

CHAPTER 5.

WASTE: ROME'S ECONOMY OF REUSE



I am inside a cylindrical structure, about two meters deep and a bit less in diameter. Squatting at the bottom to examine the lower surface I glance up to see the towering structures of the imperial palaces on the Palatine Hill, framed in the circular opening above.

My assignment is to make a drawing of the surfaces of the walls, rough bricks partially coated with what appears to be vitrified stone. The non-profit institute I helped launch — and headed for several years — has partnered with Stanford and Oxford universities to carry out field research at the base of the Palatine Hill, behind the Temple of Castor and Pollux and along the *Vicus Tuscus*, an ancient road of Etruscan origins connecting the Tiber river to the Roman Forum. As architect for the project I move

from trench to trench, drawing plans and sections while young archaeologists work in the dust with trowels and brushes, collecting their finds in ziplock bags.

My training has prepared me to represent on paper my proposals for the future, and to document existing conditions in preparation for renovations, but documenting the past *as it is revealed* is a new experience. Instead of a single phase there are many, and the lines between them are hard to discern. It is challenging to “reconstruct” the building sequence while deconstructing the stratigraphy, and to do so without destroying the very object of study. The students from California, in particular, work slowly, in awe of the age of the fragments they uncover, and fearful of making irreversible mistakes on a site which has seen two millennia of human occupation.

Their concerns are not unfounded. At one point on about the third day of the dig the archaeologist from Oxford gives an “impromptu” speech he has probably made on countless digs. Holding a ziplock bag he removes a small pottery fragment and announces that it has been erroneously archived in the wrong context, a mistake which could have contaminated all the data and resulted in a serious misreading. With a dramatic gesture he lobbs the offending terra-cotta artifact, now a meaningless scrap, onto the trash heap while the offending student (mercifully un-named) and colleagues absorb the seriousness of the crime. What I take away from the lesson is this: what counts is not the material, but the information it represents.

In the well-like structure I am drawing in the archaeological dig, the surfaces are rough and dirty, clearly not designed for human habitation. The material melted onto the walls was the result of extreme temperatures reducing marble to its component parts, removing the carbon and oxygen from calcium carbonate to pro-

duce a material commonly known as quick lime. I am at the bottom of a medieval lime kiln, many of which were constructed in the heart of Rome to reduce ancient masterpieces to cheap construction material.

Alongside the kiln are chunks of carved marble, column capitals, fragments of sculpture. Regular blocks could be reused directly in construction but decoration reduced the value, leaving them useless except to burn for lime. Today we cringe to think of such waste, but I suspect our grandchildren will react the same way when told that we squandered millions of years of carbon reserves to drive our cars to the mall.

The finds that the young English and American archaeologists brush lovingly are pieces so bereft of value that they weren't worth the effort to remove, or perhaps they ended up here when the Forum was a waste heap and cow pasture. Much fine marble would be reused either in situ, for example in the conversion of an ancient temple into a church as happened to the Pantheon in the year 609, or more commonly elsewhere, carried to a nearby job site to hold up a medieval basilica. While the *calcarari* reduced marble to its chemical components, the *marmorari* salvaged, cut, polished and reassembled the stone to produce new floors and decoration, especially in churches. In the 6th century, as vestiges of the formerly grand civilization that was Rome lay crumbling on the seven hills, whatever didn't find a feasible second life would just stand there until nature took its course. In 1845 Faustino Corsi made a list of all the marble columns known in Rome to have survived from antiquity; there were 7,012 in total!¹

Medieval Rome in particular was marked by an innovative use of pre-owned materials, transformed through skilled labor into new forms. The Cosmati family of Trastevere, for example, took

broken fragments of marble and other fine stones, splitting and slicing them into usable tiles to assemble in new patterns. You can see their handiwork today, almost as good as “new,” in churches like Santa Maria in Cosmedin or Santa Maria in Trastevere.



Medieval lime kiln in the Roman Forum

Harvesting Pollution

Buckminster Fuller once said that “pollution is nothing but resources we’re not harvesting.” In nature there is no waste and no pollution, only nutrient cycles. If we think of things as “waste” we throw them out, if we recognize value in them we find a way to reuse them. One of the most vivid examples is the culinary tradition of the *quinto quarto*, or “fifth quarter,” where Roman delicacies are born of the creative use of every edible part of the animal processed in the slaughterhouses of Testaccio. Especially in times of hardship, such as the dark ages or Apollo

missions gone awry, humans prove themselves highly creative in discovering new uses for discarded materials. Limits make us smarter.

Walk around Rome and you discover everywhere ingenious examples of re-use. On a recent visit to an excavation north of the city we examined the remains of a *fullonica*, an ancient laundry, which used urine with its ammoniac solution as a bleaching agent. Some evidence suggests that, rather than presenting waste management problems, public latrines were profitable businesses — their “product” could be sold to farmers as fertilizer and laundries as bleach. And, of course, organic waste found a second life, feed for domestic animals or simply compost.

Construction waste, which makes up 25 percent of our rubbish today, did not exist in ancient Rome. Marble, imported at a huge expense from distant quarries, was used in its entirety. Irregular scraps left over after the cutting of large regular blocks and slabs could always be shaped into small mosaic *tesserae* and assembled into functional and decorative floors which can still be seen all over sites like Ostia Antica. The left over scrapings could then be reduced to marble dust, mixed with cement and used as filler in inlaid marble decorations. Random stones and discarded brick fragments could always find a new home in the concrete conglomerate which comprises most imperial buildings; it’s not uncommon to find a hand or foot imbedded in an ancient concrete wall, not the result of criminal vendetta, but the smart reuse of broken statuary.

Stratigraphy

Demolished buildings, reduced to masonry rubble and — unlike our modern construction — devoid of toxic materials, could be safely used as landfill to raise the city foundations to higher, more salubrious heights above the flooding Tiber. Grant Heiken

estimates that 93 million cubic meters of man-made debris has accumulated within the Aurelian Walls over the centuries, leaving the ancient city foundations at least two to five meters, sometimes as much as 15 meters, below modern world. You might assume that this happened after the fall of Rome, and it is true that from the 5th century onward large tracts of the city were abandoned and transformed by collapsed buildings, silt from the Tiber, and rampant vegetation. But the ground was already rising during the Roman Empire. Peer down into the excavations undertaken by Mussolini at Largo Argentina and observe grey tuff stone steps buried beneath white travertine paving and carved bases of temples that disappear into the ground below other ancient stones². As you stare into the sunken site at the ruins, cats and detritus of centuries of urban transformation, any simplistic notions of “original” make way for a more holistic understanding of layers and cycles. What we so nonchalantly call “ancient” was about 1500 years of evolution, during which the city changed shape and most importantly changed its ground elevation repeatedly. Like a parchment, erased and rewritten again and again, Rome represents a rich palimpsest.

Recycling in the Ghetto

Not far from Largo Argentina, in Rome’s former Jewish ghetto (still Jewish, though by no means a “ghetto” in the sense of an area to which a minority group is relegated) everywhere you see testament to the restrictions enforced by the papacy from the 16th until the late 19th centuries. Following centuries of persecutions, restrictions on property, ban on professions, obligatory participation in humiliating public spectacles and the like, a Papal Bull of 1442 forbade Jews from practicing professions and working any new materials. As a result, the community became known for innovative uses for old material, especially metals

and cloth. Metal scavenged from the structural supports of buildings such as the Colosseum or “discarded” by wealthier classes was molded and hammered into new shapes. Just as paper would be reused for writing and canvases painted onto again and again, cloth could be reworked almost infinitely. Old clothes were cut into small segments, like the stone tiles of the Cosmati, and restitched into beautiful decorative torah covers (*Bein Gavra*), many of which are on display in the museum of Rome’s main synagogue. Today jewelry shops and fabric stores abound in the neighborhood between the Tiber Island and Largo Argentina, descendants of these ventures born of limits.

The Eighth Hill of Rome

While dining on *offal* at Flavio al Velavevodetto, not far from the slaughterhouse in Testaccio, you may notice the glass cases containing an array of broken pottery. In fact, you are looking into the ancient mound of discarded amphora, known as Monte dei Cocci or Monte Testaccio. Rome’s first landfill anticipates modern waste management strategies of piling it up and burying it. But the hundred-foot high hill is composed solely of broken amphora, not the “monstrous hybrids” of our modern dumps, to use the term coined by Michael Braungart and William McDonough in *Cradle to Cradle*. Over time it has found smart re-use. The mound is conveniently porous enough to allow carving out workshops and storerooms.

In other sites, amphora never even made it to the landfill, being re-used to lighten the load of concrete domes over the Mausoleum of Helena and other structures. But the vessels designed to carry olive oil contained biological buildup which would contaminate construction sites; instead it was sprinkled with lime to render it inert and laid systematically in layers to form the

mound we see today. What was once waste is now valuable real estate in the center of the city.

As an added benefit, the porous mass provides for natural heating and cooling, making it a traditional location for wine cellars and a destination for summer evening festivals, chilled by the air filtering through the terra-cotta mound. Monte Testaccio is under investigation by a team of Spanish archaeologists whose findings shed light on the swings in productivity over time in the same way tree rings provide evidence of climatic swings. The ancient landfill is a valuable testament to the economy of the Roman Empire.

By contrast, everyday thousands of tons of what just yesterday was we called “goods” and paid good money to “consume” are piled onto trucks and taken to “waste treatment facilities.” For the past decades, waste management in Rome has meant one place and one man: Malagrotta, the property of Manlio Ceroni. Until its closure in 2013, 5,000 tons of trash would show up every day at what was Europe’s largest landfill. Some of it would be converted to energy through incineration or gasification, but the rest just piled up. And since 2008 this landfill has been, well, full. The proposed alternatives, a new dump site north of Rome at Allumiere, or Grottaferrata in the Alban Hills, or even within the limits archaeological area of Hadrian’s Villa, have all been rejected, leaving the question open.

The real problem isn’t finding another landfill site but reducing, and eventually eliminating, the waste produced. The Lazio region as a whole produces over 3 million tons of waste a year, with an average of only 30 percent recycled. Compare this to Germany’s 70 percent rate. The process is marred at every step: inadequate measures for separating waste in the home, at the curb, ineffective control at the processing plant leading to poten-

tially usable recycled materials being sent to landfill anyway. The lessons of Naples, where trash piled uncollected on the streets tarnished decades of hard-earned improvements in the city's public image, seem to go unheeded in the Italian capital. The *terre del fuoco* phenomena of the Neapolitan countryside, where residents and criminal organizations have taken to burning waste (with resulting toxic emissions), has become a reality in Rome. From the cupola of Saint Peter's, where white smoke announces the election of new popes during conclave, one can see plumes of toxic black smoke rising from the countryside, a gripping symbol that a lasting solution has yet to be found for Rome's practical waste management crisis.



Adaptive Reuse in Rome's Teatro di Marcello

Adaptive Reuse

It is fitting that Testaccio is at the hub of a neighborhood which

has seen some of the major adaptive reuse projects in Rome of the past decades. From the edge of the planned social housing of Garbatella, along the Via Ostiense and across the Tiber to the former soap factories in the Marconi quarter and the old papal arsenal near Porta Portese, the southern side of Rome is replete with abandoned industrial sites either undergoing or awaiting transformation.

The phenomena of gentrification we know from New York's meat-packing district or London's Canary Wharf is nothing new. Already in the late 1st century BCE Julius Caesar, realizing that the city was growing and its former edge was no longer central, began constructing a theatre where river docks had stood, moving the industrial ports further out of town to the west. Completed a generation later by his successor Augustus, who named it after his nephew, the Theater of Marcellus is at the heart of a new cultural center planned where warehouses and markets had stood decades earlier.

The theatre still stands between the Capitoline Hill and the Tiber, although its stage, which stood near where the embankments would later be built, collapsed long ago. Its architecture was copied from the Greek building type with a few Roman modifications, the most significant being its imposing free-standing position above the Tiber flood plains rather than being nested into the landscape, as Greek theaters always were. The structure is of concrete, dressed in the Greek architectural orders: Doric at the base, then Ionic, then Corinthian, exactly as used on the Colosseum a century later. Inside, the three tiers of bleachers could accommodate up to 20,000 spectators for performances of (mostly Greek) theatrical productions, both comedies and tragedies.

The Theatre of Marcellus was never demolished but rather lived

on as the city's quintessential example of adaptive reuse. Like the Colosseum and many other massive Roman structures after the city's decline and fall, the theater's arcades provided shelter for vagrants who moved closer to the river after the destruction of the aqueducts made it impossible to live on the hills far from any source of water. Powerful families took possession of these sites and fought to maintain control during the middle ages. The Frangipane family lorded over the ruins of the Colosseum, the Colonna fought their rivals in the Campus Martius, and the Theatre of Marcellus fell under the control alternately of the Caetani and Savelli and Orsini families. In 1550 the Savelli commissioned Sienese Architect Baldassare Peruzzi to create for them a respectable palace on the site and, in a surprisingly modern approach to cultural heritage, rather than demolish the theater, he used it as the foundations. I have had the good fortune to visit much of the building on various occasions, when the daughters of author Iris Origo used to rent out their gorgeous (and massive) apartments to exclusive visitors to Rome, or when the international law firm which owns part of the main floor have been gracious enough to open their rooms and gardens to participants in seminars I have taught.

I point out to visitors that this is probably the oldest inhabited building on the planet. Where else is a building dating back two millennium anything other than a museum or monument?

When Augustus evicted the industry from the Campus Martius it found a new home downriver. In the shadows of the Monte Testaccio landfill were emporia, warehouses, marble cutting yards, and industrial docks. Fittingly centuries later when Rome was chosen capital of newly unified Italy this area was once again designated as the site of what the master plan called the "noisy industries," referring to those facilities necessary to support city

life but undesirable in ones own backyard. NIMBY lobbyists in the noble families in central and northern Rome determined that Testaccio and Ostiense would be the sites for the slaughterhouse (1875), the central markets, the gas plants and electrical generation facilities, as well as river ports and train stations. In fact the presence of the river, rail lines and the ancient consular road (Via Ostiense) made this a highly strategic and desirable location. Public housing constructed in Testaccio and nearby Garbatella would provide the necessary manpower, while the great Montemartini generator plant would burn coal and later diesel to provide electrical power.

By the late 20th century the city had once again outgrown its bounds and the edge of town was again engulfed by the growing center. As industry moved elsewhere, abandoned factories were made available for redevelopment. Key to the platform of progressive Mayor's Rutelli and Veltroni in the 1990s and early 2000s were programs to reprogram these *industrie dismesse* (abandoned factories) and these same strategies are again on the tables of Mayor Marino's urban transformation team led by Giovanni Caudo.

The most acclaimed urban revitalization in Rome is certainly the transformation of the former Montemartini power plant into an overflow venue for Capitoline Museum collection. Built in the 1912, with several upgrades to its turbines in the 1930s and 1950s, this served as the city's primary power generator until its closure in the 1970s. In the early 1990s I experienced the industrial archaeology of the then-abandoned Montemartini plant as part of an "itinerant" performance of Kafka's *Amerika*, staged by director Giorgio Barberio Corsetti. The play opened on one of the unused platforms of the Ostia Lido train station, moved (by metro) to Garbatella and the Montemartini, and culminated

in a bonfire on the banks of the Tiber. The use of the machines of the former power plant as a stage for contemporary art demonstrated once again how the ephemeral can provide a catalyst for urban transformation. About eight years later, in 1997, the *Ex-Centrale Montemartini* was renovated as an experiment and hosted the temporary exhibit “The Machines and the Gods,” a display of classical statuary and other finds from Roman excavations which the Capitoline Museum lacked the space to put on display. The critical success of the exhibit from its opening resulted in its extension as a permanent showcase for ancient and industrial archaeology, set off against one another in a poetic and compelling juxtaposition.

The museum’s economic failure (averaging just a handful of visitors a day) shouldn’t be blamed on the strategic or aesthetic choice but rather on the city’s inability to keep tourists, who should be the prime resource for economic growth, for more than a couple of days. The potential for adaptive reuse of industrial archaeology, like the reuse of the ancient Theatre of Marcellus, is thrilling to any visitor who take the time to explore this alternative Rome, beyond the Colosseum and St. Peter’s. Sadly, the city today, mired in illegality and marred by blight, repels its visitors while seducing them. After a day or two, tired of dodging cars, waiting for buses that never come, finding museums closed or overcrowded, shocked to see pickpockets and illegal vendors working undisturbed under the nose of the authorities, licking their wounds, many leave frustrated vowing never to return.

Places of Waste

Like many architects, I am in love with simple, minimal elegance, with clean lines and stripped down, ordered space. But I have become increasingly aware of the cost which accompa-

nies minimal design; behind any minimal looking design usual lies an inefficient mess hidden away somewhere, often far away. It is this dialectic of clean space/messy space which we need to recognize in design of any scale, including cities.

At the smallest scale of domestic space, this is the role of closets. In order to have a tidy, slick, minimal interior we do one of several things: 1. strip our lives of most of our objects, something many of us strive for but few really want to achieve, so we do 2. periodically throw the clutter in the trash, and when we need something go out and buy it, unless we are lucky to have sufficient storage space in which case we do 3. store the clutter but keep it nearby for when it might come in handy. Of course, #2 is the least efficient and (if we dismiss #1 as a pipe dream) #3 is by far the best solution. It results in a place that is neither on stage nor discarded; a kind of wings where stuff can wait unobtrusively (a concept I recall as being key to the simplicity of Japanese homes).

I'm a packrat as well as a design snob, which means I fill this kind of middle space (my basement, storage lofts, walk-in closets) with things that I have no use for at present but anticipate some unknown future use.

At the scale of urban space a similar concept applies, but storage of detritus is rarely designed into master plans; it just happens. It fills the gaps alongside railroad tracks, it is tossed into landfills, and at best it shows up at flea markets and junk yards. These places usually go by the label "blight" and urban design seeks to eradicate them, which only serves to raise the cost of waste and the need for consumption. This is not the "Junk-space" Rem Koolhaas extols. It is closer to Alan Berger's concept of Drosscape, "large tracts of abused land on the peripheries of cities and beyond, where urban sprawl meets urban derelict-

tion,” which in turn derives from Lars Lerup’s use of the term “dross” in contrast to “stim,” the stimulating, deliberately developed urban areas.³ Observations of third world squatter towns provide abundant precedents for the smart use of what we in the first world often dismiss and discard as waste. Scott Brown tells of the Cape Dutch farmhouse she visited in South Africa where the floor was made of cow dung and peach pits, “seen as valuable resources, not waste, in that society.” Enough material exists on the space of waste (not to be confused with the waste of space) to devote entire urban design studios.

But idealizing/romanticizing “dross” is at best unnecessary and at worst pathetic and counterproductive. It should be recognized as useful piece of the urban puzzle, considered and provided but not aestheticized. Of course, the gritty marginal spaces of the city feature prominently in fiction and films— think of Pasolini, Jim Jarmusch, Wim Wenders and countless others— but this is quite different from recreating the aura of abandonment in new design. Michael Benedikt refers to “ environmental stoicism,” our “ability to tune out places that are cheap, neglected, depressing” but also what he calls “place machismo,” the tendency— of architects especially —to find inspiration in the grim embrace of harsh realities such as abandoned factories, gypsy camps, railroad sidings, and the likes.

An architecture which deals appropriately with such space of waste should do so practically and ecologically, with the same approach we use for organic farming. The goal should be to reuse whatever is on a site as close to the site as possible without damaging the health and well-being of the residents, but rather contributing to the on-site economy.

Innovative Reuse

Examples abound of economic phenomena based on innovative reuse. Often the consequence of poverty, many of these occur in the informal economies of the developing world. On the outskirts of Cairo the Zabbaleen, a community of Coptic Christians, collect, sort and process the city's trash, separating out reusable and recyclable waste and, until a 2009 health law forbid it, feeding food scraps to pigs. Slums in general, as Stewart Brand has observed, rely on the adjacency to wealth in order to glean from its waste, a mutually beneficial synergy that is undermined by misplaced attempts at cleaning up the city, like the slaughter of pigs in Cairo. In Rome it is common to see Romani from Eastern Europe rummaging through dumpsters, mining the city's trash for resources. The activist group Stalker-Osservatorio Nomade has recognized the innovative value of this activity and focused a series of workshops on the Romani communities. Such synergies work less well when the global north and global south are kept separate, distanced by space and high security fences, and yet the informal economy thrives even there. Like dark energy in astrophysics, Brand says, "it's not supposed to be there but it is."

In more recent cases, re-use has arisen from a conscious desire to live more sustainably and here too examples using found materials abound, from the Rural Studio projects in Alabama to the Cirque du Soleil headquarters in Montreal, Italian organizations like *Cianfrusoteca* and *Barotopoli*, the Dutch Atelier *Bom Design* and countless others. From an economics of frugality, re-use has now become trendy, not in itself a reason for dismissal. The ethics of environmental awareness has found its match in a green aesthetics. Culture and sustainability, often poised in opposition, have found common ground in old stuff.

Re-use, perhaps even more than other productive activities given its space requirements and low economic value, often takes place in the public realm. The overflow of productive activity into informal public spaces often takes place when growth meets its limits, spatial or economic (usually one and the same). Many productive activities begin by default in the public realm. Hunting and grazing took place in the wilderness and the commons before the enclosure of agricultural lands and game reserves. Selling was itinerant until the establishment of a reliable enough market to support a fixed location. “Place taking” precedes “place making.” Businesses usually start on kitchen tables before graduating into purpose built facilities, performing essential innovations in coffee shops and public libraries. Rock bands and high tech start-ups both famously begin in garages and seedy bars, alternatively occupying the extremes of cramped private spaces and vibrant public ones before finding their own, often banal, middle ground in functionally specific containers. These extremes of public and private work together to offer a surprisingly efficient venue for productive work; in my limited private space I store personal things, retreat to privacy, but when I want a change of scene, a breath of fresh air, society, stimulus and open space I bring my laptop out to the piazza or the park.

Especially when work requires space or involves irritating substances moving outside is the best option. From pueblo villages to European medieval towns, craftspeople have often set up temporary workplaces in the public realm.

Throughout Rome, still today tiny workshops spill into the streets in warm weather. These artisans are an endangered species in the late capitalist economy, evicted to make way for fast food, souvenirs, slot machines, internet points and the like, especially in the touristic center of Rome. However, the very

existence of blight-ridden, abandoned property in the center of the city may provide the opportunity for survival of an economy which bypasses the cycle of consumption and disposal and instead promotes local, informal productive use of public space and the smart use of information technology.

La Periferia Centrale

One of Rome's most archetypically marginalized sites is at the heart of the city, along the Tiber river, a short walk from the Circus Maximus. For several years the California Polytechnic University Rome Program and other American architecture courses have focused on this site for workshops aimed at proposing an architecture of and for material reuse.

The premise of the workshop was that cities produce waste and consume materials and energy, but this is not necessarily "by nature." Products which today become broken or obsolete are discarded when they could be repaired, reused, regenerated or, as a last resort, see their component materials recycled. Traditionally, such activities have often been marginalized, performed by outcasts in blighted parts of cities. Rome, however, has a tradition of productive workshops in its historical center, now being rapidly forced out of existence by global economics. In an emergent green economy this work will become more appreciated and more central to a mixed use urban ecology.

The university projects called for the transformation of the site of the former papal arsenal at Porta Portese into a Center for Rome's (traditional and emergent) "Green Economy," an urban resource center or a center for material reuse—anything but a "junkyard." The challenge was to create a vibrant place in which urban synergies and efficiencies are maximized, by design, to reduce "waste" to close to zero.

Another goal of the Center is to bring production and commerce back together. It intends to provide workshops to some of those artisans who fix, produce and sell objects, but have been forced to move out or to close down their business. The project brief called for “an area of buildings and open spaces dedicated to the stockpiling, repair, dis-assembly, reuse and recycling of used technology, from bicycles to computers, including everything but motor vehicles (which require more space and produce more toxins). It would be a place where people can bring things to fix or hack, where someone can drop off a broken washing machine knowing it will be treated as resource, not waste.

Interestingly, many of the projects started with a strongly digital framework, a database of parts and system for cataloging and sorting, observing that often the problem is not “not having” the part but not finding it or recognizing its potential. Sophisticated storage systems emerged, resembling libraries or archives more than yard sales. The role of creative arts was held foremost with studio spaces for visual artists and designers who use found materials in innovative ways; many projects integrated design and manufacturing in adjacent spaces.

In all the more successful projects the result was not a closed facility but an open community space including public gardens with agricultural use, integrated with the river’s ecosystem. While commerce is present in the projects, as is gastronomy, it is part of a near closed-cycle loop, especially when considering the greater community of Trastevere and Testaccio. In reviewing the outcome of the workshops, the participants and critics observed that the resulting public spaces provided a role for all kinds of knowledge, from the know-how of the old-timer ready to give out technical advice to the open source sharing of systematically catalogued data. By grounding social encounters in

material objects, but rejecting the obsessive and ecologically dysfunctional “discarding of the old to make way for the new,” more complex relationships are made possible.

Public space is energized by the innovative re-use of materials and plays a productive civic role. Out of this experience came the master plan proposal for the urban makeover of the Porta Portese neighborhood elaborated by my firm, TRA_20, in 2013.



Piazza di Pietra, Rome

Square of Stone

The results of the Cal Poly workshop for Porta Portese were put on display in 2010 in an exhibit entitled Foreign Architects Rome (FAR) at the Temple of Hadrian on Piazza di Pietra, one of the city’s most elegant piazzas. The occasion was part of the Festa dell’Architettura and included the work of nine university programs (members of the association AACUPI) and an equal number of architects from the various foreign academies.

A more appropriate venue could not have been chosen to display projects related to adaptive reuse. Originally built in about 140 by Hadrian's adopted son and successor, Antoninus Pius this monument stood tall above the Campus Martius, its 50-foot marble columns surrounding the stone faced *cella* containing a statue to the deified architect-emperor Hadrian, responsible for the Pantheon (just down the street). Over the centuries the temple has seen numerous transformations, acting as Napoleon's offices in the early 19th century, Rome's stock exchange in the mid 20th century, and now, since the 1990s, an exhibition and conference space for Rome's Chamber of Commerce.

Its street address in Piazza di Pietra tells another story, one of material reuse. *Pietra* (stone) was the material available to be quarried from the eroding temple, most likely to be burnt for quicklime in the lime kilns. Appropriately, material reuse was the subject of our students' principle design project, on display along a selection of quotes used to express the issues being addressed and their global-local urgency. Visitors were impressed to see the attention of the international architectural world focused not just on the historical monuments and cultural traditions of Rome, but on the complex urban systems that make any city an effective ecological habitat.

Bridging the Gap

In the 1970s and 80s, when I was in architecture school, after an important but very fleeting burst of environmentalist thinking from the likes of British economist E. F. Schumacher (Small is Beautiful) to American engineer Buckminster Fuller (Spaceship Earth), an interest in history again emerged. People began to recognize the artifacts present in the city as repositories of meaning, rather than obstacles to progress.

For theorists of the post-modern, the value of history was often in its age and its aura, the associations that come with it, not in its actual material. Architecture was so busy trying to look “contextual” or vaunting pithy, mannered, historical references that it ignored its own role in the evolving city, often replacing real history with an ersatz version. Fortunately, little of this marred Italy, although Italian architect Aldo Rossi was one of its (inadvertent) perpetrators.

Instead of reading history as pure meaning to be quoted knowingly (the historians’ reading) or as pure material to be recycled (the bricoleur’s reading), can architects accept the complexity on both levels, treating urban design as a process of increasing knowledge and performance through critical acts of preservation and urban transformation? Ruskin said “Take proper care of your monuments and you will not need to restore them.” For Cesare Brandi the first step in deciding if a work of art is worth preserving is recognition of it as a work of art: the second step is preserving its material support. This distinct yet inseparable quality of aura and tangible composition, of meaning and material, underlies our reading of cities. In fact, Brandi’s brand of critical conservation is the basis for the accepted Charter of Preservation.

Jane Jacobs said that “old ideas can sometimes use new buildings⁴. New ideas must come from old buildings.” Stewart Brand distinguishes between high road buildings that can’t be touched and “low road” ones that are street tough, that you can put a nail into without complaints. Then there are “no road” buildings, or what Brand terms magazine architecture. According to cyberpunk writer William Gibson “the street finds its own uses for things.”

The challenge as a designer in a rich and complex urban context

(none more so than Rome) is not to compete and to stand out; with exceptions made for temporary exhibits and ephemeral projects of which Rome has a great history, most architecture has consequences that should prohibit it from following fleeting trends of fashion. No one but a few critics and historians will care about how daring or unprecedented a project was after it has been in place for a few decades. Nor should our objective be to embalm the past under glass as if history has ended.

Carl Elefante's observation that the greenest building is one that already exists is a starting point, not an end. I believe we can dialogue with the past, operate on our cities in ways that improve not only our performance, but also our fit. It is not enough to reduce the negative impact of our cities. We have to ensure that our impact is positive and regenerative. It is a design problem in which the architect has the onus of bridging the gap between cultural knowledge and scientific knowledge.

Notes

1. Corsi, Faustino, 1771-1845: *Delle pietre antiche* (Roma : Tipografia Salviucci, 1833)
2. Largo Argentina is now better known for the cat sanctuary which shares the space with the ruins, profiting from the fact that when archaeology is protected its feline inhabitants will also be safe from the risks of modern life.
3. In addition, Kevin Lynch addressed the positive aspects of waste space in his last work "The Waste of Place," and Denise Scott Brown, in a talk called Art of Waste presented at Basurama makes similar observations.

4. Jane Jacobs, *Life and Death of the Great American City*. (Cambridge, MA: M.I.T. Press, 1961)