

# The Building of a Symbolic Image: The Juxtaposition of Giambattista Piranesi's *Vedute Di Roma* with Photographs Taken 250 Years Later

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## GIAMBATTISTA PIRANESI (1720–1778) AND THE VEDUTE DI ROMA

**G**iovanni 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>1</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>2</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 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>3</sup>

Piranesi designed his images to capture the entirety of complex environments of architectural ruins, so as to represent the experience of the Roman landscape to people who more than likely would not have had a chance to visit Rome in person. He aimed to capture the visual and symbolic essence of those artifacts, and to accomplish this goal he frequently, as Marguerite Yourcenar said, adjusted his vanishing points with shifts in the viewpoint and angle of view. At times he also combined views from widely separated viewpoints into a single image.

Piranesi shared his first and middle names with another famous engraver – Giovanni Battista Nolli (1701-1756) with whom for a time he worked. While Piranesi became the master of the view, Nolli was Rome’s greatest cartographer. Even though 20 years Nolli’s junior, Piranesi became a colleague of Nolli, reflecting their shared expertise in surveying and topographical detail. Piranesi, the great antiquarian and first generation archaeologist that he became, even took Nolli to task over the placement of the Theater of Pompey in Nolli’s *Pianta Grande*.<sup>4</sup> Piranesi was also a contemporary of the other well known Italian engraver of *Vedute di Roma*, Giuseppe Vasi (1710–1782), but Piranesi’s work demonstrated his greater scenographic creativity, producing an extraordinarily large body of work that is more evocative than any of

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1 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 engraving.

2 Ibid, p 11-12.

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3 Marguerite Yourcenar, *The Dark Brain of Piranesi and other Essays*, trans. Richard Howard. New York: Farrar Straus Giroux, 1980, p. 97.

4 See the chapter by Triff in this volume.

his contemporaries. Piranesi's name has even become an adjective in the English language: "Piranesian" – a reference to the kind of heroic but partially torn and ruined spaces that he both documented and, in other instances, invented.

What makes Piranesi's topographical art so compelling is that he managed in some of his most expressive prints to capture not only the essence of both the buildings and ruins as such, but also included the space that surrounded and enveloped the subjects. No longer are the subjects of his art simply archeological or architectural artifacts on display. The larger visualized spaces have become the subject, inspiring the viewer to seek them out on the ground in order to complete the experience. However, Piranesi was not creating images to serve only as memorabilia. In his writings, Piranesi described a very different and more 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.<sup>5</sup>

Piranesi succeeded in his 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. As the number of visitors to Rome grew, the systematic pillaging and quarrying 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 changes over the passage of time, and, ironically, the influence of photography have tended to separate it from its original subject matter. Tourists are sometimes familiar with his work, but rarely do they 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, notably Herschel Levit and Steven Brooke, have undertaken to document the sites of his views photographically, but Piranesi's compositions do not lend themselves to easy replication with a camera.<sup>6</sup> The attempts to capture the Piranesi

views with photographs have been frustrated 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 engraved scenes in their entirety. More importantly, such photographs also rarely possess the kind of taut energy and dramatic impact that characterize Piranesi's art. This fact may have contributed to the widespread belief that Piranesi somehow radically distorted his views or portrayed the monuments in imaginary settings.

Herschel Levit, an American photographer and art professor who undertook a project to photograph the same views engraved by Piranesi that was published in 1976, admitted in his preface that "*it is frequently difficult, and in some cases impossible, to correlate the views. Piranesi sometimes used a complete panoramic sweep approaching 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>7</sup> Steven Brooke, who later undertook a similar project with a view camera with swings and tilts<sup>8</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>9</sup>

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## PHOTOGRAPHY IN THE FOOTSTEPS OF PIRANESI

**T**he options available to a modern-day photographer working in Piranesi's footsteps 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

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5 Giambattista Piranesi, *Le Antichita' Romane*, 1756.

6 Herschel Levit, *Views of Rome, Then and Now*. New York: Dover,

1976; and Steven Brooke, *Views of Rome*, New York: Rizzoli, 1995.

7 Levit, *Views of Rome Then and Now*.

8 Levit used a fixed lens camera for his images.

9 Brooke, *Views of Rome*.

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>10</sup>

As photographer Steven Brooke correctly determined for his 1991 Rome Prize project, the use of a fisheye lens or panoramic camera, or the making of photomontages in the darkroom, would not be as likely to produce images from the same sites with the artistic quality that he could achieve with his view camera, which has 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 dramatically, and a different art form has become possible.

During the academic year 2002–03, like Steven Brooke, I was on a Rome Prize Fellowship<sup>11</sup> and was inspired to follow in the footsteps of both Piranesi and these recent 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 the deeply historic landscapes of Rome also became 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 (see figures 1 and 2).

My prior work as a photographer during the 1960's and '70's 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 (see Figures 3 and 4). 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 early modern industrial archeology to the archeological sites of Classical 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 in 2002 without the equipment for large format photography. Instead, I had 35 mm cameras and lenses, and a new five megapixel digital camera with a built-in zoom lens. Despite having purchased a substantial amount of 35mm film for the trip, I found myself only shooting digital images right from the beginning of my fellowship year in Rome. Unbeknownst to me when I purchased the camera plus the larger computer together with Adobe Photoshop software for the trip, I quickly found that the medium was not just a film-less version of film photography, but offered the craft ingredients for potentially a new art form. In the years since this fellowship, I find that I am still exploring the potential of this technology, as both the hardware and software continues to develop to this day. The camera, which was smaller than the 35mm cameras, proved to be flexible and suitable – especially because of the restrictions against the use of tripods and professional cameras at the Italian archeological sites.

Another feature that I discovered as the work unfolded was that the moveable screen on the little digital camera proved invaluable in taking photographs from an elevation well above my head, in sites that had been excavated since Piranesi's time. This feature alone made the entire Piranesi Project possible, whereas film cameras lack this feature. Back in the studio, the digital medium – with Adobe Photoshop software – enabled an immediate processing of the images which could then be checked against the 18th century engravings. More importantly, this technology provided the opportunity to “build” the images out of combinations of as many as nine wide angle photographs, to overlay onto digital copies of the work of Piranesi and other 18th and 19th century artists. This is what will be described in more detail below.

The “Piranesi Project” was not a preconceived project (my primary project under the grant was on earthquakes and traditional construction), but one that emerged slowly out of the experience of living and working in Rome for the year. In its final form, the slide/video *The Piranesi Project, A Stratigraphy of Views of Rome* included overlay images not only with Piranesi's 18th century work but the work other 18th and 19th century artists and early photographers. In 2012, work began to make this into a movie entitled *Rome Was! A Piranesian Vision* (see [www.piranesian.com](http://www.piranesian.com)).

My own decision to abandon the single-point perspective of traditional photography and explore Piranesi's and the other artists' art through the use of

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10 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 20th 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/>)

11 2002-03 National Endowment for the Arts Rome Prize in Historic Preservation at the American Academy in Rome.

digital image montages, which embody varying rules of perspective, was neither a single artistic decision nor intended as an academic art-historical analysis. It emerged when it became clear there was no other way to bring the images separated by a quarter of a millennium into visual register. At the same time, I was increasingly fascinated with the aesthetic and documentary results of doing the montages as the project expanded.

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## TIME AND CHANGE IN THE SYMBOLIC IMAGES

**T**he reason for photographing the *vedute* in Piranesi's footsteps was to explore how a quarter of a millennium had changed what was already an iconic landscape of the ruins of a past civilization. As a photographer, the act of taking Piranesi's *Vedute di Roma* to their sites transformed them from disembodied works of art on their own, to pieces that were seamless with the landscapes they illustrate. Suddenly, they appeared to extend beyond their frame – both in time and in 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, which gave the ruins new meaning as less static artifacts.

While the usual interpretive information for tourists focuses on the speculative reconstructions of what the archeological sites may have looked like in ancient times, in my experience the viewing of Piranesi's images at their sites had a far more evocative impact. Between Piranesi's time and our own, the ruins of classical Rome have been preserved and at the same time, transformed. 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 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 19th 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 fell from about 2 million to less than 50,000 after the collapse of the western half of the Roman Empire at the beginning of the era of the Byzantine Empire, centered on Constantinople.

The other change that affected all of the monumental ruins, including the Forum, is the stripping of the vegetative overgrowth (Fig. 5). 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. For centuries, except for their use as convenient quarries, the ruins had been largely neglected and allowed to become overgrown. Beginning in the 19th century, this vegetation has been systematically stripped off. The current presentation of archeological remains – denuded of vines, flowers or trees intermingled with the structures – is so accepted today as an inevitable and necessary part of their conservation that many people will be surprised to learn that there was a heated debate over their removal. Indeed, at the time of the first clearing of the vegetation and excavation of the archeological sites, many people shared the view expressed by French novelist Gustave Flaubert (1821-1880), when he 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>12</sup>

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## THE PIRANESI PROJECT

**A**s of 2002, digital photography had been widely 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 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 rectified images with a visual power that comes from a breadth of coverage, together with enhanced foreshortening that is impossible to capture in single photographs.

Despite its foundation on optical science, a photograph in truth is as much a two-dimensional abstraction of the original three-dimensional environment as is an artist's handmade image on a copper plate. Ironically, the seeming objectivity of the camera can on occasion be a handicap, as the resulting image can lack much

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12 From a letter to a friend quoted in: Christopher Woodward, *In Ruins*, Pantheon, New York, 2001, p 72.

of the sense of reality experienced by a person in the actual space. This is especially true when comparing photographs to the work of the most creative and observant artists in their paintings and engravings before the invention of photo-sensitive materials. One only needs to look at color 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," 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>13</sup>

Before the age of photography, painters and engravers were called upon to provide realistic views of the built and natural environment. 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 a single picture frame, 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.<sup>14</sup>

Today, the demand for illustrations of the environment is largely fulfilled by photography. 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. Nonetheless, 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 Project progressed, it became clear that departures from single viewpoint linear perspective enabled Piranesi to capture his sweepingly wide-angle views without extreme wide-angle distortion.

As a first example, I turn to Piranesi's engraving of the *Grandi Terme* (Large Baths) at Hadrian's Villa (Fig. 6). This particular image is one of Piranesi's most powerful and compelling images of the archeological ruins, and it was the first image that inspired me to undertake what later became entitled *The Piranesi Project*. In their wisdom, the curators of the modern-day archeological site at Hadrian's Villa had placed a copy of Piranesi's famous engraving of the ruins of the *Grandi Terme* on an interpretive sign at the site. This was unusual in that more commonly the interpretive signs include reconstruction views showing the sites in the ancient Roman era of Emperor Hadrian. Piranesi's engraving proved that the ruined structure had survived the additional quarter of a millennium from his time essentially in the same state of partial collapse as when he saw it, with the exception 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.

Upon finding the Piranesi view on the sign, I took a picture of it so it would appear on the digital camera screen, and thus I could carry this copy of it to the very spot where Piranesi would have stood to sketch his view 250 years earlier. From that vantage point it was readily apparent that the view that he documented could not be recorded in a single photograph – simply because it encompassed almost a full 180° sweep of vision. Six wide angle photographs<sup>15</sup> were necessary to capture with photography the entirety of the *Grandi Terme* that Piranesi captured in his single engraving (Fig. 7). Piranesi had avoided the "catastrophic distortions" that would have resulted from a single angle of view linear perspective of this scene by compressing the extreme edges of the view so that they would not look stretched and distorted, while avoiding the curvature or warping that is characteristic of the usual photographic panorama.

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13 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.

14 Lia Viviani Cursi, *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.

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15 A 19 mm lens (35mm equivalent) was used on the digital camera.

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 was viewed through the wrong end of a telescope (Fig. 8). 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 because of the wall that is right behind his viewpoint. 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 more than a modest alteration of the geometric rules of linear perspective when looking at his print. In effect, Piranesi had recomposed a view that a camera can only be covered with a fish-eye lens, into a seemingly undistorted flat image that realistically conveys a visual sense of being in the space.

This photography and the work within digital imaging software on the overlays – mainly Adobe Photoshop – served to expand my perception beyond that gained from years of architectural photography with a large format view camera. 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 what one sees in the field is different from a flat image of the same subject, and how the essence of this art is perceptual, rather than optical.

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## PERSPECTIVE AND VISUAL PERCEPTION IN THE CREATION OF FLAT IMAGES

**W**hen taking a wide-angle photograph, as demonstrated above, the visual effect of recession can be very extreme – making most foreground subjects look overly large compared to how they are perceived in space. Interestingly, the limit 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*.” He demonstrated 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> (Elkins 1994, 69).

Moreover, in extreme wide-angle photographs, 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 the *Grandi Terme*. To offset this effect, Piranesi enhanced the foreshortening of the sides, which served to pull the elements at the center of the image closer so they would appear larger despite the wide coverage of the overall view. (This can be seen by comparing Figure 6 with Figure 8.)

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 or the optics of a lens in a *camera obscura*, the film-less camera technology that was available in his time. He had also realized 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 the sense of realism (Fig. 9). Rudolf Arnheim describes this as a psychological as well as a visual phenomenon in *Film as Art*.

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

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16 James Elkins, *The Poetics of Perspective*, Cornell University Press, Ithaca, 1994, p69. It is interesting to speculate on what method Piero della Francesca 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 between the eyes setting the inside limit of the eye coverage and thus the limit of binocular vision. 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 to form the cone of binocular vision described above.. 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, depending on their size and position on the face, usually allow slightly more than a 90° cone of vision.

17 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))

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>18</sup>

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 from further back through a longer (more telephoto) lens. Unlike photography, however, his perspective shifts were exercised at his discretion rather than by the application of a single geometric rule. 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 moving back may be physically possible. While the layouts of his compositions were more consistent with wide-angle views, the perspective applied to the principle elements in the images was consistent with longer focal lengths. Piranesi's creativity is evident in how he managed to make his subjects look realistic and undistorted, even while expanding his horizontal coverage sometimes close to 180°.

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 of 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).<sup>19</sup>

To study this phenomenon, one can analyze how people perceive straight lines in space, and the difference between perfectly vertical and horizontal lines and forms, such as those with most buildings. 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 lens of the eye any more than it would be with a camera lens on a camera without swings and tilts.

The explanation for this lies in how the human mind interprets the visual data that the physical eye records. This mental interpretation process is different for images than it is for the original three-dimensional environmental space. For the 3D space, the mind automatically “rectifies” the scene. Otherwise people would not be able to look at objects or buildings located too far from the viewer for binocular three-dimension discernment and, for example, interpret the difference in shape between a Roman military fortification, with its battered wall, and a structure with precisely vertical sides. On the other hand, if a photograph is taken of this same scene with the camera pointed upwards, it can be difficult for the viewer to distinguish the sloping sides of a battered wall from the converging lines of vertical walls.

Such vertical rectification of the imagery by the artist is, therefore, 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 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>20</sup> So fundamental is the rendition of 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 that enabled the film plane to be precisely vertical while the lens could be shifted upwards to capture the taller subjects. This continues to be the accepted practice for almost all professional architectural photography,

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18 Arnheim, *Film as Art*, p 13.

19 Zimmer, A. C., “Multistability – More than just a Freak Phenomenon,” P. Kruse, M. Stadler, *Ambiguity in Mind and Nature*, Springer-Verlag: Berlin, 1995

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20 Anthony Phillips, review of J. V. Field, *The Invention of Infinity: Mathematics and Art in the Renaissance* (Oxford: Oxford Univ. Press, 1997), *Notices, Journal of the American Mathematical Society* 47 (2000).

but it leaves open how horizontal perspective is to be represented.

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## PIRANESIAN PERSPECTIVE

**L**ike his colleagues, Piranesi also followed the convention of rectified images, but his work demonstrates that, for the horizontal planes, he departed from the single point perspective that had evolved during the Renaissance. 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 visual confusion. On the other hand, objects at the perimeter of a wide angle view with a single central vanishing point do appear stretched and distorted, and thus incorrect to the eye. Perhaps from his early experiences growing up in the Venetian tradition of stage scenographic art, Piranesi came to realize that the stretched distortion at the fringes of a wide angle view is perceived as less realistic than are the subtle shifts in viewing angles combined into the same image.

Working with Piranesi's images by combining them with photographs of the same sites 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 19th and 20th centuries has narrowed that debate by focusing on 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), 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>21</sup>

Gombrich goes on to point out that it is only the center of the eye – the "foveal" area – that records and communicates with the mind at the level of perceptual acuity capable, for example, of interpreting readable text. "*Things are not just blurred outside of the foveal area, they are indistinct in a much more elusive way.*" 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 its entirety in a single "snapshot" as a camera does. This is true not just beyond the 90 degree width identified by Piero della Francesca described above, but also across the entire human field of vision, down to the level of a single degree. 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 vanishing points and viewing angles. If one also accepts the active and essential contribution of short-term memory, these composite images will also sometimes include different station points seen in a sequence over time (Fig. 10).

This observation is central to the varieties of departures from linear perspective with a fixed single viewpoint of the type undertaken by Piranesi, as well as by a number of other artists from the same era. Piranesi created his engravings based on what he saw by turning his head in a way that a standard camera cannot record in a single shot. He thus managed to compose his images in ways that avoided the signature distorted look of most photographic panoramas. Piranesi's compositions are, in effect, 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, even panorama cameras, utterly lack this synthetic capacity.

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 have resulted in images that appear to people to be more "realistic" than unaltered photographs of the same scenes, as A. C. Zimmer demonstrated.<sup>22</sup>

For this reason, bringing the modern-day digitally manipulated photographic images together with his eighteenth century views sometimes required as many as nine separate photographs to form a mosaic three

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21 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.

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22 Zimmer, Alf. C. *op cit.* Piranesi was not always fully successful in avoiding visual distortion in his views, as a few of his engravings do look visibly distorted.

images high and wide, as for example in Figure 7, and it necessitated an elaborate disassembly and reassembly of the photographic images on the computer.<sup>23</sup> Only then could the resulting single image even begin to cover the breadth of Piranesi's view without "catastrophic" wide-angle distortion or panoramic curvature. In these multi-photograph assemblies, the images on the sides have a different vanishing point from the others, resulting in a perspective recession that is slightly splayed. At the same time, the side elements are foreshortened more than they would be had a single viewpoint and direction of view been used. (See Fig. 6 as compared to Fig. 8) If undertaken in a subtle way, these manipulations of the image data are not usually perceived by the viewer as distortions. The objective is to produce a realistic two-dimensional image of a three-dimensional space.

Piranesi also used other important compositional techniques. In his view of the firewall of the Forum of Augustus in Fig. 10, for example, there are multiple station points, yet the resulting image appears remarkably realistic. This is true, even though most likely the entire length of the firewall has never been visible from a single viewpoint since Roman times simply because, along the narrow lane, buildings on sites occupied since ancient times block the view of the wall where the lane jogs around a corner. Even though one cannot actually see this wall in a single view, individual photographs of it fail to capture the sense of grandeur that it has when one walks along it from one end to the other. This 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, despite my prior familiarity with the wall. My experience of viewing the wall by walking along its length in the narrow lane had coalesced in my mind into an image of the wall as a single artifact consistent with Piranesi's illustration which convincingly shows the magnitude and extent of the wall, in a way that no single photograph can convey.

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 have resulted in images that, as A. C. Zimmer demonstrated, appear to people to be more "realistic" than unaltered photographs of the same scenes.

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### THE MEANING OF "TRUTH" IN ART AND PHOTOGRAPHY

**T**hese 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, when it comes to 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 encountering the ruins they first had seen in his images. 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>24</sup> Of course, one can only speculate as to which elements of Piranesi's images made his views more powerful than the real-life experience for Goethe.

With the advent of photography, what is accepted as truth has shifted primarily because the lens of a camera imprints the three-dimensional scene onto film according to rigid rules of optical geometry. However, this type of objectivity rarely was the primary objective of the pictorial or topographical artist. A more important goal for the pre-photographic era artist when documenting a real landscape or architectural subject is capturing the spirit of the place in a single iconic

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23 Piranesi was not always fully successful in avoiding visual distortion in his views, as a few of his engravings do look visibly distorted, but these were avoided when I was making the choices for the photographic overlays.

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24 Johann Wolfgang von Goethe, *Italian Journey (1786-1788)*, trans. Heitner, (New York: Suhrkamp, 1989), p 363.

view. 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>25</sup>*

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 originally 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 convert them to the pre-photographic perspective system of Piranesi’s era, and bring them into register with the best of Piranesi’s compositions.

Digital photography and computer-based editing software has made it possible to manipulate photographic images in ways that are difficult to detect – placing people together who actually have never 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 into imaginary views. These composite images are intended to reproduce real and familiar spaces in ways that would still look familiar. The editing changes 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 were changed.

It was not until the first showing of the Piranesi Project in Rome that I had the chance to validate the difference between literal and perceived truth of the images. This and subsequent showings in Italy did not lead, as I had feared, to questions and criticisms on the veracity of the photographic images. On the contrary,

most were startled by how “realistic” the photographs were. In fact, the composite photographs actually served to rehabilitate Piranesi’s reputation in the minds of the Roman viewers as to 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, until they saw the show, 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. In other words, the creation of the photo-mosaic from the multiple sets of images did not make the resulting composite images look unrealistic. It was quite the opposite. Just as A. C. Zimmer had demonstrated, looking “accurate” is as much a subjective as an objective process, and that perception is conditioned by how we perceive three-dimensional space by scanning the view with our eyes rather than remembering it as a “snapshot” view. Joel Snyder commented on the phenomenon of visual memory and interpretation 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>26</sup>

Art historian James Elkins made a similar observation when he commented: “*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> What I came to realize while undertaking this project is that the manner in which Piranesi turned his head and incorporated the shifted perspective into his views comes closer to the reality of how all people perceive an actual view in 3D space than does an image with a single station point and vanishing point. As we scan a view with our eyes, our sense of the perspective is constantly shifting in the

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

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26 Joel Snyder, “Picturing Vision,” *Op Cit.* p. 234.

27 Elkins, James, “Precision, Misprediction, Misprision,” *Critical Inquiry*, Volume 25, Number 1, Fall 1998

same way that it does when we turn a camera to face in a different direction, but the mind merges all of this information into a rational composite image of the scene. Thus the photo-mosaics 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>28</sup>

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## CONCLUSION

**T**he act of "building" the composite photographic images based on Piranesi's compositions offered an opportunity to take documentary still photography in a direction I had never explored before – well beyond the realm of visibly overlapping snapshots, such as those done by David Hockney, or the curved or faceted panorama views that now can be executed automatically with software in a digital camera or on a computer. In the course of this work, I found that when buildings and landscapes are pictorially portrayed on the flat plane of a painting or print, there is no single rule or mathematical formula that can be used to fully explain how they can be most realistically perceived, especially after the artist has made his contribution to the nature of that perception (for an example of an image created using the Piranesian compositional method on a different subject in Rome, see Figure 11).

Working with the Piranesi images provided the opportunity to document more than a quarter of a millennium of changes to an iconic human landscape. It also offered the chance 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 or an electronic chip.

Piranesi's gift was his ability to make the subtle adjustments of perspective necessary to gain an all-encompassing view of his subjects in his images without apparent wide-angle distortion. These then became the symbolic images that brought the existence of these disappearing cultural artifacts into the consciousness of all of Europe, and helped to save those artifacts for

posterity. The experience of working on this project has made me realize that the same subtle adjustments can be integrated into photographs, not only of Rome, but also of other places around the world 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, as it has the potential to expand documentary photography beyond its previous confines to show sweeping views of a subject that not only can 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. For information about the movie *Rome Was! A Piranesian Vision* made from this work, please see [www.Piranesian.com](http://www.Piranesian.com).

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28 E.H.Gombrich, *Op Cit*, pp. 209-10.

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Figure 1: An image from the *Piranesi Project* showing Piranesi's engraving of the interior of the *Atrio del Portico di Ottavia* overlaid onto a composite photograph by the author taken in 2003.

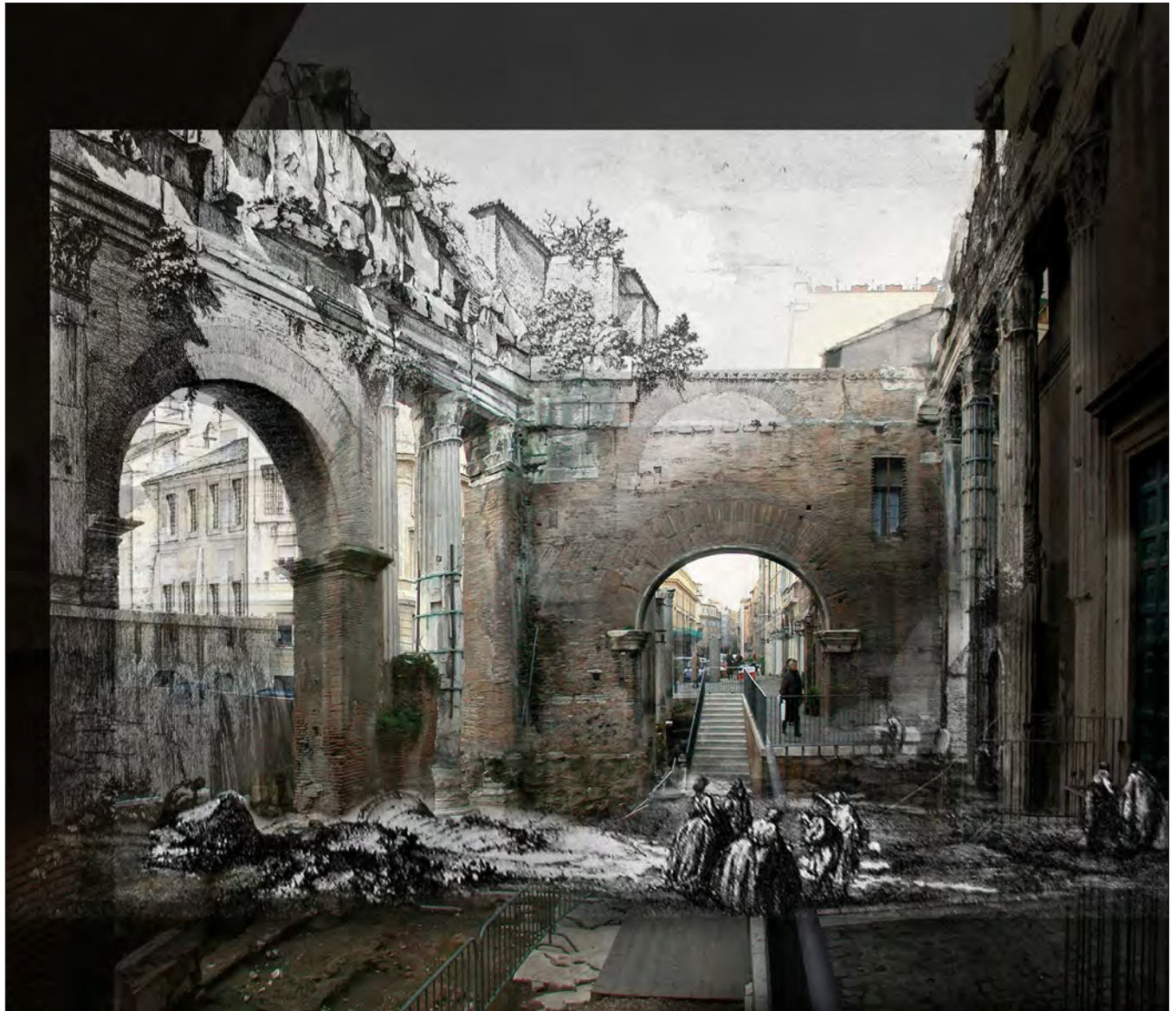
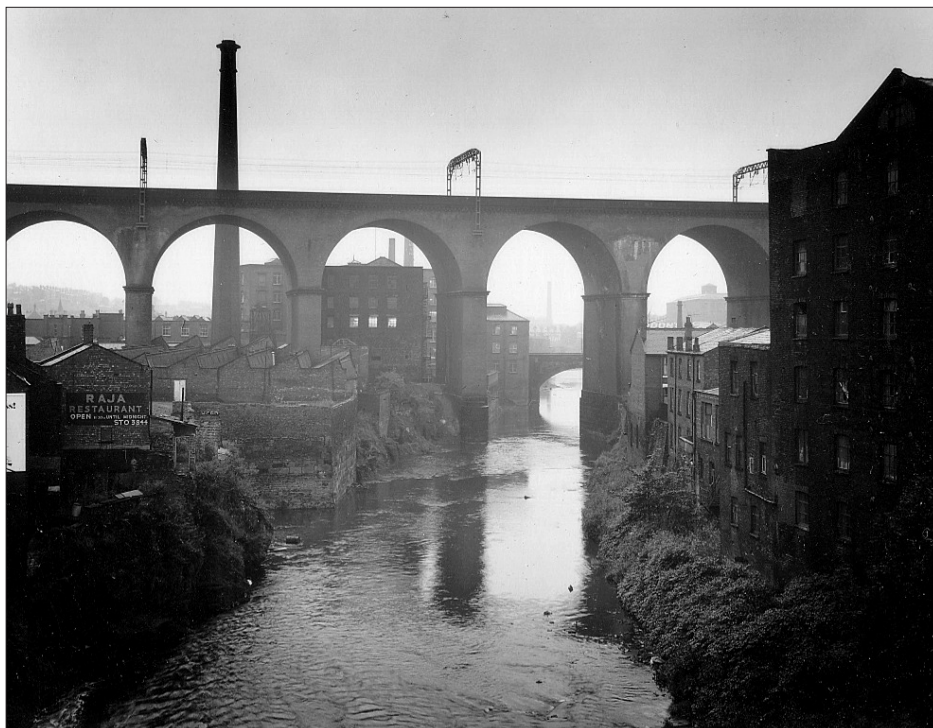


Figure 2: Piranesi's engraving of the interior of the *Anfiteatro Flavio ditto il Colosseo* with a single wide-angle photograph that shows a segment of the same view. This provides a comparison between what can be practically shown in a single photograph taken with a wide angle lens (equivalent to 19mm on a 35mm camera) and the breadth of view in some of Piranesi's compositions.



Figure 3: Stockport Viaduct, Lancashire, England taken by the author in 1969.

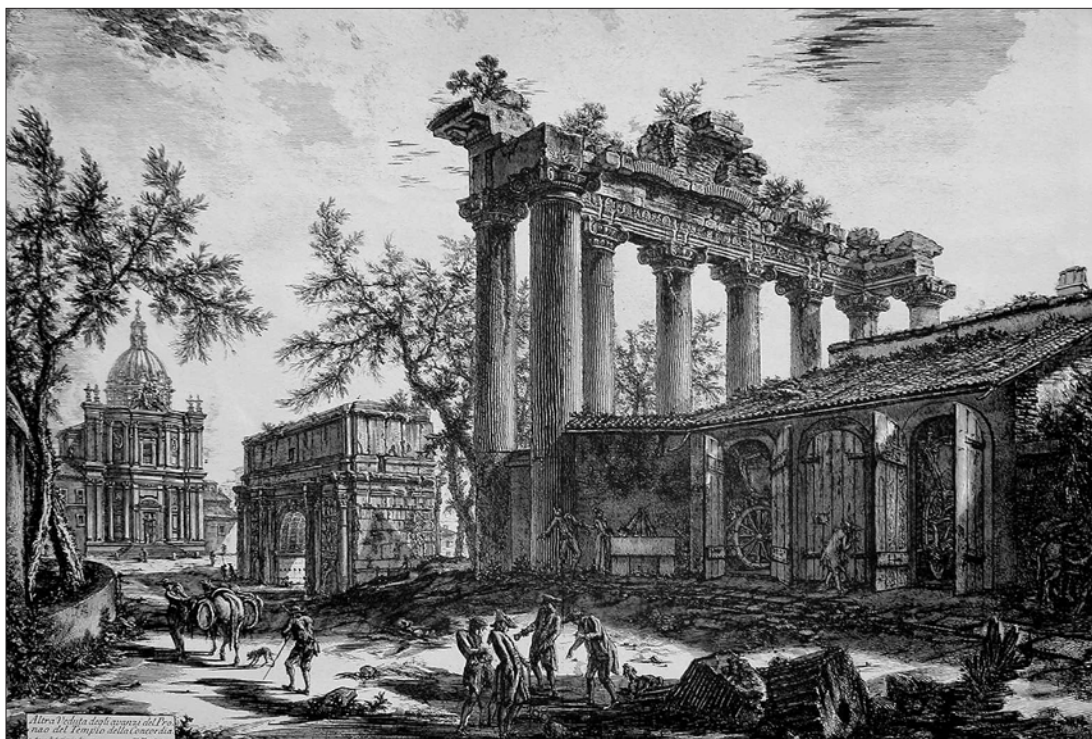


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Figure 4: The Amoskeag Millyard, Manchester, New Hampshire, USA before the demolition of the canal buildings on the right and filling of the canal for roads and parking as part of a government “Urban Renewal” project. From the collection of large format photographs taken by the author in 1966-1975.



Figure 5: (Top) Giambattista Piranesi, *Pronao del Tempio della Concordia*. (Bottom) Author's photograph of the same view reformatted to conform to Piranesi's perspective, 2003.



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Figure 6: The *Grandi Terme* in Hadrian's Villa with Piranesi's engraving on the top, and the same view in 2003 as a composite photograph by the author below. The fragment of the Piranesi image with the people seemingly floating in space shows where the ground plane was in his time prior to the archaeological excavations.



Figure 7: The 6 individual photographs taken with a 19 mm lens (35mm equivalent) used to build the composite image of the *Grandi Terme* shown in Figure 6.



Figure 8: The *Grandi Terme* photographs used for Figure 6 reformatted to show how the space would look if the view were constructed following the rigorous rules of linear perspective with a single angle of view and single vanishing point. The darker image in the center is one frame of the group of six used for this composite image.

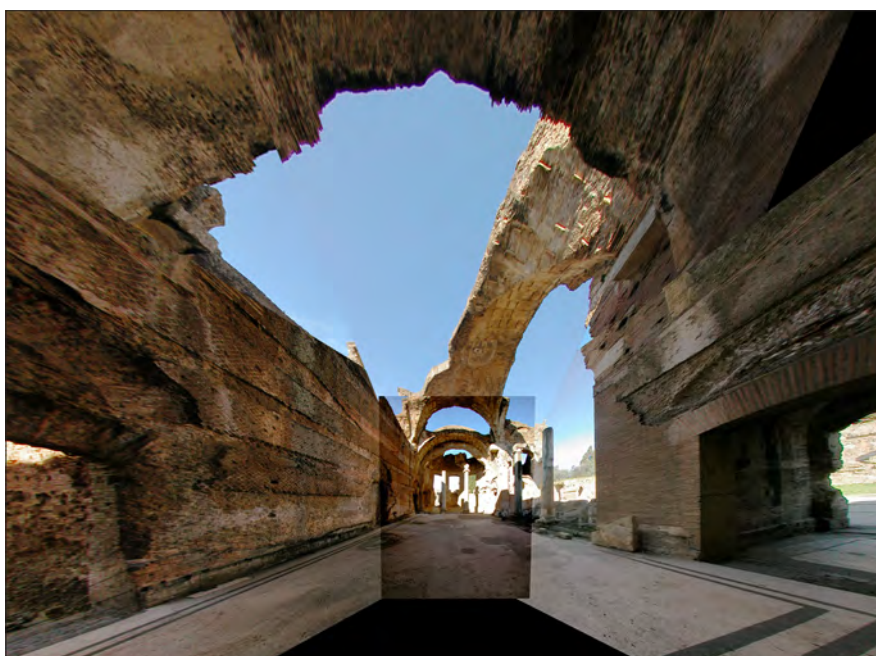


Figure 9: (Above) Piranesi, Island Enclosure, Hadrian's Villa, preliminary sketch. (Below) Same view, 2002, Piranesi's has enlarged the apparent size of the distant element on the left for dramatic effect. (The colonnade, fallen and buried in Piranesi's time and therefore missing in his sketch, has been unearthed and re-erected.)



Figure 10: 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 the author. 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 it is now.



Figure 11: The seven original unaltered photos of the interior of *St. Ivo della Sapienza* by Borromini showing how the dome can only be seen looking almost straight up together with the composite photo made from them using techniques learned doing the Piranesi Project. 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 the view of the *Grandi Terme* in the Piranesi Project.

