to show the two walls of the space as Piranesi did.

There are two steps in the creation of the Piranesi Project that served to elucidate the difference between literal and perceived truth of the images. First was the experience of taking the Piranesi images into the field. The second was showing the images to Roman colleagues who are familiar with both the Piranesi views and the actual scenes in the city. Many of Piranesi's etchings were of sites of which I was already familiar, but so subtle were many of his shifts from a "photographic" perspective and layout of the elements of his compositions that it was only when directly trying to capture the same view that I became aware of the shifts Piranesi had made from what the camera would reproduce in the field.

More interesting was the reaction of the viewers – especially those for whom the scenes documented were so familiar. Watching the photographic overlays emerge from the Piranesi views in the projected slide-video did not lead, as I had feared, to questions and criticisms on the veracity of the photographic images. In other words, the creation of the photo-mosaic from the multiple sets of images in the field did not make the resulting images unrealistic. Even those photo-mosaics that were created independent of one of Piranesi's views, but using the same technique as learned doing the overlays, proved to be accepted as realistic. Just as A. C. Zimmer demonstrated, looking “accurate” is as much a subjective as an objective process.

Since these were familiar views, the question of the veracity of the image is an important one, but in the several showings in Rome of the photographic production the veracity of the photographic images was never called into question. In fact, it was quite the opposite: the composite photographs actually served to rehabilitate Piranesi's reputation for the accuracy of his views. Historians, archeologists, and architects at the American Academy and in Rome, as well as the city planners of the City of Rome repeatedly commented that previously they had believed that Piranesi had manufactured a great deal of what he had drawn in his *Vedute di Roma* series, but that the photographic overlays dissuaded them from that belief for the first time. Seeing *veduta* after *veduta* dissolve into a photograph of the same view served to shatter the preconception that Piranesi's views were in fact largely invented.

Joel Snyder commented on the phenomenon of visual memory and interpretation that, in addition to paintings and drawings, relates to the interpretation also of these photographs with altered perspective recession, rectified vertical lines, and corrections of wide-angle distortion when he said:

*“Since the Renaissance, artists have had the ability to move ahead of the viewer, to make fresh discoveries about what we really see. This is not an unconditional freedom, but its very possibility implies a paradox. The artist can depict what we see because what we see is pictorial. And yet, in his paintings, the artist can achieve fidelity to his own vision based upon his knowledge of vision and depiction, and we will accept the picture as credible and warranted even though we may insist at the same time that we never quite saw things that way before.”<sup>25</sup>*

Thus the question has to be asked: *If so much work had to go into the editing and assembly of the photography to bring the images into register with Piranesi's views, how can it be that the viewers, particularly the historians and archeologists in Rome, would find the results realistic enough to provide an unquestionable basis for accepting the Piranesi engravings together with the photography as accurate and realistic?* I have come to believe that the answer lies in the fact that, while linear perspective with a single fixed viewpoint has its own rigorous geometrical rules, human perception of a topographic scene is not a “snapshot” view.

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<sup>25</sup> Joel Snyder, “Picturing Vision,” *Op Cit.* p234.

The way in which Piranesi turned his head and incorporated the shifted perspective that resulted in his impressions into his views comes closer to the reality of how all people perceive a view, than does an image constructed from a single viewpoint and direction. As we scan a view with our eyes, our sense of the perspective is constantly shifting in the same way that it does when we turn a camera to face in a different direction. The mind merges all of this information into a rational image of the scene – not with a single perspective geometry, but a composite one. Thus the composite photographs in the Piranesi Project looked even less distorted than did many of the unedited photographs before they were assembled into a single image. As E. H. Gombrich observed: “*Perspective cannot and need not claim to represent the world as we see it.*”<sup>26</sup>

## Conclusion

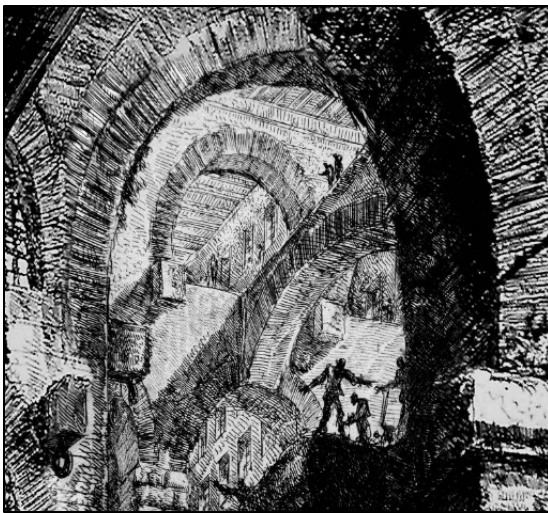
The act of “building” the composite photographic images based on Piranesi’s compositions using a computerized photographic process offered an opportunity to take documentary still photography in a direction I had never explored before, well beyond the realm of visibly overlapping mosaics, such as those done by David Hockney, or the more common curved or faceted panorama views. By being in Rome, the subject matter for this was unusually rich, and working with the Piranesi images gave the opportunity to document the changes to an iconographic human landscape over a quarter of a millennium of change. It also provided an opportunity to learn a great deal about the relationship between the imagery of a space and the space itself. Thus, while photography provides us with a documentary tool, the science of what makes both drawings and photographs of landscapes and cityscapes expressive and meaningful representations of the artifacts of human history and culture is a window into how the human eye sees and interprets space, rather than simply how the camera lens dispassionately directs light to form an image on film.

While it is true that some artists over the years since the Renaissance may not have fully understood linear perspective geometry, it is also more likely that the most talented among them may have deviated from it, as Piranesi did, for deliberate reasons. As explained by art historian James Elkins: “*Any perspectival picture that has more than a single object will suffer from internal inconsistencies because every painter assembles parts that don't belong together. That is true even of careful, analytically minded paintings.*”<sup>27</sup> Such deviations in art are, in fact, responsive to the simple truth that every individual moves his or her eyes in the act of seeing objects within spaces many times every minute. With each eye movement, the actual perspective of the view changes while the mind serves to integrate the experience. Artists, whether past or present, were (and are) likely to be conscious of this phenomenon. Piranesi’s gift was his ability to make the subtle adjustments of perspective necessary to gain the all-encompassing view of his subjects into his images without any apparent wide-angle distortion.

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<sup>26</sup> E.H.Gombrich, *Op Cit*, P209-10.

<sup>27</sup> Elkins, James, “Precision, Misprecision, Misprision,” *Critical Inquiry*, Volume 25, Number 1, Fall 1998



**Figure 14:** (a) This photograph of the substructure of the Septimius Severus Palace on the Palatine Hill show the kind of heroic scale to the ruins that so moved Piranesi. Although this view and others in this structure do not appear in his *Vedute di Roma*, there is strong evidence that this structure was influential in the delineation of some of the details in his *Carceri*, as can be seen in (b) a detail from *Carcere V* and (c) taken in the Septimius Severus substructure arches.



**Figure 15:** This image of Machu Picchu in Peru is constructed from three 19mm photographs and covers a width of approximately 130 degrees. The side panels are rectified sufficiently to reduce the “panoramic” distortion (convexity) to an imperceptible level, but adjusted to avoid the extreme wide-angle distortion that would exist if they were fully rectified to the vanishing point of the center image. Thus, the image, which has three different vanishing points imbedded within it, is intended to look as realistic as possible as a flat image of a sweepingly wide view that shows Machu Picchu in its mountain setting.

The experience of working on this project has made me realize that the same subtle adjustments can be integrated into photographs with the aid of the digital medium. As a documentary tool, the ability to make such creative manipulations may, in fact, be a powerful gift because it has the potential to expand documentary photography beyond its previous confines to show sweeping views of a subject that can then, not only inform, but also stimulate the viewing public to grasp – perhaps for the first time – the full magic of the powerful and deeply historic buildings they see and the landscapes they traverse.

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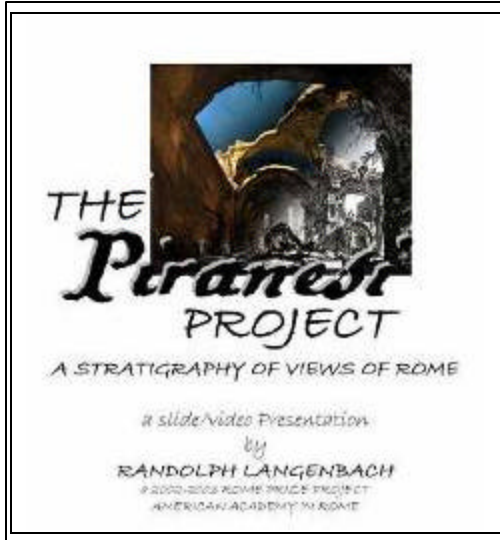
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## SIDEBAR

### A DESCRIPTION OF THE: PIRANESI PROJECT, a Stratigraphy of Views of Rome

The following section can be placed with the article, but formatted differently or running in a sidebar.



Over the course of the 2002-2003 academic year, while on a Rome Prize Fellowship at the American Academy in Rome, Randolph Langenbach produced a 50-minute digital slide/video presentation called *The Piranesi Project: A Stratigraphy of Views of Rome*. This video was inspired by the celebrated engravings that Giambattista Piranesi created between 1740 and 1778 of views of the ruins of ancient Rome. In the show, the Piranesi engravings dissolve into the documentary photographs taken by Langenbach from the same vantage points used by Piranesi for his engravings in his famous *Vedute di Roma* (Views of Rome). Langenbach

also applied the same technique to the paintings and engravings of other artists from the late eighteenth and early nineteenth centuries, and to a number of nineteenth century photographs which were included in the show.

Each image sequence in the show was created by assembling the modern photographs together with digital copies of the Piranesi and other historical views into a series of layers using Adobe Photoshop as a platform on which to assemble the paired images in a close registration. By fading from one to another layer in these overlays, a series of digital images could be exported in JPG format into PowerPoint in exact registration. The PowerPoint show was then programmed to fade from one image to the next in rapid succession, showing each step in the transition from the early view (usually a black and white line drawing) to the color photograph of the present-day view.

By assembling several photographs taken of a particular Veduta into a single flat-field view, Langenbach has succeeded in producing a series of composite photographs that document the same subjects as illustrated by Piranesi in a manner that closely matches his compositions—thus breaking free from the limits imposed by the optical geometry of each single photograph. This digital photographic project has thus provided a remarkable opportunity to explore compositional methodologies practiced by artists who have used the landscape of Rome as a source of inspiration in the years before photography.

At this time, plans are to produce the Piranesi Project video into a movie for projection and publication on a DVD. To learn more about this project, please go to: [www.conservationtech.com](http://www.conservationtech.com).