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Architecture of Sustenance

by

terence william tourangeau, b.a.s.

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in partial fulfillment of
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abstract

This thesis contends that our contemporary desire for “sustainability” is undermined by the fact that we have forgotten what it means “to sustain”. As such, a return to the forgotten practices of architectural sustenance is necessary to remedy this dilemma, so that an Architecture of Sustenance might arise, like a Phoenix from the ashes generated by the amnesia of contemporary “sustainable” building practice.

The Greek concept of *mnēmē* is presented as the fundamental means of sustaining our self, and it serves as the basis of an understanding of sustenance. It grants us a metaphorical tool for understanding the usage of *rediviva saxa* in translating the Roman Empire from pagan worship to Christianity in Late Antiquity, and leads to a discussion of the memory-obsessed Middle Ages, providing context for the practice of using *rediviva saxa* and the rise of a new aesthetic involving *varietas* and *vetustas*. Harold Bloom’s concept of influence as a form of misprision with the past, applied to buildings built with *rediviva saxa*, sets the stage for a contemporary Architecture of Sustenance.

Derived from the work of Gordon Matta-Clark, Garth Rockcastle, and Santiago Cirugeda, the contemporary *rediviva saxa*, termed mnemets, are conceived as the constituent element of an Architecture of Sustenance – they are *of mnēmē* – and are deployed in the design of a Kindergarten sited in Ottawa, Ontario. Taken from unused and dilapidated buildings in Ottawa, the mnemets - by virtue of their subtraction and translation – fulfill the promise of an Architecture of Sustenance: they renew an existing space with their absence while construing a new one with their presence.

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“...there are but two strong conquerors of the forgetfulness of men, Poetry and Architecture; and the latter in some sort includes the former, and is mightier in its reality...”
—John Ruskin

Introduction

Contemporary “sustainable” architecture is resource-intensive, relying on heavily processed materials -- recycled or newly made -- to create technologically advanced structures which may or may not eventually offset the pollution which they initially created. Regardless of this offsetting, pollution is still created and resources are consumed. It is a practice which is antithetical to its own goals.

Despite their widespread usage in contemporary architectural circles, the words *sustainable* and *sustainability* do not describe anything specific -- the suffix of *-ability* only describes the capacity for something to, some day, fulfill a potential. Derived from the Latin *sustinere*, “to hold up, support, endure”,¹ variants of *sustain-* are deployed in architectural cir-

cles to refer to buildings which, by virtue of their perceived small carbon footprints and energy efficiency, have the *potential* to “hold up”. What they are holding up is not specific, though in common usage the term connotes environmental support. *Sustainability*, then, refers the holding up of the environment through the production of new architecture.

The declining state of the environment, combined with the increasing scarcity of natural resources and heightening economic uncertainty, presents us with the need to discover building practices which are capable of truly sustaining us. It is a mistake, however, to believe that the investment of energy and resources into new construction is able to sustain – it is an open-loop process which requires input in order to generate output. How is architecture to sustain if it is constantly consuming the environment?

If we look to *sustinere* again, we may decide to follow a different route. The same word leads to the Late Latin concept *sustinentia*, “endurance” which derived from the Latin *indurare*, “to make hard against”. Fundamentally, it is the branch of *sustinere* which “sustain” has forgotten. *Sustinentia* is a more concrete concept – it is the basis upon which the ability “to sustain” is based, as it is *of* endurance. *Sustenance*,² with its connotation of nourishment, comes from *sustinentia* and it will serve as the basis for our discussion.

While sustainability denotes “capable of sustaining”, sustenance connotes “the means of sustaining”. This thesis contends that if architecture is to sustain, we do not need sustainable architecture – we need Architecture *of* Sustenance.

The most fundamental form of sustenance for human consciousness is memory, and it is the point of departure for an Architecture of Sustenance. From its Greek heritage, through modern philosophy and the work of Marcel Proust, we will work up to the modern understanding of memory’s formation of the Autobiographical Self and Extended Con-

sciousness as conceived by Antonio Damasio. We will see that a chiasma of memory and forgetting – *mnēmē* – is the sustenance of our “self”.

Realizing that our collective memory includes forgetting, it is worth investigating architecture’s amnesia to rediscover the usage of architectural *spolia* in the Middle Ages which, as it turns out, is so forgotten that it has been mislabelled for the past five centuries. The word *spolia*, in medieval texts, never refers to reused architectural elements, and only twice does its participle, *spoliatae*, appear (Alchermes 167). The act of building with *rediviva saxa*, or “reborn stones”, is a practice which facilitated the translation of the Roman Empire from pagan worship into its new Christian ideology under Constantine and the emperors who came after him. This second section, “Building with the Past” expands on memory as sustenance of the self, showing that the medieval translation of ideologies took place with the chiasma of memory and forgetting – *rediviva saxa* facilitated that translation, acting as material sustenance for the collective identity of the Romans.

Proceeding from the Roman Empire and continuing an exploration of the Middle Ages, we will look at how medieval scholars utilized memory as sustenance for their craft – memory was the faculty valued above all others in the Middle Ages, and it is through both personal and collective memory, in the form of authority and repetition in Medieval literature, that they were able to engage in acts of creativity. By contextualizing the Late Antique and medieval practice of using *rediviva saxa* – which itself lacks any specific ideological underpinning – we will see how the practice led to the development of *varietas* and harmony in a new medieval aesthetic. A brief look at Harold Bloom’s definition of influence, as applied to medieval poetry, will set the stage for the Architecture of Sustenance.

Taking cues from both cookery and pieces of contemporary architectural projects, we will attempt to define what the modern equivalent of the *rediviva saxa* is, and what it might be called. It is these pieces which constitute an Architecture of Sustenance, a practice which

will then be demonstrated in a kindergarten sited next to the Dominican University College in Ottawa, Ontario.

¹ *Sustinere* is comprised of the prefix *sub-*, meaning “up from below” and *-tenere*, “to hold”. (Etymonline)

² “The means of sustaining life; nourishment.” (American Heritage Dictionary)

“...*memory is of the past.*”

—*Aristotle*³

Memory as Sustenance

In antiquity, memory was represented by Mnemosyne, the mother of the muses. By extension, this classified memory as the mother of all knowledge and thought. Memory, by virtue of her maternity, sustained the faculties which set us apart from the animals.

In discussing memory as a fundamental form of sustenance, we must first establish the different senses of speaking about the past – memory, remembering, and recollection. While these terms each denote an experience of the past, it is worth discussing them briefly in order to carefully delineate our conception of memory in this thesis. It will also help us define the *rediviva saxa* as being *of memory*, rather than the more conventional conception as that which *represents memory*.

Greek Heritage

From Plato and Aristotle, we are presented with two complementary topoi on the subject of our perception of the past. Plato's dialogue *Thaetetus* elucidates the idea of the present representation of an absent thing, upon which Aristotle builds to develop the ontological representation of a thing formerly perceived.

According to Socrates, Mnemosyne gifted mankind with a block of wax upon which we impress everything we wish to remember. We then make a stamp – an imprint, or *eikōn* – of these impressions (*tupos*), and as we perceive the world we measure these stamps against them. The recognition between an imprint of an absent perception with the perception that is present is termed recollection. The *eikōn*, however, possesses the capacity for deception – as elucidated in the *Sophist* (Ricoeur 11). This creates the potential for the eikastic conception of memory to only ever function at the level of *mimēsis*.⁴ Through the *Sophist*, eikastic art is placed in contrast to fantastic art, the making of likeness contrasting the making of appearances (*Sophist* 236c).

Plato, then, conceives of recollection as inherently problematic – it preserves the mark of imprint (*eikōn*), but what meaningful relation does it maintain in relation to the marking event (*eidōlon*)? Aristotle's affirmation of this problem – and his subsequent reconciliation – begins to approach our definition of memory.

Aristotle's treatise *On Memory and Reminiscence*⁵ established, after Plato's *eikōn*, that there is a distinction between memory – *mnēmē* – and recollection, *anamnēsis*. Aristotle is careful to discern that memory is *of* the past – in the future lies conjecture, and in the present we have only sense-perception. *Mnēmē*, he contends, is an affection of both perception and conception conditioned by lapse of time – a *pathos* which manifests a simple evocation. *Anamnēsis*, then, is established by Aristotle to be an “effort to recall”,⁶ a “searching” which does not necessarily preclude a “finding”. Unlike Plato – who defined *anamnēsis* in the *Meno* as

the recollection of a knowledge once known but lost at birth – Aristotle naturalizes it and defines it, for the first time, in accounting for the function of everyday memory.

Mnēmē is thus the concept of memory as pathos – an evocation of an affection which appears unexpectedly. It is the basis upon which the understanding of memory as sustenance is construed. The work of Henri Bergson and Marcel Proust carried this concept into the twentieth century, and we will use them in the next phase of our discussion to gain a better understanding of the qualities of memory which are *of* sustenance.

Modern Echoes

Henri Bergson

The French philosopher Henri Bergson (1859-1941) was widely influential in the twentieth century. Grounding his work in scientific concepts, Bergson was able to bridge both the real and the ephemeral, affirming “both the reality of matter and the reality of spirit” (Bergson, *Matter and Memory* 9).

Bergson’s echo of the ancient texts can be found in his essay “Intellectual Effort” in *Mind-Energy*. His primary distinction is between laborious recollection and spontaneous recollection, “where spontaneous recollection can be considered the zero-degree of searching and laborious recollection its purposeful form” (Ricoeur 28). This discussion – which is fundamentally asking “What is the intellectual characteristic of intellectual effort?” (Bergson 187) – lays the groundwork for the concept of “pure memory” and the memory-image in *Matter and Memory*.

The most lucid description of this concept comes from Bergson’s famous analogy of the inverted cone (Figure 1, page 16). If we imagine an inverted cone resting its tip “S” on the plane of our experience “P”, S describes our present condition, where we interact with the world. The base of the cone (AB) is the entire collection of memories of our lived past –

the “pure” memory which exists in the recesses of our mind, of which we are unaware. Our perception of the world, then, is constantly oscillating up and down the sides of this cone, fluidly combining at any given moment our experience of the world with that of our lived past.

In *Matter and Memory*, Bergson distinguishes between the “two forms of memory” (87), between *mémoire-habitude* (memory as a habit) and *mémoire-souvenir* (memory as a recollection). His distinction is made clear using an

Figure 1: The Inverted Cone

analogy of the recitation of a text, where habit memory “is part of my present, exactly like my habit of walking or of writing” (91). Memory as a recollection, however, would be the recollection of a specific reading of that text on a certain date. “The memory of a given reading is a representation, and only a representation” (91). It is the difference, then, between remembering *how*, and remembering *that*. Bergson thus establishes habit memory as a form of sustenance. It “no longer *represents* our past to us, it *acts* it... it prolongs [pure memory’s] useful effect into the present moment” (93). Bergson then quantifies spontaneous memory as integral to this process of bringing pure memory into the present:

“...personal recollections, exactly localized, the series of which represents the course of our past existence, made up, all together, the last and largest enclosure of our memory. Essentially fugitive, they become materialized only by chance, either when an accidentally precise determination of our bodily attitude attracts them or when the very indetermination of that attitude leaves a clear field to the caprices of their manifestation.” (129)

Bergson, we may conclude, describes pure memory as a kind of tacit knowledge – a *noesis*⁷ – which sustains our consciousness. It is memory, spontaneously remembered – *mnēmē* – which governs our perception and comprehension of the world. The most sublime extension of this concept is found in the work of Marcel Proust.

Marcel Proust

"Memories like these contain the deepest architectural experience that I know. They are the reservoirs of the architectural atmospheres and images that I explore in my work as an architect."

– Peter Zumthor

In *Swann's Way*, Marcel Proust does not write about his experience of life – he writes about his memory of it. His extension of the concept of memory as a pathos – invoked involuntarily rather than intentionally – is most potent with the incident of the madeleine, in which a young Marcel eats a piece of the hard cake after it has been softened by lime-blossom tea and is instantly reminded of his childhood in Combray, France:

"And as soon as I had recognized the taste of the piece of Madeleine dipped in lime-blossom tea that my aunt used to give me... immediately the old gray house on the street, where her bedroom was, came like a stage set to attach itself to the little wing opening onto the garden that had been built for my parents behind it... and with the house the town, from morning to night and in all weathers, the Square, where they sent me before lunch, the streets where I went on errands, the paths we took if the weather was fine." (47-48)

Involuntary memory is quite unlike voluntary memory, which for Proust gives information about the past but "preserves nothing of the past itself... [Combray] was all really quite dead for me." (44) Proust sees involuntary memory – *mnēmē* – as the key to utilizing it as a form of sustenance.

It is quite humorous, in retrospect, to hear that Proust once wrote "I have enough to do without trying to turn the philosophy of M. Bergson into a novel!" (Lehrer 78) It is impossible to deny the influence of Bergson, as Proust read *Matter and Memory* just as he was beginning to write *Swann's Way* in 1909.⁸ In writing it, Proust utilized an intuitive and open-ended process which saw him, at his most extreme, stopping the printing presses in or-

der to make revisions to his work. He described the world in terms of senses, experience and intuition – a stark contrast to the typical, realist style of the typical nineteenth-century novel:

“...at the very instant when the mouthful of tea touched my palate, I quivered, attentive to the extraordinary thing that was happening inside me. A delicious pleasure had invaded me, isolated me, without my having any notion as to its cause. It had immediately rendered the vicissitudes of life unimportant to me, its disasters innocuous, its brevity illusory, acting in the same way that love acts, by filling me with a precious essence: or rather this essence was not merely inside me, it was me.” (45)

What is interesting to note about this passage is that Proust had intuited one of the most fundamental connections inside the mind: that *mnēmē* is elicited by taste and smell. Whereas sight, hearing and touch all connect to the brain through the thalamus – the gateway to consciousness, it regulates sleep and wakefulness and acts as a “relay” for most body functions – taste and smell connect primarily through the hippocampus, the brain’s center of long-term memory storage (Lehrer 80). This intuition is made even more explicit by Proust shortly after he discovers the trigger of his extraordinary experience:

“But, when nothing subsists of an old past, after the death of people, after the destruction of things, alone, frailer but more enduring, more immaterial, more persistent, more faithful, smell and taste still remain for a long time, like souls, remembering, waiting, hoping, upon the ruins of all the rest, bearing without giving way, on their most impalpable droplet, the immense edifice of memory.” (47)

Were Henri Bergson alive today, he would likely classify the hippocampus as the gateway to “pure” memory.

From Proust and Bergson, we may conclude that *mnēmē* is the true sustenance of consciousness. Bergson contends that the “effort to recall” is laborious, merely re-presenting a representation. Proust asserts that recollection, the act of voluntarily searching – *anamnēsis* – is in vain:

“It is a waste of effort for us to try to summon it, all the exertions of our intelligence are useless. The past is hidden outside the realm of our intelligence and beyond its reach, in some material object (in the sensation this material object would give us)...” (44)

Extended Consciousness

In *The Feeling of What Happens*, neurologist Antonio Damasio writes about consciousness as being comprised of three important parts: Core Consciousness, the Autobiographical Self, and Extended Consciousness.

Damasio hypothesizes that our Core Consciousness occurs when the brain’s representation devices generate an imaged, non-verbal account of how its organism’s own state is affected by the organism’s processing of an object (169). When this processing enhances the image of the causative object, it is placed saliently in a spatial and temporal context (169). This leads to a certain “feeling of knowing”, or a narrative without words of our interactions in the world (168). Our Core Consciousness, then, allows us to perceive the world around us and become a part of it.

The Autobiographical Self, the “pure memory” or set of autobiographical memories which we carry with us, arises from the interaction of two spaces in our neurological web – image space, where sensory images occur explicitly, and dispositional space, where dispositional memories contain records of implicit knowledge on the basis of which images may be constructed in recall (219). This Autobiographical Self is connected neurologically and cognitively to our Core Consciousness – this connection forms a bridge between our transient, everyday experience of the world through Core Consciousness with the rock-solid, historical existence embodied by our Autobiographical Self (219). Damasio refers to this bridge as Extended Consciousness – it arises when our working memory holds both an object and the Autobiographical Self simultaneously, thereby permitting us to experience the world in rela-

tion to our past experience with it. “At any given moment of our sentient lives, then, we generate pulses of Core Consciousness for one or a few target objects and for a set of accompanying, reactivated autobiographical memories”(219).

In the BBC documentary “How Our Memory Works”, Professor Mark L. Howe demonstrates the importance of memory in children’s comprehension of the world around them. His experiments show that the onset of autobiographical memory correlates with the ability of a child to recognize their image in a mirror,⁹ thus linking the notion of self directly with our ability to remember.

With this understanding of *mnēmē* as the fundamental sustenance of our consciousness, we may begin to unwrap the *rediviva saxa* from its covering of *eikōn* and *anamnēsis*, to discover what the new *rediviva saxa* is, and how with it, we may construe an Architecture of Sustenance. But before doing so, we must first detour through the phenomenon which, to this point, has remained unspoken. Without forgetting, *mnēmē* does not exist.

³ “On Memory and Reminiscence” 449b15

⁴ The concept of *mimēsis* is discussed at length by Paul Ricoeur in *Time and Narrative, volume 1*.

⁵ Greek *Peri mnēmēs kai anamnēsēos*, Latin translation *De Memoria et Reminiscencia*

⁶ In the words of Henri Bergson (Bergson, Matter and Memory 90), the recollection is an “effort to recall”.

⁷ *Noesis* is a word of Greek origin. It is an act of consciousness – something one *does* as an aspect of *being*, not something which one believes.

⁸ In 1892, Bergson married Proust’s cousin. The only recorded conversation between the men, however, was about the nature of sleep. (Lehrer 78)

⁹ The experiment involved the hiding of an object (a stuffed lion) alongside a “mirror test”, where the child views their reflection in a mirror while a parent inconspicuously marks their face. The children able to find the hidden object two weeks after it was initially encountered tended to touch their own marked face when looking in the mirror – children who could not remember where the lion was hidden reached out to touch the marked face in the mirror.

*"Then his father Anchises said: Souls fate
Has destined for other bodies scoop up water
From the Lethe, and drink long oblivion."
—Virgil, Aeneid 6.713-716*

*"...it is forgetting that makes memory possible."
—Martin Heidegger*

Verso Memore

In *Funes the Memorious*, Argentinean writer Jorge Luis Borges recalls his time with Ireneo Funes – a teenager who, following an accident with a horse, finds himself unable to forget. Able to recite the precise time of day without a clock, Funes has memorial powers which trivialize the existence of most mortals: "... the least important of his memories was minuter and more vivid than our perception of physical pleasure or physical torment" (Borges 66). He was surprised every time he saw his own hands, as his perceptive power – by virtue of being unable to negate the past – was so strong that he could continually discern the advances of corruption, decay and fatigue. Funes was unable to forget.

In the context of memory, forgetting is often considered a dysfunction. In contrast to the horizontal metaphor of memory, which stretches across the vast landscape of the human mind, forgetting often constitutes a vertical metaphor – the deep, bottomless void of oblivion. Yet forgetting, according to Paul Ricoeur, can be so closely tied to memory that it could be considered one of the conditions for it (426). Without forgetting, *mnēmē* is not possible.

Although it is derived from the prefix *for-* and the verb *get*,¹⁰ the most interesting lineage for the concept of “forgetting” is drawn through the ancient Greek word *aletheia*, “truth”. In *Being and Time*, Martin Heidegger deconstructs the word into its components: the *a-*, a negative prefix, negates *-leth-*, meaning covered, concealed or latent. *Aletheia* is thus something which is unconcealed, uncovered, or non-latent (qtd. in Weinrich 2). Further, Lethe’s establishment as the river of forgetfulness in Greek Mythology could lead one to surmise that *aletheia* also means “the unforgotten” or the “not-to-be-forgotten” (Weinrich 2).

For memory to maintain its role as the sustenance of consciousness, some degree of forgetting is necessary. According to Cicero, Simonides (the talented inventor of the *ars memoriae*, whom we will encounter later) offered to help Themosticles – a man of great intellectual gifts – so that he may “remember everything” (Weinrich 11). Themosticles replied that rather than an *ars memoriae*, he required an *ars oblivionis* (an art of forgetting) so that he may forget everything he wanted to forget. He wanted this, Cicero writes, “because everything he has ever seen or heard is stuck in his memory” (11).

From this casual beginning, the idea of an *ars oblivionis* was born. Despite the objections of Umberto Eco that an *ars oblivionis* cannot possibly exist,¹¹ the idea has persisted through classical literature and mythology alike. Most often, an agent of forgetting is imbibed (rather than an *ars oblivionis* employed) in order to assist the wanting-to-forget in their quest. From the waters of the river Lethe, to the Lotus flower on the island of the Phaiakians in Homer’s *Odyssey*, to Dionysos’ cherished gift of wine to man, which according to Eurip-

ides “drives cares away” (Weinrich 16), agents of forgetting have permeated our collective consciousness. Harald Weinrich’s *Lethe: The Art and Critique of Forgetting* stands as a testament to this.

In the opening paragraph of Borges’ tale, the narrator recalls Funes being referred to as a precursor to Nietzsche’s supermen – “...a vernacular and rustic Zarathustra” (Borges 59). While scholars of the German philosopher may contend that this comparison is tenuous¹², it provides an interesting literary thread which, when followed, shows us that the tale of Funes is illustrative of a Nietzschean thought experiment.

In *The Use and Abuse of History for Life*, Friedrich Nietzsche critiques the historicism of man by stating that there is a degree to which history is useful, beyond which life may atrophy and degenerate (59). Those unable to live in the moment – un-historically, like a cow grazing in a field which is oblivious to the past and future – will never know what happiness is (62). Our philosophical guide then goes on to propose a thought experiment to demonstrate the debilitating nature of unrelenting memory:

“Imagine the extremest possible example of a man who did not possess the power of forgetting at all and who was thus condemned to see everywhere a state of becoming: such a man would no longer believe in his own being, would no longer believe in himself, would see everything flowing asunder in moving points and would lose himself in this stream of becoming: like a true pupil of Heraclitus, he would in the end hardly dare to raise his finger.” (62)

It is no surprise then, that Borges’ character is paralyzed – while the narrative attributes this to the accident with the horse, the astute reader will readily acknowledge the symbolism of Funes’ condition in relation to Nietzsche’s concept.

If a lack of forgetting is paralyzing for both Funes and Themosticles, we may deduce that forgetting is sustenance – its absence is debilitating. From Paul Ricoeur’s *Memory, His-*

tory, *Forgetting* we may conclude that forgetting encompasses two polarities: the complete erasing of traces, and a forgetting which is kept in reserve – an *oubli de réserve*.

The first type of forgetting is considered as an effacement of traces, where traces are the “mark” left by an experience in the world (414) – the *tupos* of Plato’s wax tablet. The effacement of said trace results in oblivion, where we are not even aware that we have forgotten – the realization that one has forgotten something is proof enough that the trace remains.

The second conception – the *oubli de réserve* – services our needs much more appropriately. It embodies Bergson’s notion of “pure” memory, in that one’s memories may be kept in reserve until they prove useful to the situation at hand – considered the “passive persistence of first impressions” (427). It defines “forgetting” as an immemorial resource, rather than inexorable destruction (442). Ricoeur, in his analysis of Heidegger’s seemingly paradoxical statement that forgetting makes memory possible, says:

“... forgetting has a positive meaning insofar as having-been prevails over being-no-longer in the meaning attached to the idea of the past. Having-been makes forgetting the immemorial resource offered to the work of remembering.” (443)

Perception and memory must, as a critical aspect of their function, reduce the world. As Borges writes,

“I suspect... that he was not very capable of thought. To think is to forget differences, generalize, make abstractions. In the teeming world of Funes, there were only details, almost immediate in their presence.” (66)

Given dominion over our consciousness, both memory and forgetting are dysfunctional – while one leads to paralysis, the other leads to oblivion. Therefore it is the *chiasma* of memory and forgetting which permits the faculty of memory to sustain us – thus defining *mnēmē* as sustenance.

¹⁰ For- : “passing by, letting go”; get: “to obtain, reach” (Etymonline)

¹¹ In his paper “An *Ars Oblivionalis*? Forget it!” Umberto Eco makes the case against what he termed an *ars oblivionalis* on the basis of semiotics – that all signs produce presences, not absences. He concedes that an unusually verbose mnemotechnics could, by multiplying presences, produce a “befuddlement of memory which has forgetfulness as its consequence” (Weinrich 12).

¹² Funes is essentially paralyzed by his memory, incapable of true thought and destined to perish – quite the opposite of the goal of the *Übermensch*.

“... an edifice occupying a space with, so to speak, four dimensions – the fourth being time – extending over the centuries its nave which, from bay to bay, from chapel to chapel, seemed to vanquish and penetrate not only a few yards but epoch after epoch from which it emerged victorious...”

– Swann’s Way by Marcel Proust

Building with the Past

With his conversion to Christianity in 312 CE, the Roman Emperor Constantine ushered in a new era of building in Rome. Shifting the climate of the Roman Empire from pagan worship to Christianity in the aftermath of the Crisis of the Third Century, Constantine built upon Diocletian’s autocracy and ushered in a new era of building and understanding which would fundamentally alter the direction of the empire. It is within the overall climate of translation and sustenance that the practice of building with *rediviva saxa* became commonplace in the Roman Empire and, after its eventual decline, throughout the Middle Ages.

Spolia versus Rediviva Saxa

In classical Latin, *spolium* refers to the skin stripped from an animal. The plural, *spolia*, was used to figuratively describe the violent taking of something, especially after the end of a war when the victors would raid their newly conquered territory for treasures, or when they would strip the armour from defeated combatants as if they were stripping an animal of its hide (Brenk 103). Writing to Pope Leo X in the sixteenth Century, Raphael said with great distress that Rome should not continue the practice of its predecessors, exploiting its ancient heritage for building pieces so that they might be burned into lime or used as aggregate in wall construction (Hansen 23). "Rome uses itself as a mine and a quarry, and [...] it both nourishes and consumes itself" (qtd in Hansen 23). The practice which Raphael detested, however, was not that of re-use. It is known that he quite liked the Arch of Constantine, even if he disliked the craftsmanship of the Romans and preferred the hand of ancient artisans (Kinney, *Spolia. Damnatio and Renovatio Memoriae* 122). Rather, it was the practice of destroying or hiding pieces of antiquity that he disliked so vehemently. It is through this lineage that *spolia* entered art history and, after that, architectural history.

During the reign of Constantine, legislation which governed building practices never used *spolia* in reference to architectural re-use (Alchermes 167) – the practice's sixteenth century detractors used the term *spolia* while its medieval practitioners used the term *rediviva saxa*, meaning "reborn" or "renewed" stones (Hansen 14). The participles of *spolia*, *spoliata* and *spoliatae*, each appear only once in the *Theodosian Code*.¹³

Thus we see a problem with the term *spolia*. Not only does it imply the unwarranted taking of something, but it "applies to only one form of a long and varied history of reuse" (Kinney, *Spolia. Damnatio and Renovatio Memoriae* 118). The reality is, for the early Christians and later in the Middle Ages, "reused marble artefacts" was an indirect concept. As Kinney notes, "without a proper name they would not figure as a principal subject of dis-

course” (119). It is for these reasons that she declares *spolia* to be anachronistic with respect to the medieval practice of reusing building fragments – it is “laden with artistic prejudices and interests from a much later period” (120). While we cannot quantify the historical validity of using a term other than *spolia* for the acquisition of specific building fragments, the reuse of a piece certainly translates it into *rediviva saxa* regardless of how it was procured. As such, this thesis eschews convention to employ the term *rediviva saxa* for a reused building fragment in its new context.

The term *rediviva saxa* can be traced to both Vitruvius and the *Theodosian Code*, a late antique collection of laws which legislated the practice of building in ancient Rome (Hansen 14). Given the ontological distinction between *spolia* and *rediviva saxa*, we begin to see that the use of the term *rediviva saxa* may be rich with significance as it indicates an interest in the practice of restoration and building using recycled material. One of the implications of the term *rediviva* is that the recycled part – which may have been an obsolete, contested, or authoritative architectural element – was allowed to live on into the present (14). Before exploring the various ways that *rediviva saxa* were deployed in medieval buildings, it is important to understand the practice in terms of its context. Beginning with Constantine, the Roman Empire was translated from its pagan origins into an early Christian society. In this context, the appropriation of building fragments was a very careful and purposeful act which was initiated by a confluence of factors.

The Roman Empire

As a patron of his newly adopted religion,¹⁴ Constantine issued the Edict of Milan in 313 CE, legalizing Christianity in the Roman Empire.¹⁵ The best known aspect of Constantine's obedience is the extraordinary number, size, and grandeur of the Basilicas with which he enriched the Church in Rome (Macmullen 49). Yielding obedience to his new-found deity, Constantine felt that a good Christian “should make tangible contributions to the fabric

of cult, and that no harm could be done in requiring Christianity's rivals, wicked and misguided folk that they were, to foot the bill" (49). He also issued a now-lost decree which was beneficial to the Church in many ways: it exempted Church lands from taxation, set up a system of gifts of food to Churches, and ordered provincial officials to make available materials and labour for construction (49).

With his decree, Constantine urged his subjects to give up their pagan rites if they were not already Christian. Historian Robert Macmullen states that, with respect to non-Christians, "[Constantine] would have liked to obliterate them, no doubt. But, lacking the means for that [...] he had to be content with robbing their temples" (96). Giving up their rites would be much simpler if the subjects began despising the pagan temples and images contained therein. Since there were many Christians serving in his palace, and given that the population "kept quiet out of fear that they themselves, wives and children, might suffer if they offered opposition" (qtd. in Macmullen 50), Constantine did not need to use military force – his decree was solemnly carried out amongst the cities of the empire. The exquisite treasures of the pagan temples then became public property, generating tremendous wealth in precious metals for Constantine's coffers.

All this took place after the Crisis of the Third Century, when civil war, plague, and economic collapse all but annihilated the Roman Empire. Rome's vast network of trade infrastructure had broken down and limited the ability for merchants to conduct trade safely due to civil unrest. This made cash-crop farming and the trade of goods between cities much more difficult, encouraging the localization of manufacturing and farming. It also limited the amount of material that could come from the marble quarries around Rome, prompting new attitudes towards increasingly unused pagan temples.

During Constantine's reign, the specific subtraction of ornament from buildings was legislated against. This was derived from earlier laws which were meant to discourage the movement of art *spolia* from one city to another. The early jurists felt that subtracting mar-

bles from one city for another created ruins, and ruins “subvert peace by giving the appearance of war” (Kinney, *Spolia. Damnatio and Renovatio Memoriae* 128). Thus it was the gaps left in buildings, not necessarily the fate of the marble fragments, which most concerned them. Ornamented buildings were one of the principal constituents of beauty, and beautiful cities were peaceful. A beautiful city was an ideological imperative in the fourth century, and “municipal officials were caught in the cleft between ideology and the reality of supply” (129). Consequently, this duality led to both *varietas* (heterogeneity) and *vetustas* (the quality of age) constituting a new, modified ideal of beauty.

Towards the end of the fourth century, even unused temples were protected by legislation (129). However, the new reality meant that some reuse would need to take place, and thus with imperial orders an emperor was permitted to make use of despoiled buildings. This is not to say that *rediviva saxa* were the result of strictly pragmatic concerns. If it had been necessary for an emperor in the fourth century to employ homogenous material, “the necessary means could probably have been invested in establishing a workshop to produce new regular pieces” (Hansen 17), or at the very least he could employ skilled craftsmen to camouflage the reuse of old elements. As Beat Brenk has noted, Constantine “was affluent enough to build generously. Material necessity alone cannot account for the use of *spolia* [*rediviva saxa*] in Constantinian buildings” (105). Any contemporary architect, let alone fourth century builders, could attest to the fact that “it is far more difficult to work with *spolia* [*rediviva saxa*] than newly made homogenous building materials” (105). Constantine’s use of *rediviva saxa* can thus “no longer be considered as economical ploy but rather as an impressive protective and aesthetic measure” (105).

To facilitate building with *rediviva saxa*, publically maintained material deposits were set up in various cities within the empire. Constantine’s son Constantius, the Roman Emperor from 337-361 CE, noted that material should not be moved from one city to another – no municipality should lose its embellishments, so the most logical solution was to re-

deploy the public ornament from a demolished building to other buildings in the same city (Hansen 110). The specific legislation against using *spolia* was geared mostly toward the illegitimate practice of dilapidating buildings through the harvesting of their ornament¹⁶ – the fact that there is so much legislation against this practice is indicative of the extent to which it must have been a problem.

Translatio

Translation, derived from the Latin term *translatio*, is important to define at this juncture as it is the primary strategy used to deploy *rediviva saxa*. *Translatio* originally comes from *transfere*, to transfer or carry over (Hansen 117). It is often used to denote the moving of something from one place to another, but is most appropriately defined as the transference of meaning into a new context.

Under Constantine, the Roman Empire became a system of translations. Christianity, building upon the foundation of pagan cults, had to establish new versions of places and meanings which had originally dealt with pagan traditions. Not only did the Romans appropriate Greek mythology and culture, but they also developed a metaphorical language of art which subverted its Greek precedent: the full-bodied, three-dimensional sculpture of the Greeks became the abstract busts and two-dimensional reliefs of the Roman tradition (117). This translation from a concrete, realistic form into a two-dimensional pictorial one implies the importance which the early Christians placed on the image rather than the concrete.

As Constantine brought Christianity out of obscurity, it was apparent that its practitioners would require larger places of worship to accommodate their growing congregation. While they were operating at the level of numerous other cults, there was an introspective and private tendency to early Christians. They gathered in private homes, eschewing and even professing a disinterest in the “worldly frame around their spiritual practices” (137).

The Edict of Milan, however, connected the early Christians with the governing power and thus melted away their anti-social behaviour (137).

After the Edict of Milan, the Roman basilica – which until this point had typically housed official imperial functions – was appropriated by the Early Christians and translated into a house of worship. The linear axis of the basilica became an important spatial procession for the early Christians, and by situating the basilica's entry on the end of the nave,¹⁷ one's movement into the church came to symbolize movement towards the altar and salvation (138). The clerestory windows of the new Church were also a new innovation by the early Christians. Until this point, large expanses of openings were uncommon in monumental Roman architecture. Filling a typically dark space with light symbolized the manifestation of the divine inside the church, paralleling the development of light as a metaphor for Christ (139). One might even consider the translation of the basilica as an inversion of the pagan temple, whose dark and sacred cella necessitated outdoor worship.¹⁸

The aforementioned tendency towards imagery also further translated the basilica – sculptural effects of material were eschewed in favour of the patterning of surfaces, making the Church itself an image (142). We will see later that the use of spoils inside this pictorial structure led to the conception of space by the early Christians.

Medieval Culture

Medieval culture presents itself as an interesting precedent at this juncture of our discussion. With its foundation in the translating Roman Empire, medieval culture had a will-to-sustain. The fusion of Neo-Platonist philosophy and pagan religion with Christianity meant that scholars had to come to terms with the distinction between creativity and Virtue – as Christianity began to take root, activities not directly related to salvation were looked down upon. Since there are “no texts clarifying the ideology of despoliation” (Brenk 103), it is useful to look at other disciplines in order to understand the cultural impetus for building

with *rediviva saxa*. Beginning with the *ars memoriae*, we will examine authority and repetition in medieval scholarship. This will help us gain a complete understanding of the conceptual foundation of *rediviva saxa* in the Middle Ages, which we may then extrapolate in order to conceive the new *rediviva saxa* and its place in an Architecture of Sustenance.

Ars Memoriae

Memory was the faculty valued above all others in the Middle Ages. Those who had the greatest powers of recollection were revered as geniuses. To possess a powerful memory was to be a virtuous individual, and the development of the memory was held to be a virtuous practice. It is around these beliefs that the *ars memoria*, or art of memory,¹⁹ flourished in the Middle Ages. Originally the principal part of a rhetorician's education, Thomas Aquinas helped shift the importance of the *ars memoria* in to the realm of ethics, making it the sustenance for the craft of literature in the Middle Ages.

In the Middle Ages, three principal texts were referenced when rhetoric was addressed as a function of memory: Cicero's *De Oratore*, Quintillian's *Institutio Oratoria*, and the anonymous *Ad C. Herennium libri IV* (3). It was, after all, as part of the art of rhetoric that the *ars memoriae* passed down through European tradition in which it was not forgotten.²⁰ Of these texts, the *Ad Herennium* was the most prestigious in the Middle Ages as it was thought to be by Cicero.²¹ Referred to as the First and Second Rhetoric, *De Oratore* and the *Ad Herennium* served as the backbone for the *Summae* later written by Albertus Magnus and Thomas Aquinas.

In *The Art of Memory*, Francis Yates recounts the origins of the art of memory. While there were many variations throughout the Middle Ages, the original can be found in Cicero's *De Oratore*. At a banquet given by a nobleman named Scopas, the poet Simonides recited a lyric poem in honour of his host, including a passage about the twin gods Castor and Pollux.²² After the conclusion of the poem, Scopas only paid half the agreed-upon

amount and snidely told Simonides to retrieve the other half of his payment from the gods to whom he had dedicated part of his poem.

Later in the evening, a message was brought to Simonides that two young men who wished to see him were waiting outside. He left the banquet hall, but could find no one. During his absence, the roof of the hall collapsed crushing Scopas and all his guests. The bodies were so mangled that the relatives who came to retrieve the bodies of their loved ones could not identify them. Simonides, however, remembered the places at the table where the guests had been seated, and was able to identify the bodies for the relatives.

By assigning images to places, the orator was able to pair memory with the sense believed to be the most dominant – sight. Young students of the *ars memoriae* were encouraged to find the optimal space – “as spacious and varied a one as possible” (Yates 3), but not too small or too large, not too bright but not too dark, and so on – in which to locate images in their mind. The images were divided into two categories: those for “things” (the subject matter of a speech), and those for words (the language to be used). The classical orator could then move from place to place in his memory, retrieving the symbolic deposits from their custodians whilst making his speech. It was advised by the author of the *Ad Herennium* that one must stay in good mental shape – “in placing the images you should exercise every day” (16).

In his treatise, Quintillian speaks of the astonishment that was aroused by the memorial powers of the orators, and suggests that it was their phenomenal development of the faculty which attracted Latin thinkers to the philosophical and religious aspects of memory:

“We should never have realized how great is the power (of memory) nor how divine it is, but for the fact that it is memory which has brought oratory to its present position of glory.” (qtd. in Yates 43)

By the Middle Ages, however, the classical art of oratory had fallen from prominence. Being the only Latin treatise on memory, the *Ad Herennium* held esteem for medieval philosophers like Albertus Magnus and his pupil, Thomas Aquinas.

Since it was believed to be written by Cicero, the *Ad Herennium* was always read in the context of *De Inventione*, where Cicero describes what would later come to be known as the four cardinal virtues. Virtue, he said, was composed of four parts – Prudence, Justice, Fortitude and Temperance. These were the habits of mind which were in harmony with reason and the order of nature. Of these, the primary virtue of Prudence was divided into three parts – memory (*memoria*), intelligence (*intelligentia*), and foresight (*providentia*). Read in this context,²³ the artificial memory was translated from realm of oratory to ethics. Unlike the classical use of the artificial memory, where images were chosen for their familiarity and phonetic similarity, Aquinas said we should link things, in memory, with images based on “corporeal similitude” and “subtle and spiritual intentions” (Yates 76). This advocacy for the use of imagery in the practice of virtue is what, Yates feels, led to the proliferation of imagery in the Middle Ages – the inner mental image was projected externally onto the imagery of the vices, virtues and beyond.

Since memory was the fundamental aspect of Prudence, it played the role of mediating both the present and the future. For Thomas Aquinas, Prudence was the cause, measure, and form of all virtues and it became the matrix upon which human perception was based. The revered *Ad Herennium* (the Second Rhetoric) makes mention of the fact that there is an artificial memory by which natural memory can be improved (Yates 21). For Albertus Magnus and Thomas Aquinas, to practice the *ars memoriae* was to practice Prudence and partake in a virtuous activity.

As the shift of the *ars memoriae* from rhetoric to ethics took place, so too did the way it was employed. Rather than utilizing it to deliver marathon orations, or use it as Seneca did to recite a list of 2,000 names (Yates 16), the cultivation of the artificial memory permitted

medieval scholars to employ their power in the act of authoring. This helped employ the virtue of memory on a cultural scale, and eventually led to the sustenance of knowledge in the Middle Ages through authority and repetition.

Authority

The medieval sense of authoring is composed of two parts – division and composition. Division, or the act of reading, required the use of memory and was thus considered an exercise of the virtue of prudence (Carruthers 191). Rather than merely growth in knowledge, as part of the virtue of prudence it provided growth in character (191). By breaking out the “intention of the text” and amplifying it, the reader could then begin to re-present it through composition.

Authoring can be divided into two senses – the author, and the auctor. The author²⁴ digests and ruminates²⁵ pieces of memory into a composition, tapping into the *res*²⁶ of a text in order to convey the intent of the work. An author-text, therefore, is retained and imitated *ad res*²⁷ because it is there that their authority lies – not in the actual words.

The work of an *auctor*²⁸ could be considered an originating text which is full of “authorities”, much like the *fons* of the metaphorical river of literature.²⁹ One could consider works such as the Bible as the work of an *auctor* – they are works which are the “progenitors” of a whole family of textual descendants, whose commentaries and adaptations are the “authorization” of a work’s institutional standing in the public memory (191). An author, on the other hand, acquires authority only by virtue of his texts being retained in the memories of subsequent generations (191). In the Middle Ages, it was authority which created precedents and defined reality (Illich 13).

Seneca, whose letters were a standard item in medieval rhetoric curriculum (Carruthers 191), created a trope of food for authoring which best conveys this idea. Utilizing the same *res* as the trope of the bee,³⁰ he established *memoria* – the memory-store – as the

sustenance for the author. Reading, he says, is like “the food we have eaten, so long as it retains its original character and floats in our stomachs, it is a burden” (qtd. in Carruthers 192). For Seneca, composition is the digestive process. What we have eaten “passes into tissue and blood only when it has been changed from its original form. So it is with the food which nourishes our mind... We must digest it; otherwise it will only come into our acquired memory-store [*memoria*] and not pass on to become part of our own abilities [*ingenium*]” (qtd. in Carruthers 192). The two tasks of reading and writing are a chiasma – as Jerome says, there is no point in reading if one does not also compose and write (Carruthers 192).

Repeating Seneca’s trope, other medieval scholars viewed reading and writing in a similar vein: according to Ivan Illich in *The Vineyard of the Text*, St. Bernard of Clairvaux wrote of the Canticle of Canticles “Enjoying their sweetness, I chew them over and over, my internal organs are replenished, my insides are fattened up, and all my bones break out in praise” (qtd. in Illich 56). Hugh of St. Victor established the medieval monastic reader as an eater of words, with pre-university monasteries becoming places of mumblers and munchers – “Peter the Venerable, the learned Abbot who rules Cluny, usually sits at night on his bed indefatigably chewing the Scriptures by turning them over in his mouth” (qtd. in Illich 54).

For Mary Carruthers, it is inadequate to describe composition strictly in terms of “verbal” or “oral” process – neither the “eating” of words nor the repeating of authorities is enough to quantify it, as it is the stage at which the digestion and rumination of a text happens. A more useful descriptor, then, is “memorative composition” (194).

Prior to the act of composing, an exercise of invention is undertaken, typically in the form of *cogitatio*, or cogitation. This involved a deep, deliberative meditation by the author on the memorized readings which would give rise to the *res* of the work to be composed. Rather than use *anamnēsis*, or the more rational, recollective part of the brain, this rumination was meant to tap into the non-rational part of the brain – what we have alluded to pre-

viously as *mnēmē*, the emotional senses and instinct that the cogitating of a text arises. This *res* then enters the composition stage which has two parts – *compositio* (a formalization of the *res*), and *dictamen* (which involves the correcting and polishing of the draft). These stages are completed on a wax tablet, after which they are transferred to parchment for the *scribere*, or scribing. Having been transcribed, the work is thus “written” and it is presented in its final draft as an *exemplar*, after which it would undergo more editing before being made available to copy.

It was the first part of this process – the *cogitatio* – which most consumed authors. Rather than ponder their readings in an analytic and deliberate manner, the cogitation allowed them to tap into a more visceral, intuitive and non-rational state of mind – they used *mnēmē* rather than *anamnēsis* in order to give rise to the *res* of a work. As Carruthers describes, the whole process is reminiscent of Aristotle’s idea of the *deliberative imagination*, a combination of *phantasia* and *dianoia* which allows one to create a single image out of multiple ones (197). It was *cogitatio* which was thought to be the laying-together of multiple mental constructs – thus defining composition as an act of rumination, cogitation, a “gathering together” of one’s emotional judgments as they pertain to the “divided” texts.

Authoring – the act of division and composition – was sustenance for medieval scholarship. It was the employment of *mnēmē*, as part of *cogitatio*, which allowed the scholar to synthesize texts and formulate his authority. It is the perfect example of what Seneca alluded to when he said that *memoria* is not an alternative to creativity, but the route to it (Carruthers 192). The final aspect of medieval culture – where repetition and conventionality allow creativity to flourish, giving both reader and author a foundation with which to gauge the value of a work – will concretize this idea.

Repetition

The dominant philosophical tradition of the Middle Ages was Neo-Platonism. Taking shape in the third century ACE, Neo-Platonism was founded by Plotinus and based on the teachings of Plato.³¹ In “Repetition: Modern Reflections on Medieval Aesthetics”, Peter Haidu is careful to note that Platonism still remained the aesthetic norm for most of the Middle Ages, and “can be considered as at least a beginning framework for the analysis of particular textual phenomena” (877).

The distinguishing trait of literary practice in the Middle Ages was repetition – that is to say, conventionality without the presence or presupposition of any consciousness. In the Platonic conception of the universe, reality is divided into two categories: the Formal, and the Ideal. Forms made of material on Earth may, through our perception, be connected to Ideas which are immaterial – the essence of a thing which we attempt to imitate through a Form. The Idea is most clearly articulated by Pseudo Dionysius³² in *The Celestial Hierarchy*:

“Matter, after all, owes its subsistence to absolute beauty and keeps, throughout its earthly ranks, some echo of intelligible beauty. Using matter, one may be lifted up to the immaterial archetypes.” (151)

In this sense, time “is merely one of the deforming characteristics to which an ideal reality is subject in its concretizations” (Haidu 877). Repetition, then, is not simply an occurrence of something along a linear dimension of chronological development – it takes the form of a further concretization, a further incorporation and revelation of an abstract Idea. “Repetition is referred to not in the chain of history but to the chain of being” (880). It constitutes a further revelation of value in medieval literature, since it “brings before our eyes again that aspect of the abstract form that can be concretized and visualized” (880). Repetition is not tolerated in this context, it is positively valued.

For the fundamentalists in medieval literature, “creative writing” constituted a perversion of speech’s proper function. Thomas Aquinas considered poetry, for example, to be “the lowest of all the doctrines”³³ (Yates 78). For medieval stoics, the moral control of fantasy was an important ethical responsibility – any activity not related directly to salvation was not encouraged.³⁴ The opposite view, which was surprisingly widespread, was more of an “anything goes” mindset, as anything could be re-interpreted to have Christian meaning. Hugh of St. Victor, who repeated Augustine’s philosophical notions, makes the most compelling distinction between the arts and concrete poetry. For him, poetry was tolerable because it essentially bracketed the important questions of tropology, allegory and anagogy which supersede any kind of ornamental play. The weak side of the human mind – the childish, somewhat carnal side – displays itself in a “relatively harmless way” in these creative acts (Haidu 881). Since the important questions are fundamental and cannot be varied, any variation from the norm would be considered “non-meaningful variance”, and therefore the re-incarnation of the abstract only serves to restate its Form. “It is precisely the sense that the fundamental message will not be varied which allows the variation to occur” (883).

Repetition thus served as sustenance for scholarship, in that it preserved and concretized the relation of a literary Form to its Idea. For Medieval scholars, it was this sustenance which unified the Neo-Platonic structure of thought with Christian content. Without the reverence of repetition, there was no validity to the purely ornamental and “empty” act of creative writing.

The next phase of our investigation – exploring *rediviva saxa* in-depth – will examine the influence of these beliefs on the architecture and building practices of the era, as a model for what I have referred to as the new *rediviva saxa*.

Rediviva Saxa

The most straightforward deployment of *rediviva saxa* involved the translation of the column and its constituent parts, most often from a pagan context to a new Christian one. A sublime example of this – albeit from a later period – is the Hagia Sophia in Constantinople (now Istanbul, Turkey). When Justinian built the Church in 532 CE, he ordered eight columns to be taken from the Roman Temple of the Sun (Hansen 54). This is hardly coincidental, given that pagan religions and Christianity, not to mention the cult of the emperor, all referred to the sun metaphorically when speaking of their deities (147). As a common denominator for all worshippers, the sun and its temple were the perfect authority for the newly constructed church – the columns taken from it translated the holy power of the pagan divinities to the new monument.

In the more common translation of a pagan context to a Roman basilica, a certain rigor was established for the practice of using *rediviva saxa* – rather than just put a column anywhere, the great variety of material and style was dealt with by deploying the columns in pairs, with the mundane columns (ones made of grey granite, for example) near the entrance of the basilica and the precious ones, such as red marble columns, reserved for the sacred space near the choir. For capitals, quality of craftsmanship often determined their location in the Church, with the most elaborate ones indicating prominent axes.

Started by Constantine in 312-313 CE, San Giovanni in Laterano was the first sacred structure to be built predominantly with *rediviva saxa*. Its five aisles were separated, on the outside, by *verde antico* shafts. Lining the nave were red columns which differed in material and size, each one topped by a capital of different size and height – the first instance of such in the history of architecture (Figure 2, page 49). Old St. Peter's was built in a similar way, under Constantine's son Constantius between 337 and 350 CE (44). The drawings and measurements of Baldassare Peruzzi (from the 1520s) document both a great variety of mate-

rials as well as differing measurements for each column and capital (Figure 13, page 57). While the new St. Peter's was under construction, Giorgio Vasari wrote wistfully of its predecessor, which was abundant in

“columns, bases, capitals, architraves, mouldings, doors, and other incrustations and ornaments, which were all taken from various places and from the edifices built most magnificently in earlier times.” (qtd. in Hansen 48)

The archaeological evidence and documents regarding these two structures built with *rediviva saxa* are buttressed by countless churches which still stand, both inside and outside the city walls of Rome.

Sant'Agnese fuori le Mura demonstrates a complex variety of materials, despite its relatively modest size. It is situated on the site of an early church founded by Constantine's daughter, and dates to the papacy of Honorius I (625-638). The columns, which carry arches along the sides of the nave and gallery above, differ in color and texture and carry different capitals (see Figure 3 and Figure 4, page 50 and 51). At *Santa Maria in Cosmedin* (8th Century CE) the effect is even more pronounced, with the height of the columns and capitals changing dramatically from one column to the next (Figure 5, page 52).³⁵ *San Lorenzo fuori le Mura: Basilica of Honorius III* (1216-1227) demonstrates an even greater variety of material. While there is great variation in the diameter of the columns, symmetry is still maintained on each side of the nave, and the quality of materials increases towards the altar (Figure 6 and Figure 7, page 53).

Rediviva saxa were thus deployed according to guiding principles of symmetry and hierarchy, often implying spatial articulation in the Church. Prior to early Christianity, a building's interior was focused on the material structures rather than the volume which they enclosed. With the organization and distribution of *rediviva saxa* in pairs – becoming more precious and ornate as one moved towards the altar – the Christian basilica was an architec-

tural frame surrounding the congregation which meditated and moved within it (143). “Space and direction were incorporated into the architectural structure as underlined and reflected by the arrangement of the *spolia [rediviva saxa]*” (143). It was within this early Christian architecture that the notion of space first came into existence (143).

Aside from the translation of columns and capitals, a second degree of transference involved the change of use in *rediviva saxa*. This is evinced by the conversion of sarcophagi into church altars. Although they were being used as altars, the sarcophagi were still a tomb in some sense – the altar represents the tomb of the body of Christ or, more literally, the tomb of martyrs in the form of relics (Hansen 30). In other cases, soffits were sometimes rotated ninety degrees to be used as lintels above doors, converting the circular profile of the column it once rested upon into ornament.³⁶ Figure 9 (page 54) shows such a lintel in Santa Sabina (422-432 CE). The same church also has the cella entrance from a temple re-used as a frame for the western entry into the church (Figure 8, page 54). Considering that only the priest could enter the cella of a pagan temple, one must wonder whether this use of *rediviva saxa* was intended to subvert its original function, or if it was intended to make the entrance more sacred. In these ways, the appropriation of *saxa* took on an authoritative role – “the translations of authority, dignity, or holy power of a pagan divinity took place through the translation of *spolia [rediviva saxa]*” (148).

Varietas and Harmony

Constantine's decree certainly initiated the widespread use of *rediviva saxa* in the new heterogeneous architecture of Late Antiquity and the early Middle Ages – under him, the Roman Empire itself was one of translations, and the concepts of both influence and sustenance were a part of its new reality. It was the writings of Augustine in the late fourth century, however, which concretized and authorized the rejection of coherence and homogeneity

in the built environment. Returning to the topic of rhetoric from the last section – which included notions of style and expression, and invention and imitation – there was an ideal of eloquence which, to the rational mind, may tease sense out of the disordered and seemingly chaotic deployment of *rediviva saxa* in early Christian architecture. Augustine held biblical writing – considered by even the early Christians to be primitive and crude – to be an expression of the highest form of eloquence. The notion of antithesis,³⁷ in which meanings or dynamic motifs are opposed, achieves a certain beauty through its contrasting discrepancies. As he wrote in *De Ordine*, "... the beauty of all things is in a manner configured, as it were, from antitheses, that is, from opposites: this is pleasing to us even in discourse" (qtd. in Hansen 175).

From these ideas, we may deduce that beauty is composite: "parts correspond and so are joined together as to form one harmonious whole" (qtd. in Hansen 175). As Hansen says,

"It was not the formal, actual look of the parts that mattered, not their sensuous, physical materiality, but the order that resulted from their combination, a general underlying principle, the quality of opposition as such, which reflected a higher, divine principle of order." (175)

It was within this idea of antithesis that Augustine recognized all aspects of secular beauty. Often making analogies to building for his rhetorical concepts, Augustine cannot be discounted when read in the context of *rediviva saxa*, especially considering that they were deployed systematically:

"[...] he who would build elegantly, must put a feature that is to be unique in the middle of the building, and, if there are several features, they must be made to correspond, like with like [...]" (qtd. in Hansen 175)

Even prior to Augustine, there was a certain preference towards heterogeneity. Both Cicero and Quintillian wrote of the importance of *varietas*, or the quality of variety and multiplicity,

in eloquence. It was recommended most when something was to be emphasized. As Quintilian wrote in the first century CE, tedious subjects may bore the reader. He warned against

"[...] a style which has no variety to relieve its tedium, and which presents a uniform monotony of hue. This is one of the surest signs of lack of art, and produces a uniquely unpleasing effect [...] on account of its sameness of thought, the uniformity of figures, and the monotony of its structure."
(*qtd. in Hansen 173*)

Given that there was no shortage of funds or ability in the early Christian period and Middle Ages, the act of building with *rediviva saxa* cannot be easily defined as an act of necessity, merely the result of material availability and other pragmatic concerns. The translation of the Roman Empire under Constantine, along with the medieval focus on authority and sustenance, led to the widespread deployment of *rediviva saxa* and a new heterogeneous aesthetic. It was through this heterogeneity that the origins of a work remained visible – the qualities of *vetustas* and *varietas* acted as a literal and ideological foundation for the shifting and translating present.

Influence

In “Roman Architectural Spolia”, Dale Kinney discusses two paradigms of influence in which *rediviva saxa* can be considered. As previously mentioned, the term *rediviva saxa* itself denotes a certain “permission” which was granted to the objects of antiquity, whereby their past-ness was allowed to live on into the present. This defines the first paradigm, where the survival of a predecessor delineates the simple transmission of ideas along the chain of history.

The second paradigm, however, is culled from Harold Bloom’s *The Anxiety of Influence*. For him, influence denotes “the fraught interaction between a strong successor and an overbearing predecessor” (Kinney, Roman Architectural Spolia 139). Unlike the paradigm of

simple emulation, this concept of influence is a contentious misprision which results in a successor that is “strong” – architecturally speaking, a building’s “relationship to Roman precedents involved self-preserving repulsion as well as attraction” (140). While this notion is anachronistic with respect to the Middle Ages, it serves “to provoke fresh observations of medieval buildings that, under the lens of influence as it is normally applied, seem all the same” (150).

Let us return to the Lateran Cathedral. Its most prominent precursor was the Basilica Ulpia in the Trajan Forum, built by Trajan around 100 CE. The Lateran responded to it “by destroying the longitudinal symmetry of its ground plan and disrespecting the traditional principles of its elevation” (144). The architects of the Christian basilicas attained a height similar to the Basilica Ulpia’s (approximately thirty metres) by stacking a wall on top of its principle colonnade (Figure 10, page 55) as opposed to the second order of columns found in the Basilica Ulpia (Figure 11, page 55). While it is impossible to know exactly what the Lateran’s architects had in mind, the fact that this feature must have “seemed very bold, if not insane” to their over-building Roman contemporaries cannot be ignored (144). Alberti even described Old St. Peter’s as having “a crass feature: an extremely long and high wall... constructed over a continuous series of openings, with no curves to give it strength and no buttresses to give it support” (qtd. 144 – see Figure 12 page 56).

A dynamic pair of buildings displaying Bloom’s sense of influence are the Palatine Chapel built by Charlemagne in Aachen c. 790 CE (Figure 14, page 58) and the Church of San Vitale in Ravenna, 540 CE (Figure 15, page 59). Separated from the domed central space by stacked pairs of Corinthian columns, the Chapel at Aachen houses a second-floor gallery above the ground floor. Charlemagne’s throne sits on this gallery level to the west, and it is interesting to note that the central space looks normal when seen from his vantage point – from the ground level it seems disproportionately deep. Most of the columns and capitals are *rediviva saxa*, brought from Rome and Ravenna (147).

In Ravenna, two and a half centuries earlier, the Byzantine Church of San Vitale was built during the reign of Justinian and Theodora. It also has a domed central space, resting on eight piers which open into the gallery spaces surrounding it through paired columns. Rather than resting directly beneath an overhead arch, the columns at San Vitale occur on a semi-circular pathway delineated by partial domes above. San Vitale also lacks the lower story of the chapel at Aachen.

Although the spaces are unmistakably related, they are precisely at odds with each other – mass, heaviness and vertical thrust at Aachen are the antithesis of San Vitale’s balance and embracing openness. While we cannot determine whether the chapel at Aachen was meant to reprise San Vitale specifically, Kinney notes that “the formal resemblance between them is much closer than one normally finds among medieval buildings” (148). The *rediviva saxa*, however, signify an area of resistance. San Vitale’s columns and capitals were newly made, incorporating “early Byzantine shapes... and decorative motifs... that are flagrantly un-Vitruvian” (148). In Aachen, students of Vitruvius would have applauded the *rediviva saxa* brought from Rome, as they engender the more Roman qualities of the chapel there – traditional ornament, solid and static masses, and unnecessary height. The curvaceous forms and grace of San Vitale were anxiously avoided in Aachen, with the *rediviva saxa* serving as indicators of the builders’ “intensely retrospective aspiration” (148).

There are three auspices under which we have discussed the usage of *rediviva saxa*. First, the reality of the fourth century in the Roman Empire, coming in the wake of the Crisis of the Third Century, necessitated a pragmatic approach to building which was inescapable. As noted, pragmatics cannot be held solely responsible for the practice given the extent to which it was common, and it is within the realm of the translation of the Roman Empire

under Constantine which *rediviva saxa* took on their true potency. Into the later Middle Ages, viewing *rediviva saxa* as a component of an architecture of misprision proved to be an interesting, if slightly anachronistic, method of interpreting building practices of the time. With *rediviva saxa* defined on these three levels, we may determine how the practice might be translated to contemporary society and how it can be reborn as part of an Architecture of Sustenance.

Figure 2: Fresco of the Lateran Basilica (Hansen 44)

Figure 3: Sant'Agnese fuori le Mura (625-638). Ground Floor Plan with material indications. (Hansen 86)

Figure 4: Sant'Agnese fuori le Mura (625-638). Second Floor Plan with material indications. (Hansen 87)

Figure 5: Santa Maria in Cosmedin. 3 columns near the entrance of the church, each in a different material with a different capital (Hansen 91)

Figure 6: San Lorenzo fuori le Mura (1216-1227), plan detail showing variation in column dimension and floor patterns (Hansen 132)

Figure 7: San Lorenzo fuori le Mura (1216-1227), photo of the nave with trabeated columns (*rediviva saxa*) (Hansen 133)

Figure 8: Santa Sabina (422-432), west facade entrance taken from the cella of a pagan temple (Hansen 27)

Figure 9: Santa Sabina (422-432), west facade entrance using a soffit rotated ninety degrees as its lintel (Hansen 27)

Figure 10: Reconstructed drawing of the Lateran Basilica, c. 315 CE. (Kinney, Roman Architectural Spolia 153)

Figure 11: Reconstruction of Basilica Ulpia Interior (Kinney, Roman Architectural Spolia 154)

Figure 12: Rome, Old St. Peter's, transverse section looking west, before 1620 CE by Giacomo Grimaldi (Kinney, Roman Architectural Spolia 155)

Figure 13: Rome, Old St. Peter's (c. 325-350 CE)
 Plan drawing showing location of *rediviva saxa* columns.
 (Kinney, Roman Architectural Spolia 156)

Figure 14: Aachen, Palatine Chapel of Charlemagne (c. 790 CE), interior view
(Kinney, Roman Architectural Spolia 158)

Figure 15: Ravenna, San Vitale (532-547 CE), interior view
(Kinney, Roman Architectural Spolia 159)

Notes for “Building with the Past”

¹³ For elaboration on the context of the usage of these participles, see Alchermes p. 167 note 2.

¹⁴ Constantine’s mother Helena was Christian, so the religion was not new to him

¹⁵ It would not be until 380 CE that Emperor Theodosius would make Catholicism the official religion of the state, and would outlaw the practice of pagan cult worship (Fortescue)

¹⁶ It should be noted that this was much more of a problem for private buildings than it was for public ones (Kinney, *Spolia. Damnatio and Renovatio Memoriae* 124).

¹⁷ The entrance of a Basilica, by this point, had never been prescribed by imperial functions and thus it was placed somewhat haphazardly.

¹⁸ The *cella* was the inner chamber of a temple, only accessible to the priest

¹⁹ It is important to note that the “art of memory” refers not to a visual practice, but a cognitive one.

²⁰ “Rhetoric” refers to the “non-oral skill by which a public speaker prepares within his own mind the sentences which he wants to utter in public.” (Illich 41)

²¹ The *ad Herennium* was a full treatise on the *ars memoriae*, whereas Cicero’s *De Oratore* assumes that the reader is already familiar with artificial memory and its terminology

²² Castor and Pollux, twin sons of the goddess Leda from different fathers, were often seen as protectors – most notably of the Spartan and, later, Roman armies.

²³ At the time, the *Ad Herennium* was the only surviving memory treatise in the Latin language, making it the only complete source for the *ars memoriae* in the Greek and Latin world.

²⁴ The medieval representation of an author was often that of a reader of an old book or a listener of an old story, which he is recalling by retelling (Carruthers 190).

²⁵ Note that *rumination* has two definitions, both of which will suit our discussion: “the act of pondering; meditation” as well as “the act or process of chewing cud” (American Heritage Dictionary).

²⁶ The idea of *res*, according to Mary Carruthers, is the concept of a text having meaning which is independent of the reader and which must be amplified and “broken-out” from its words and processed in one’s memory (191).

²⁷ Imitation *ad verbum* would indicate the repetition of words – a re-iteration of the language used by an author. Imitation *ad res*, on the other hand, repeats the *res* of the text, the “meaning behind the text” (Carruthers 190).

²⁸ The word *auctor* is thought to be derived from the verbs *agere*, “to act” and *augere*, “to grow” (Carruthers 190).

²⁹ The metaphor of the “river of literature” was widely known in medieval times, with the *fons* as the “source” of the river which flows through time and envelops other works (Carruthers 191).

³⁰ The trope of the bee has been extensively analyzed by medieval scholars as a model for assumptions concerning the nature of literary imitation. According to Seneca, “we ought to imitate bees, as they say, which fly about and gather [from] flowers suitable for making honey, and then arrange and set into their cells whatever nectar they have collected.” (qtd. in Carruthers 192)

³¹ Although based on the teachings of Plato, Neo-Platonism contained enough unique interpretations of the writings of Plato to make it substantially different than what Plato wrote and believed.

³² Pseudo Dionysius the Areopagite was a late 5th to early 6th century Neo-Platonist theologian and philosopher.

³³ We can instantly recognize that Aquinas' rejection of poetry is at odds with his advocacy for the use of imagery. But since imagery was an extension of the *ars memoriae* (and thus the virtue of Prudence), it was still a virtuous activity – while poetry, dealing with Grammar (the lowest of the liberal arts), was not.

³⁴ One must remember that at this stage, Neo-Platonism was only beginning to be fused with Christianity. It seemed like a natural fit however, as the religious content of repetition validated the ontological structure of repetition. (Haidu 880)

³⁵ It is worth noting that the introduction of the archivolt into the church seems to have come about with the introduction of spoliata columns – it is much easier to accommodate their varying heights with arches of varying dimension than it is to prop them up so that they might support a level trabeation. Consequently, a trabeation is used when the spoliata columns are all taken from the same source, which only tended to happen in the very first early Christian churches.

³⁶ Sofits were the beams which spanned between two columns

³⁷ From the Latin term *contraposita*, contraposto

“What a contradiction, to search in reality for memory's pictures, which would never have the charm that comes to them from memory itself and from not being perceived by the senses. The reality I had known no longer existed... The places we have known do not belong solely to the world of space in which we situate them for our greater convenience. They were only a thin slice among contiguous impressions which formed our life at that time; the memory of a certain image is but regret for a certain moment; and houses, roads, avenues are as fleeting, alas, as the years.”

— Swann's Way, by Marcel Proust

Architecture of Sustenance

As we have seen, there are a variety of factors which contribute to the notion of *sustinentia*. The most fundamental form of sustenance for our consciousness is *mnēmē*, the chiasma of the pathos of memory and forgetting. Beginning in Late antiquity and lasting throughout the Middle Ages, sustenance was embodied by Western Culture – from the translation of the Roman Empire as assisted by *rediviva saxa*, to the practice of the *ars memoriae* and authoring throughout the Middle Ages. These topics of investigation serve as a conceptual foundation upon which we can build an Architecture of Sustenance.

While the author recognizes that contemporary culture is slowly incorporating ideas of energy production and efficiency into its building practices, an Architecture of Sustenance

seeks to return to the visceral *sustinere* of the Middle Ages so that we may reconsider the tacit assumption of what it means “to sustain”. Not merely an act of offsetting one’s carbon emissions, it is the engagement of a process which connects to our fundamental necessity for sustenance.

As we saw in the discussions regarding the Middle Ages, it is difficult to address a subject upon which little architectural theory is written. Despite the increasing tendency towards environmental responsibility, the level of discourse around the disciplines of reuse and recycling, in architectural circles, is relatively flat. There is ample writing surrounding the larger spheres of preservation, conservation, reducing one’s carbon footprint and attaining net-zero construction, all of which tend to be discussed in the larger sphere of “sustainability”. However, the specific reuse of building fragments in the manner we have alluded to is one upon which little is written. A contemporary equivalent of the *rediviva saxa* must be explored in order to fully conceive of an Architecture of Sustenance. As such, a brief analogy with the most familiar and fundamental kind of sustenance is ideal at this juncture – let us discuss food.

Sustenance from Scraps

Anyone who has prepared a meal knows that few, if any, ingredients can make the journey from nature to plate without some degree of manipulation. Animals must be slaughtered; fruits and vegetables must be plucked from the earth and washed, skinned, separated or trimmed in order to make them palatable. To utilize onions, for example, one typically discards the tip and root, the skin, and whatever else we deem inedible. We conserve the part we want, and we forget the rest.

The French chef Auguste Escoffier (1846-1935), who took the alchemical craft of cooking in nineteenth century France and codified it into a science, knew better. Without question, it is important to prepare ingredients. The skin of an onion, the cartilage or a cow;

neither taste very good, and it is worth discarding them from the food that we will be eating. But that is not to say they should be completely forgotten – Escoffier intuited that, if manipulated in the right way, even the lowly food scrap could give us something of value. The heart of his insight was in his use of stock – it was so important that he declared “... stock is everything in cooking. Without [a good stock], nothing can be done” (Lehrer 53). More than just the water left over from boiling meat, Escoffier derived a complicated 16-hour method for preparing veal stock which included bones, vegetable scraps, a few select herbs and the repeated deglazing of a pan used to fry meat scraps. Only at the end of this process was one able to begin cooking (56). As Lehrer states, “What every other chef was throwing away – the scraps of tendon and oxtail, the tops of celery, the ends of onion, and the irregular corners of carrot – Escoffier was simmering into sublimity” (54). While he may not have been able to articulate his craft to a scientist, Escoffier certainly knew that he was entering into new realms of flavour which, in nineteenth century France, had been uncharted.³⁸

At the same time that Escoffier was perfecting the art of making veal stock, Japanese chemist Kikunae Ikeda was investigating a unique flavour which he could not quantify, that of Japanese *dashi*, a classic Japanese broth made from a dried form of kelp (57). The most that he could say was that it was “delicious”, or as the Japanese say, it was *umami*. Expanding his research, he found the taste to be rather pervasive. “There is a taste, which is common to asparagus, tomatoes, cheese and meat but which is not one of the four well-known tastes” (qtd. in Lehrer 57).

Both Ikeda and Escoffier, in parallel and unbeknownst to each other, were tapping into a taste which, until it could be proven perceptible to humans, would remain elusive. As it turns out, it is a taste which arises from the processes of life itself. When photosynthesis or the aging process takes place, glutamic acid is denatured into the amino acid known as glutamate. Both boiling and frying happen to be exceptional vehicles for the production of glutamate, along with the rest of the ways we cook food. So when Escoffier was frying up inedi-

ble meat scraps and deglazing the pan, he was unknowingly harvesting glutamate. When he was boiling bones and vegetable scraps, he was extracting flavour in the form of glutamate.

Ikeda's problem, however, was that it didn't seem possible for us to be able to detect glutamate. Although he is credited with discovering the substance in 1908, for years Western scientists balked at his investigations into "deliciousness, whatever that [is]" (59). Despite the fact that the tongue seemed to lack detectors for glutamate, both Ikeda and Escoffier seemed to realize there was a taste which was simply "delicious", beyond sweet, salty, sour or bitter. Not until more than ninety years later would a very unique receptor for glutamate be found on the tongue (61). It is quite unique - the four tastes which we typically associate with food can only be used in relation to each other, whereas umami (as the taste was named in honour of Ikeda) is detected all by itself. It turns out to be one of the most important tastes for us to sense. As an essential neurotransmitter, and a key element of cellular metabolism, our bodies produce more than forty grams of glutamate per day and we are constantly craving more. We acquire the taste of it at birth, as breast milk is rich in the substance.³⁹

Escoffier's genius was in realizing, purely intuitively, that all the inedible parts of the food we eat still contain substances which are both important to us and delicious. By taking bones, scraps, and scrapings of the pan, Escoffier let nothing go to waste and revolutionized the way we cook. With his creation of veal stock he was able to craft, out of discarded and forgotten pieces of food, one of the most sublime and important tastes for our sustenance. It is an important example of the potential contained in the "forgotten" parts which we discard every day, and it is the ideal bridge which we shall use to cross into the territory of the new *rediviva saxa*.

Mnemea

As evinced by Escoffier, the "forgotten" elements of food can contain its most essential and profound characteristics. Utilizing them led to the invention of something new and

unlike that which they came from, but it was delicious nonetheless. What, then, of an architectural element which would embody this duality – where its omission heightens the sensorial effects in one context, yet in itself may be utilized in order to create another, equally substantial experience? This architectural element is the contemporary equivalent of the *rediviva saxa*, which I have termed the *mnemet* (pronounced “nem-it”). This term arises primarily from the Greek *mnēmē*, as defined earlier: the chiasma of memory and forgetting. If we consider the act of embodying this dialectic as *mnemea*, then we might consider such an act to be the production of mnemets. It derives phonetically from the term “tenet” (“ten-it”) which, as detailed in the introduction, is a component of the Latin precursor to sustenance, *sustinere*. This protologism will be used as the contemporary equivalent of the *rediviva saxa*.

In order to better understand how constructing with mnemets might give rise to an Architecture of Sustenance, we must first examine three cases in which buildings are remembered and forgotten. Pieces of each approach will help clarify the mnemet and how its usage constitutes an Architecture of Sustenance.

Forgetting: Gordon Matta-Clark

The work of American artist Gordon Matta-Clark (1943-78) is arguably the most profound amongst the late twentieth century artists who worked with derelict or abandoned spaces. With the intent of revealing new spatial relationships and teasing dynamic experiences out of mundane or otherwise straightforward environments, Matta-Clark’s work found its power in the careful act of subtraction (Figure 18, Figure 20). By causing buildings to “forget” in a strategic way, Matta-Clark heightened our experience of them.

Matta-Clark, who referred to himself as an “anarchitect”, created incisions to reveal dramatic, often revelatory conditions in otherwise mundane structures. Despite this, his work was often short-lived – since his process involved techniques which may not have been approved by most building code regulations, Matta-Clark was often relegated to performing

his manoeuvres anonymously within structures scheduled for demolition. As a result, none of his works remain today. Some of the products of these endeavours found their way into gallery spaces, but they were relegated to the role of an object to be observed.

As part of *Splitting* (1974), Matta-Clark used a chainsaw on a house scheduled for demolition and removed the four corners where the roof connects to the second floor (Figure 16, page 72). In doing this, Matta-Clark opened the darkest areas of the house to nature and the sky, presenting the occupant with an entirely new experience of a familiar space. The four corners then made their way to an art gallery, where they sat on the floor to be admired (Figure 17, page 72). *Conical Intersect* (1975) found the artist violently subtracting a conical volume from a building scheduled for demolition in Paris, France. Opening the building up to the elements, Matta-Clark crafted a new vista for both visitors to the building, as well as passersby (Figure 20, Page 74). In *Day's End* (1975), two spherical intersections were imagined as part of a series of interventions on an abandoned warehouse on New York City's waterfront (Figure 18, page 73). One intersection occurred at the upper corner of the warehouse (Figure 19, page 73), once again disrupting the expectation one has when experiencing a space. The other intersection occurred on a much larger scale, tracing out a subtraction on the end wall of the cathedral-like space (Figure 21, page 75), and tracing a complete removal of the floor of the building, revealing the harbour below (Figure 22, page 75). Other, smaller subtractions were then taken from around the building for placement in gallery spaces (Figure 23, page 76).

While Matta-Clark was a sublime agent of architectural forgetting, the architect's culled building memories were confined to gallery walls or the dumpster – given Matta-Clark's rudimentary and sometimes violent working methods, most of the forgotten material was discarded. It is worth investigating a contemporary architect who manipulates old spaces for new uses in order to further develop the components of an Architecture of Sustenance.

Remembering: Garth Rockcastle

At Open Book in Minneapolis Minnesota, contemporary American architect Garth Rockcastle took three dilapidated warehouses and renovated them into a literary arts center. It was designed as a home for a client team consisting of three organizations: The Loft Literary Center, which offers writing classes and book events; The Minnesota Center for Book Arts, which provides equipment and space for literary artists specializing in letter printing, bookbinding and paper-making; and Milkweed Editions, the United States' largest non-profit literary publisher (Walker 6). The program consists of a performance hall, a "literary commons" with a variety of reading spaces, classrooms, meeting rooms, a resource library, studios, a cafe, an art gallery, and a gift shop – all alongside office space for each of the three clients.

Conceiving of the three, three-storey warehouses at 1011 Washington as a single entity, Rockcastle gave each client one floor of the complex rather than one building each. Each building has its own varied history as a part of downtown Minneapolis' historic milling district, and each has survived long enough to contain traces of these varied uses. From industrial through commercial occupants (including one of the buildings acting as a flophouse for a period), the buildings contain a rich history which Rockcastle leaves exposed. Layers of wallpaper, vestiges of original structure, and paint-chipped window frames all act as indicators of the previous lives of the building. The client team also held a regional competition for art installations within the building – artists were invited to visit the space under renovation and peruse the scraps, from which art pieces were derived and then displayed in the completed building (Figure 24, page 77).

One of the building's most inspired moments is in one of its many reading areas, in which a stair was mostly removed (Figure 25, page 77). Rather than remove the stair and floor above completely, Rockcastle removes only as much as is necessary to permit a new function in its absence, using the remaining fragments to relate the present space to its past

configuration. It is architectural *mnēmē* – *mnemea* – in which the memory of an old function remains and enough “forgetting” has taken place to allow a new use to occur. Other moments around the building see old window frames (which had to be replaced on the exterior for pragmatic reasons) reused on the building interior as a way of decorating interior views (Figure 26, page 78). Extensive additions were made using new material to bring spaces up-to-date.

While Open Book is a delightful example of *mnemea* – the actualized chiasma of spatial memory and forgetting – it could not be said that it is an Architecture of Sustenance. While it is an elegant and thoughtful intervention in an old space, it suffers from the same symptoms as most renovations: it discards the old in favour of the new, despite the traces of the past which remain into the present. Although efforts were made to retain some of the old material, they were only utilized to the extent that Matta-Clark’s cuttings were: as aesthetically pleasing objects placed within a space for admiration. What about architecture which utilizes the pieces which result from the process of *mnemea*?

Inventing: Open Classroom Association

In 2003, Santi Cirugeda, an architect and Associate Professor of Architecture at the European University of Madrid, worked with students from the Architecture faculty at Granada University to form the Open Classroom Association (AAABIERTA) as a platform to “discuss the necessity of redefining the university course within the process of European convergence of teaching institutions” (van Hinte, Peeren and Jongert 60). A seminar was created for the course, and the possibility of creating a new space for discourse came up. Within days, it was discovered that a municipal building in Granada was scheduled for demolition (Figure 27, page 79), to make way for a social housing project. Working with its architect Andrés Perea, the students concluded that the materials would be suitable for reconstruction. As part of the agreement the students would not be able to take their time, as the municipal-

ity did not want to postpone its plans – so with permission from the city and the social housing organization (Visogosa), 25 students disassembled the building in 8 days and put it into a storage facility in Granada, much in the same way that the Romans stored their *saxa*. This gave the students ample time to choose a new site and develop a new design out of the building pieces.

In the process of designing the new building, it was apparent that different elements of the building would need to be reconfigured to suit a new purpose. The existing building, for example, had a poured concrete slab and could not be easily removed for reuse. As a way around this, the students realized that the roof system could, if properly translated, become the floor. Figures 28-31 (pages 80-83) show the process which was developed. Essentially, the roof became formwork for the floors. Standing-seam metal sheets were folded along their seams to form a series of “W” shapes, which were then laterally strengthened with rebar. Additional rebar was added along the length of the “W” form, which was then filled with concrete and vibrated to eliminate air pockets. Upon curing, the rebar and central seam was cut and the two triangular beams were free to be placed on the grade beams, themselves formed from the flashing which surrounded the perimeter of the roof. Standing seam panels secured together to form a large surface then acted as the formwork for a cast-in-place floor, which sits atop the triangular beams. Figure 32 (page 84) shows the building at various stages of completion.

The reuse of materials and their translations would move this project beyond the realm of re-invention and into the realm of sustenance but for one condition: the initial building is completely “forgotten”. Although it is a fascinating and commendable project on many levels, it is not an Architecture of Sustenance because the building which was deconstructed was literally erased from existence, leaving an empty site upon which a brand new building was built. At our level of discourse, ignoring for the moment the transfiguration of the building pieces, it is no different than merely re-locating a building.

Compositio

Each of these projects contains one element of an Architecture of Sustenance. Garth Rockcastle's elegant architecture of remembering successfully mediates the past with the present, employing the chiasma of *mnēmē* to sustain the building into the present and future. Gordon Matta-Clark's careful "forgetting" brings pleasure and excitement to the otherwise banal and derelict spaces which he engages. The work of AAABIERA is a delightful demonstration of the way in which an existing building can be deconstructed and re-invented to suit a new purpose.

Architecture of Sustenance, then, is a hybrid of these three strategies. As a result, it is an idea which encompasses more than one building. The *mnemet*, as we defined earlier, assumes its power from the fact that its absence brings a positive effect to the place from which it was taken. In this sense, Gordon Matta-Clark's gallery objects could loosely be considered *mnemets*.

If we expand upon the *mnemet* as the fundamental part of an Architecture of Sustenance, we see that such an architecture is only possible when the original building and new building co-exist. The "forgotten" elements of the old building, whether they are localized pieces or larger sections, are reborn in order to construct a new structure. Sustenance arises from the fact that the old building, now improved, remains to assume a new function by virtue of forgetting. Parallel to that, a new building is built from the pieces that the old one needed to forget in order to survive.⁴⁰ An Architecture of Sustenance, then, is created from the buildings which arise from this process as well as the process of building itself.

Figure 16: *Splitting*, Gordon Matta-Clark (1974). (Lee 33)

Figure 17: *Four Corners*, Gordon Matta-Clark (1974). (Lee 22)

Figure 18: *Day's End*, New York City. Gordon Matta-Clark (1975). Exterior View. (Lee 120)

Figure 19: *Day's End*, New York City. Gordon Matta-Clark.
The intersection of three spheres delineate the moments of subtraction in the Pier. (Lee 124)

Figure 20: *Conical Intersect*, Paris, France. Gordon Matta-Clark, 1975. (Lee 182)

Figure 21: *Day's End*, New York City. Gordon Matta-Clark (1975). (Lee 129)

Figure 22: *Day's End*, New York City. Gordon Matta-Clark (1975). (Lee 126)

Figure 23: *Pier In/Out*, Gordon Matta-Clark (1975). (Diserens 210)

Figure 24: Book Sphere, Author unknown.
Constructed from found materials
during the renovation of Open
Book. (Walker 21)

Figure 25: Open Book, Meyer, Scherer & Rockcastle Ltd (2001). Interior view showing re-
membered stair and floor assembly, with substantial elements forgotten to permit
space for reading room. (Rockcastle 5)

Figure 26: Open Book, Meyer, Scherer & Rockcastle Ltd (2001).
Interior view showing new stair construction with old
window frame.
(Pete Sieger, <http://tinyurl.com/sieger01>)

Figure 27: Various photos showing views of the building scheduled for demolition. (AAABIERTA)

Figure 28: Diagrams showing the construction of the beam formwork (AAABIERTA).

Aabierta montaje

Preparación del encofrado para las vigas la base para hormigonar

Ficha nº 2b

<p>Personas</p> <p style="font-size: 2em; font-weight: bold;">2</p> <p>Fotos</p>	<p>Herramientas</p>	<p>Protecciones</p>
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Operaciones

5. Colocar la armadura en el encofrado

6. Cortar los tableros

7. Fijar las varillas con alambre y colocar los tableros

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Granada
Santiago Cirugeda
www.recetasurbanas.net

Figure 29: Diagrams showing the location of the rebar within the forms (AAABIERTA).

Figure 30: Diagram showing the assembly of the floor deck which will be filled with concrete (AAABIERTA).

Figure 31: Diagrams showing the separation of the beams so that they may be used in the construction (AAABIERTA).

Figure 32: The new building during the process of construction (Cirugeda).

Notes for Architecture of Sustenance

³⁸ His closest competition, Marie-Antoine Carême, cared more about appearances than taste – it was an insipid lavishness which resulted in epic buffets comprising hundreds of nearly inedible, cold, and bland dishes (Lehrer 62). Not surprisingly, Escoffier’s technique is still indispensable to today’s chefs (Lehrer 55).

³⁹ It contains ten times as much glutamate as cow’s milk. (Lehrer 62)

⁴⁰ Since a new building may require more than just the “forgettings” of one renovation, what constitutes an instance of an Architecture of Sustenance will likely be more than two buildings.

"Play cannot be denied. You can deny, if you like, nearly all abstractions: justice, beauty, truth, goodness, mind, God. You can deny seriousness, but not play."

—Johan Huizinga

The Kindergarten

The Kindergarten, as conceived by Freidrich Froebel, is intended to be an education based upon play. "The divine impulse of activity is never directly opposed in the Kindergarten, but accepted and guided into beautiful production according to the laws of creative order" (Logan 37). It encourages small beings, operating largely upon their Core Consciousness, to discover and relate to the world around them via play – discovery, freedom, wonder combine to enlighten the innocent mind and develop it into Extended Consciousness. *Homo Ludens* by Johan Huizinga states that play is primary to, and a necessary condition of, the generation of culture. It is within this context that a space of play is a suitable challenge for the design of an Architecture of Sustenance. While memory serves as one branch of suste-

nance, play serves as another. These two branches, for the young child, buttress each other in the development of their autobiographical self.

Program Summary

The 4,000 square foot Kindergarten for 40 students is programmed as follows:

- Mud Room
- Storage space
- Teacher Space
- (2) classrooms (based on standard Ottawa District School Board size of 7m x 10m)
- (2) bathrooms suited to 3 students each (with cleansing space for 5 students each)
- (2) kitchens
- Outdoor play area
- Indoor play areas
- Celebration Space

Site – The Dominican Garden

The Dominican Garden is delineated by stone walls along Empress and Lorne Avenue north of the Dalhousie Community Centre on Somerset Street West, with access on the north through the Dominican University College parking lot (Figure 33 – Refer to Appendix for all design images). The site has been occupied by the Dominican Order since 1883, having survived fires to varying degrees – the current St-Jean-Baptiste d'Ottawa Church at 96 Empress Avenue (which also includes the Dominican College University and a monastery) dates back to 1932, and the Dalhousie Community Centre at 755 Somerset Street West was built in 1887.

The garden itself has an equally rich history – the trees which stand there today were originally planted by the monks of the Dominican Order of Hyacinth, Quebec who first occupied the site. Long used as a place of quiet reflection for the monks, the Dominican Garden has seen its share of activity over the years – a tennis court in the summer and two hockey rinks in the winter helped keep the Dominicans active. The private, walled area even accommodated cross-country skiing by the more active monks. At 85 meters long and 48 meters deep (approximately 1 acre in area), it provides ample room – and the perfect sanctuary – for the construction of a Kindergarten (Figure 35).

Source Buildings

As noted in the section “Architecture of Sustenance” (beginning page 62), any building serving to act as a part of an Architecture of Sustenance will be construed with mnemets, taken from existing buildings. As such, an unused building was found in Ottawa to serve as a source for mnemets.

Sited at 401 Lebreton Street South (Figure 36), this U-shaped building previously served as a home for the Ministry of Natural Resources. In its current state, the entrances are sealed with plywood and welded metal plates. A plethora of broken windows are protected by rusting metal bars, and looking inside shows an interior which has been neglected and harvested of its office supplies. Facing onto Carling Avenue, this site was deemed to be useful should an appropriate renovation take place.

As the building is owned by the Federal Government, as-built drawings or blueprints were unattainable. Visual inspection showed the construction to be standard steel construction for the lower building, consisting of steel trusses (two feet deep) sitting upon a concrete slab-on-grade. Wood frame windows puncture a brick-clad outer wall, and puncture a concrete block façade on the inner wall. The taller building at the east end of the site is con-

structed with two-way concrete slab construction sitting upon steel columns (Figure 38, Figure 39).

Given that this thesis is focused on the design of a Kindergarten, the renovation was undertaken with the intent of making the building attractive to potential leasers, and with the intent of securing enough mnemets to support the development of half of the kindergarten. Three simple moves were undertaken: first, the bars and broken windows are extracted from the building. Second, the bottom of the “U” is removed to create two buildings – a low, one-storey volume situated opposite a taller one (Figure 40). The space between the now-divided buildings is conceived as a landscaped courtyard, shared by the tenants of each building. The taller volume sees two circular cuts taken from it, in order to bring light down the center of the building.

As this process only provides enough mnemets for the production of the first half of the kindergarten, an assumption was made: there are enough buildings built with these technologies in Ottawa that a second building with similar pieces could theoretically be used to harvest mnemets. This allowed me to concentrate on using two different strategies upon the same set of mnemets, rather than develop two different strategies for two different sets of mnemets. The pieces are generic enough to demonstrate *strategies* for building with them, which could theoretically be utilized in other Architectures of Sustenance.

Design Process

The creative process began with a re-conception of space in the mind of a child, utilizing the angels of Giotto (whose paintings enamoured the Proust’s young Marcel in *Swann’s Way*) to re-conceptualize the fundamental *qualia* of these spaces. The drawings of Valeriano Pastor, a student and colleague of Carlo Scarpa, also acted as an inspiration – his use of the human figure, as a tool to express architectural form, inspired a process of drawing in which I explored the relationship of the human and angelic body to the space of the Kindergarten.

Pastor's strategy revolves around the resolution of three "realms" in architecture, "the program, construction and use. Each has specific traits and operative modalities... but none can be independent without impairing the others" (qtd in Frascari, *A Tradition of Architectural Figures: A Search for Vita Beata* 263). Figure 41 shows two such drawings, from the unbuilt District School Center near Dolo, Italy. Figure 41a shows a nude male, seen from behind. "...this mime evokes, through the tension of his muscles, the co-temporal tension in a structure that is out of plumb" (266). Figure 41b, which uses shadow to "set the stage between potential use and programmatic requirement" (264), demonstrates "a tripartite interaction, architectural and corporeal" (265). The figures, delineated during the process of design rather than after it, become the "primary causes for composing through differentiation" (264).

Parallel to these drawing explorations, models were made to investigate the potential for coloured surfaces to alter the perception of light in the Kindergarten. This was undertaken after a site visit in which a sliver of light punctured the tree canopy, striking orange and red leaves sitting next to the stone wall of the site (Figure 42). As an exercise which was inspired by the site, these models do not necessarily represent specific spaces in the Kindergarten, but rather they allowed me to understand the potential for the play of light against surface (Figure 43).

Following these explorations, I began to consider the functional space of the kindergarten. A series of geometric overlays were done on the site, and a site plan was developed. Based on a ten meter module (derived from the Ottawa District School Board's standard kindergarten classroom), a large grid was overlaid on the site. Drawing inspiration from the moment of "goodbye" where a parent leaves their child on the first day of school (Figure 45), the center of the grid was conceived as a moment of subtraction. Half of the grid was eliminated, and a circle was inscribed on the site which subtracted further from the geometry. For the young child, the point at which they depart their parents' company and enter into the

care of the teacher is a fundamental moment in their experience of the kindergarten. Expressed as a space of subtraction and tension in the angel drawings, this space is demarcated by a rammed-earth surface, the top of a column which rises through the Kindergarten's basement and out of the ground. A radius traced from the circle symbolically subtracts from the rectilinear geometry of the kindergarten form – marking this moment as a space of loss, yet also perceptually acting to encompass the child who then leaves the parent to enter the embrace of the school.

Two classrooms are oriented on the periphery of this subtraction, creating the main spatial relationships for the kindergarten: the classrooms are flanked by kitchen spaces on one side, and connect to the mud room (in reality a multi-functional spill-over space) which they share access to. Bathrooms sit at the back of the classrooms, with access to an underground celebration space (and supply storage spaces) concealed in the floor of each class (Figure 46, Figure 48). This celebration space – used primarily for the kindergarten graduation ceremony – intentionally revolves around the structure from which the child first leaves their parents' embrace. Organized around the rammed-earth column which supports the moment where the goodbye happens, the sky-lit celebration space exits the kindergarten via a hidden exterior stair.

While geometrically symmetrical, the building aims to be harmonious through *varietas*. As a strategy for the development of the Architecture of Sustenance, a different approach for utilizing the mnemets was conceived for each half of the program (see floor plan, Figure 47). Certain programmatic determinations were made based on the angel drawings, which determined the overarching strategy for designing each space. The kitchen, for example, is conceived as a space of alchemy (Figure 49). The space does not necessarily have all the accoutrements of a standard kitchen – rather, each part is separately re-conceived so that together they may become a space which functions as a kitchen. A rammed earth wall – a transmutation of soil – surrounds the kitchen, further embodying its alchemical nature. Un-

conventional food storage techniques – from underground cold-storage to cold-storage as part of the exterior wall – serve to underscore the idea that alchemy, as a practice, sought to isolate and emphasize individual characteristics (the coldness of the earth, for example) to transfigure them into something new (a place to keep milk cold – see Figure 50). These spatial ideas were then transformed using mnemets, each space taking on a unique quality while remaining in harmony with its counterpart.

Four Interpretations

Taking cues from the theoretical documents' research led to the usage of the four interpretations of medieval scripture in the junior kindergarten (situated to the south). Literal, political/ethical, metaphorical and anagogical interpretations were conceived for each of the four mnemets seen in Figure 51. This drawing places the mnemets in a table according to the medieval interpretation applied to them. Where possible, these deployments were made through both the body-analogy from the initial explorations, as well as the scriptural interpretation. The body analogy primarily dealt with a “push”, relating to the transformation of the child – who is new to school and is tentatively spending time away from his or her parents – from a state of innocence to a new state of learning and play. Figure 52 through Figure 55 show the deployment of a steel truss through the four interpretations – literal, where a truss is a truss; political, where the truss divides storage spaces for the children; metaphorical, where the truss acts as a column; anagogical, where the truss becomes a structure which opens the roof to the sky.

Four Causes

The second half of the kindergarten relies upon Aristotle's Four Causes to develop a strategy for the deployment of mnemets. The Material, Formal, Efficient and Final cause all

informed the manner in which the mnemet was utilized, resulting in an entirely different set of details for the senior kindergarten. The body analogy for the senior kindergarten is a “pull”, drawing the child up and away from an education centered around play to one which is based on scholastic endeavour – the structured and carefully considered education of the first grade and beyond. Figure 56 shows various ideas encompassing the usage of mnemets according to the four causes.

Teresa’s Way

Pushing through the screen door, young Teresa bids her mother goodbye as she races down the front stairs, late for school yet again. Her quick footsteps pad rhythmically along the pavement, carrying her across the cool sidewalk in the shade of the tree canopy above. Rounding the corner onto Empress Avenue, she sees from her oblique perspective that the last student to enter the Kindergarten has failed to close the gate – though perhaps the Kindergarten’s architect is to blame, as his gate design, beautiful and thoughtful as it may be, balances the swinging gate so well that it cannot close by itself. Stepping into the Dominican Garden, Teresa grasps the brick counterweight and gently raises it, bringing the closure to rest with a weighty clang.

Teresa’s pace slows as she enters the Garden, walking her softly along a stone wall that stands tall overhead, its jagged face yielding to neither time nor nature, cutting the sun’s morning rays as they find their way through the dense cover of leaves. The path which she follows, its soft compressed soil depressing ever so slightly beneath her feet, was traced not by a hand, but by the desire of the Monks who held this Garden as a sanctuary for so many years. Passing through the grid of trees – the physical trace of the planter who, using saplings as his pencil, dotted out a perfect matrix some unknown number of years previous – Teresa feels the earth’s material change beneath her feet, as it does every day. The thick, yet hollow sound of the stone which was placed so intentionally within the site – its clean lines carefully defining a path for her journey, converging ever so slightly – is familiar to her, and on this day her mind is

brought back to what she witnessed here last year. Rather than observe, on this day she will participate.

Crossing into the building's embrace, its curved inner walls seeming to wrap her inwards, Teresa's footsteps hit the solid, dark mass around which the entire Kindergarten seems to rotate. The feeling underfoot reminds her of her first day of school – the last embrace of her mother as they departed company for the first time, the tug of war which she engaged with the teacher, reaching out to her mother as she walked away. The sense of separation lingers, but as she continues into the kindergarten's encircling form, the feeling of tension inside her yields to a feeling of being pulled towards the school, welcomed back to the familiar space in which she has played for the last two years.

As she reaches out to push the soft leather squares set into the heavy wooden door – proportioned, it seems, exactly to her hands – Teresa glances to the left, catching a glimpse of the junior kindergarteners as they begin to draw up their tables for the day's activities. Just as she turns to go inside, one of the children appears in the window, shyly darting aside as Teresa turns to catch his curious gaze. Engaging the leather squares, Teresa's hands sink into the wooden door as a loud latching sound snaps it open. Pushing through its shortened frame, she sneaks furtively into the entry hall, mitigating the squeaky hinge as much as she can in order to avoid detection.

Rather than head straight to class, Teresa pads silently across the entry hall's polished concrete floor, its cool surface subtracting the morning sun's heat from her body, while her memories of dancing across it, playing with classmates, of saying hello and goodbye to friends bounce around in the back of her mind. As she nears the junior classroom, the blocks in the wall, which contained the prized creations of she and her classmates, now house the products of the current class's play-labours. The scent of the raw cedar, which wraps the children's storage spaces, reminds her of time spent sitting in the rammed earth wall, where she would put on her boots in the winter; where Ms. Verity once patched up her knee with a band-aid after a particularly jubilant game of tag at recess. Peeking over the movable storage wall which prevents her from entering the class, Teresa can see the children sitting at their tables, playing with toy blocks and clay as their feet brush absent-mindedly across the carpet beneath. Oh, how she missed that space beneath the table! Its soft, scarlet red surface was the respite from an after-

noon of play, the surfaces of the tables creating a secret, subterranean world which only the children could access. Drifting off to sleep beneath the protective stance of the tables, Teresa and her classmates used the space as a window through which they could view the fantastical realm of their dreams. Glancing around the room, her eye is drawn across the impossibly-wide brick arch which spans the entrance to the kitchen whose counters, in their recessed position, mean that only Ms. Verity and her assistant may enter. Looking towards the ceiling, Teresa can't help but notice those strange roof structures – they seem to thrust open the roof, beckoning gently for the friendly blue sky to join the children at play.

"What's your name?" asks a soft voice, startling Teresa. Turning around, she realizes it is coming from her favourite hiding spot, the one from which she could peer into the classroom through the metal bars, or sit and look at the cars and people passing silently outside.

"I'm Teresa, what's your name?"

"I'm Samuel," the boy answers, his voice betraying the shyness which his slouched position conveys.

"Well Samuel," Teresa says, whispering, "I better go before I get in trouble!" Turning to leave, Teresa is careful to duck beneath the moveable cedar storage unit in order to avoid detection from Ms. Verity, who has now called the children to the soft carpeted space in front of it.

As she crosses the entry hall, Teresa runs her hand along the polished earth wall which rises only so far as her eye level before a long, linear window cuts it for her curious gaze. She always enjoys casting a gaze through this window when leaving the school, as the trees which abut it change throughout the year, constantly mediating the afternoon light in new ways. This morning's light, however, is coloured a brilliant orange hue – the rusted metal bars which catch and redirect it from above, separating the delicately plastered white ceiling from the stark earth wall, seem to play with the sun throughout the day.

Arriving at the entry to her classroom, Teresa kneels on the soft rubber floor and, opening the light wooden cover inset into the concrete, deposits her backpack silently into the storage space which it concealed. Closing the cover flush with the floor, Teresa walks across it to enter the classroom. At the classroom's wide entry, its concrete

lintel hovering curiously above the concrete walls which enclose the classroom, Teresa's gaze is drawn up to that familiar ceiling, its metal triangles supported by the angular wooden beams, supporting the flowing roof above. Teresa realizes that she could make a dramatic entrance, as she always liked to do – Ms. Tempura, her senior kindergarten teacher, is seated at the blackboard which backs the entry hall, teaching the children about the Platonic shapes, oblivious to Teresa's late arrival. Sneaking into the space of the wall where the kindergarten's architect had placed a pair of old window frames, Teresa shouts a vibrant "Good morning!" before jumping through them and onto the soft carpet on the other side.

"Teresa! Settle down!" exclaims the teacher, exasperated now that she has 20 laughing, excited children to placate. Calling the class to order, she instructs the children that it is time to play in groups of 4. "So, you know what that means – time to get our blocks!"

The children race to their respective spaces, rotating the wood planks in the floor to reveal the soft carpeted surface inside. Teresa knew that today was unlike other days – whereas most days this soft carpet would be the surface upon which she would nap in the afternoon, today was special. As the last day of the year, today would be a day of celebration rather than rest: the plush surface would have to wait for another day to carry a child into their subconscious. Pulling the wooden box out of the floor and rotating its carpeted side to face her, Teresa helps her classmates in pulling out their blocks before closing the wooden floor with a soft thud, concealing the now-empty space beneath it.

Although Teresa enjoys using the blocks, each face offering itself up for a different activity, she missed the simplicity of the tables in the junior kindergarten, which just required a push or pull to bring them into place. Regardless, the cubes offered a freedom which the tables did not. "Maybe these aren't so bad after all", she thought, pushing her block into a square with three other classmates.

After playing with clay for some time, folding and moulding it on the resilient white corian surface of the cube, Teresa found her hands to be quite dirty and made her way to the washroom. Oh, how boring it could look in the mornings! The stark white stalls for the toilets gave only the slightest hint of colour – the reason for which Teresa learned after her time in the junior kindergarten, where the cold stone wall

which could be viewed from the washroom lit up brilliantly in the afternoons, bathing the space in a warm orange glow. Walking across the stone floor, Teresa steps on the pad in front of the washing station – a long, curving concrete trough which seemed to grow out of a sculptural brick wall. With soft, diffused light illuminating her hands from above, she watches the water bubble out of its font, flowing along the trough which act as the guide for its gravity-induced journey. As the concrete pulls the water downwards, the brick wall spirals upwards, around it, cutting through the roof and inviting the sky to take part in the ritual of cleansing. “Perhaps it’s not so boring after all,” Teresa contemplated. Catching a glimpse of the teacher’s watchful eye through the open brick lattice set into the washroom’s boundary wall, Teresa quickly dried her hands and rejoined her classmates.

As the morning play sessions come to an end, Ms. Tempura and her assistant call the children to the kitchen area so that they can open it for lunch preparation. With the sun penetrating deep into the kitchen through the domed metal structure above, Teresa and her classmates grasp the soft leather cover around the kitchen counter, sliding it in its track until it embraces the kitchen space. Crawling into the storage space embedded in the earthen wall, Teresa is enveloped in the scent of cinnamon and recalls her first day at the kindergarten – folding the vertical wooden planks out of the wall in the junior kindergarten’s kitchen, she created a small stair out of the cupboard faces which revealed small storage nooks, their wax enclosures scented with cinnamon, saffron, and other spices used when creating lunch. In the space of this storage area, however, she was able to retrieve bread and other condiments while her classmates washed vegetables picked from the garden outside at the washing station opposite her.

Pulling the small tables into place for lunch, Ms. Tempura’s assistant cuts the vegetables on her counter while keeping a watchful eye on the children in the kitchen. Taking the milk from the cold storage walls around the oven, which in the warmer months was rarely used, Teresa recalled the interesting contraption which most enamoured her on her first day of junior kindergarten. Rotating a wooden wheel as if she were stirring a bowl, she recalled the excitement she felt as she reeled the rope out of the hole in the floor. She and her classmates watched excitedly as the rope crept upwards, eventually dislodging the floor and rising out of it. The cask which came out of

the basement was always cold to the touch, the strong, musky scent of the earth filling the kitchen space until it was returned to its furtive home. "That's probably what Samuel is doing right now," she thought.

As her classmates pull the chain to release the water for washing the fruit, it cascades across the space beneath the glass dome and scatters the sun across the floor, filling the room with a sparkling, flowing light. Teresa thought of the times water flowed beneath the junior kindergarten's clerestory windows, bouncing pockets of sun onto the ceiling, freshening the air with its cool presence and dappling the air with a trickling sound.

After lunch and cleanup, Teresa and her classmates help push the tables to the periphery of the kitchen, which allows Ms. Tempa and her assistant to slide the counters back into place, transferring the space back over to the classroom for an afternoon of play.

In the afternoon, Teresa finds herself needing to clean up once again, and makes her way into the washroom. Unlike the morning, where the white tiled walls of the toilet stalls stood fairly plain, now they are washed in the most brilliant primary colors. The sun, now in the west, illuminates the painted surface hidden above the toilet which bathes them in color. At certain times of year, when the sun was in just the right place, Teresa noted that the sunlight seemed to penetrate through the wax toilet dividers, coloured as they were with pulverized brick, just like the ones in the junior kindergarten.

Returning to the class, Teresa hears the teacher announcing that, as it is the last day of school, it is time to celebrate. Excitedly, the children begin to clean up, returning the large activity blocks to their hiding space in the floor, carpet side up, just in case someone were to come along and want to have a nap later. With the blocks returned safely to their resting place, the teacher and her assistant begin to – much to the surprise and delight of the children – open up the center of the classroom's floor. Rotating the wood slabs ninety degrees before slotting them into a vertical position, they open up the center of the classroom down its length, with the floor acting vertically as a guard for the newly created void. One by one, the children are invited to negotiate the stair, its hard but warm wooden surface deftly supporting their weight while the cool air of the basement invites them downwards.

As she enters the semicircular underground space, Teresa's curious gaze is confronted by a large, dominant column at its center. Surrounded by skylights above, the sun washes down its strong sides, the rammed earth capturing the sun within its imperfections. Cutting through the ceiling of the space are a series of voids, some of which cast natural light into the space, filtering it through the ponds in the play spaces above. Others, however, remain mysteriously dark. As the class joins together in the space, they are invited to sit upon a series of benches built into the floor.

As the festivities begin in the basement, Samuel begins to play outside with the rest of his classmates in the concentric play areas of the circular yard. As he pushes sand around the sandbox with a friend, his teacher and her assistant began to welcome adults into the space, asking them to remain within the cool shade of the Garden's trees. It captures his attention, as there seem to be quite a few, with more arriving. His teacher, curiously, begins to tug at the stone path which he walks along every morning.

"Hey Samuel!" exclaims one of the young student's classmates, anticipation colouring the tone of his voice. "Look at this!"

With his attention drawn back to the sandbox, Samuel is presented with a bizarre sight – rather than seeing the bottom of the sandbox, Samuel seemed to be looking down on people's heads! Pushing aside more and more sand, the two friends begin to admit sun into the space below, capturing the attention of Teresa who was sitting silently until a puddle of warm sunshine opened up in her lap. Looking up to find its source, she sees the confused face of Samuel and waves, a big grin taking control of her face. Samuel smiles, waving back.

With the celebration in the basement coming to an end, Ms. Tempura and her assistant rotate two tall walls which abut the column, opening up its periphery as a gust of wind rushes into the underground space. A pair of curved walls surrounds the column, capturing the warm sunlight outdoors and coaxing it into the space. The children, seeing the column illuminated from behind, are invited to approach it and discover what lies behind.

Above ground, Samuel and his classmates have been organized into a group, situated around the circular pad which has yielded to an open void in place of the path which once led up to it. At the end of this void – at the base of which Samuel

can see an earthen stairway – stand the adults who were welcomed into the park a short time before. As they stand apprehensively, excited voices begin to fill the air from below, painting the garden with excited shouts and jubilant laughter. Cascading up the stairway, Teresa and her classmates are borne from the ground, into the waiting embrace of their parents in the Garden.

Reunited after a long day of school, Teresa wraps her arms tightly around her mother's neck as she is lifted into the air. As her mother carries her away from the school, she peers over her shoulder and sees Samuel's figure, waving to her. Waving back, she realizes that she should wave goodbye to the kindergarten as well, its spaces enduring to house other children's play while she moves on to another school. "So did you have a good time at Kindergarten, sweetie?" Teresa's mother asks, setting her down on the ground to speak to her.

"Yes Mommy!" Teresa replies with excitement, her mind fresh with recently harvested memories of the space. "I'll never forget it!"

The geometry and mnemets which constitute the Kindergarten – along with the initial building from which the mnemets were harvested – are an Architecture of Sustenance. The removal of the mnemets served to make their original context more habitable, and their rebirth as both a source of inspiration for and a part of the construction of the Kindergarten gave them new life. Their absence renews their initial context, while their presence construes a new one. Rather than build a new building from scratch, or renovate an old building and send its scraps to the dump, the Kindergarten is born from the chiasma of architectural memory and forgetting. The capacity of the mnemets to inspire invention and translation, through the lens of the Four Interpretations and Four Causes, demonstrates the capacity for otherwise banal and typical architectural pieces – architectural scraps – to sublimate into an Architecture of Sustenance.

“...the more new we make, the more waste and disruption we produce. So why give new things and places a higher status? Why assign greater acclaim to those who give rise to them?”

—Garth Rockcastle

Conclusion

This thesis set out to define an Architecture of Sustenance, in order to buttress the contemporary tendency towards sustainability. Rather than allude to the ability of something to sustain, an Architecture of Sustenance is the *means* of sustaining.

Beginning with “Memory as Sustenance”, the Greek conception of *mnēmē* was traced through the work of Henri Bergson, Marcel Proust and Antonio Damasio to bring us to Extended Consciousness, which bridges our past experience of the world with our present sensing of it. What we discovered is that it is the chiasma of memory of forgetting which sustains our “self”.

“Building with the Past” took the concept of *mnēmē* and followed its course into Late Antiquity, where it was used in the form of *translatio* with *rediviva saxa* to bring the Roman Empire, under Constantine’s reign, from pagan worship into the realm of Christianity. Tracing this thread through medieval culture, we found the conceptual underpinning for the use of *rediviva saxa* in the medieval valuation of memory, authority, and repetition. The widespread use of these concepts, alongside *rediviva saxa*, resulted in the development of a medieval aesthetic around notions of harmony through *varietas* and heterogeneity, which was then analyzed anachronistically in Harold Bloom’s concept of influence as a “misprision with the past”.

Bloom’s concept helped to free us from the conventional notion of *rediviva saxa* as a “vessel” for memory, which is appropriate for the conception of a new *rediviva saxa*. The distinct lack of ornamentation which comes to us with modern architecture means that mnemets – which constitute an Architecture of Sustenance – may be dealt with on a tectonic rather than symbolic level. The study of memory, then, allowed us to gain a fundamental understanding of *sustinere* so that we might use it metaphorically, rather than literally, in understanding *rediviva saxa* and mnemets as the substance of an Architecture of Sustenance. Mnemets were defined in relation to three contemporary architects, and analogically understood through August Escoffier’s use of food scraps to create stock.

The design of the Kindergarten embodies the Architecture of Sustenance. Its mnemets, by virtue of their subtraction, make one building inhabitable while simultaneously engendering a new construction. As agents of translation (via the Four Interpretations) and misprision or acceptance (via the Four Causes), the mnemets construe a new architecture which attains harmony through variety and heterogeneity, fulfilling the role of the original *rediviva saxa* and giving architecture the Sustenance it requires.

Appendix

Figure 33: Site plan. Computer printouts, acetone transfer, colored pencil and graphite, linseed oil, sunlight.
24x24"

Figure 34: Site photo montage, summer and autumn 2008.

Figure 35: Site photo montage, autumn 2008.

Figure 36: Site plan of 401 Lebreton Street South.

Figure 37: West Elevation, 401 Lebreton Street South.

Figure 38: South Elevation of 401 Lebreton Street South, showing rusted metal bars and stained sills

Figure 39: Courtyard façade of 401 Lebreton Street South, showing concrete block and parking rail.

Figure 40: Proposed operation to 401 Lebreton Street South.

Figure 41: Drawings of Valeriano Pastor. (Fracari, *A Tradition of Architectural Figures: A Search for Vita Beata* 266)

Figure 42: Leafs reflecting light onto stone wall

Figure 43: Light exploration models (Basswood, Paint)

Figure 44: Material exploration.
Wax impregnated with spices (top row, bottom right), and brick pigment (bottom left). On the right is a wax block impregnated with cinnamon.

Figure 45: Angels participate in a tug-of-war, as the parent leaves the child with the teacher on the first day of school.

Figure 46: Overall Plan Schematic

Figure 47: Overall plan, not to scale.

Figure 48: Basement Plan

Figure 49: Drawing showing the angels participating in alchemy, overlaid on a section cut through the kitchen

Figure 50: Kitchen Plan

literal

political

metaphorical

analogical

as a clerestory,
the truss fulfills
its role as a light
structure

as a determiner
of children's
storage, the truss
divides and
delineates

fractured and
re-assembled,
the truss thrusts
open the roof
and invites the
sky inside

the old window
frames provide
unique views
outside

hiding the cold
storage space
below, the
window
maintains
distance

containing a
space for
napping, the
window is a
frame through
which children
can view their
dreams

as drainage, the
bars filter waste
water on its way
to the sewer

metal bars
protect a small
hiding space, a
child-sized
play-jail

separating
material, the bars
act to mediate
surfaces

used literally, the
brick is a
non-loadbearing
wall

the interior of
the brick,
pulverized,
colours interior
wax dividers and
exterior walls

the brick's mass
takes on thermal
properties in
below-ground
cold storage

the brick acts to
hold up the
building in a
series of
structural roles

Figure 52: Literal Interpretation.

The truss fulfills its role as light structure to operate as a clerestory above the bathroom wall. It sits on concrete supports and delineates a children's entrance to the right, and the teacher's entrance to the left.

Figure 53: Ethical/Political Interpretation.

The truss, bottom-right, divides storage space for each student.

Figure 54: Metaphorical Interpretation.

Truss is sliced longitudinally, overlapped and re-welded, with a concrete base

Figure 55: Anagogical Interpretation.

The truss is split down the middle, then re-welded to a steel angle at a right angle to itself. The new truss is then seated in a wood beam and a secondary steel structure runs perpendicular to it. The truss acts to open the roof to the sky.

material

What is it made from?

steel and geometry

formal

What is its form?

minimal support

efficient

What is produced by it?

open structure

final

for what?

light support

cut into square segments, the truss becomes a multi-functional play block

deployed to support beams and act as a lintel, it supports the roof

cast into a concrete mass, it becomes a closed structure

supported by a wooden beam, it delicately lifts steel beams across the span of the classroom

frame and void

gives perspective

view

hinged and solidified, the window permits access to the outdoors

as a physical opening, the window creates new passages through the walls

as a surface for painting, the window mediates the sun and the view outdoors

as a teaching device, the window assists children in seeing the world anew

steel and interval

protection

security

invitation

lending its interval to the light above, the steel creates rhythm in space

cut and re-assembled into a dome, the steel bars support and protect

horizontally spaced, the bars secure foodstuffs from falling prey to curious fingers

arched inwards, the bars invite and hide the child behind them

modular clay cement

mass

regulated surface

to delineate

already weather-tested, the bricks are the perfect companion for wet winter boots

rotated and spaced apart, the bricks become a viewing matrix

freed from the tyranny of a rectilinear mason, the bricks ebb and flow

liberated from a load-bearing role, the bricks delineate structure rather than space.

Figure 57: Cross-section through entry, showing rammed earth wall and light manipulation above (via the Metaphorical interpretation of the metal bars)

Figure 58: Longitudinal section through the entry, showing storage space in the floor.

Figure 59: Conception of the *qualia* of a space for napping, expressed with angels.

Figure 60: Cross-section through the junior kindergarten, showing entry into the celebration space.

Figure 61: Interior elevations and reflected ceiling plan.

Figure 62: Exterior elevations and roof plan.

Figure 63: Overall view of drawing panel.

Figure 64: Overall View of drawing panel.

Figure 65: Overall view of drawing panels showing continuous section along bottom.

"The end of the author's wisdom is but the beginning of ours."
—Marcel Proust, "On Reading"

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