

## ABSTRACT

Title of Thesis: *KINTSUGI: A NEW FRAMEWORK FOR POST-INDUSTRIAL TRANSFORMATION*

Katelin Posthuma, Master of Landscape Architecture, 2016

Thesis directed by: Dr. Kelly Dianne Cook, Department of Plant Science and Landscape Architecture

This thesis uses the Morse Chain factory in Ithaca, New York as a testing ground for the development and exploration of the kintsugi framework as a method for transformation of large-scale postindustrial sites.

Deindustrialization has had a profoundly destabilizing effect on many communities that were depended on industry. Abandoned industrial facilities are one of the primary visual markers of deindustrialization. Landscape architects employ two strategies for reclaiming these spaces - the conceal/camouflage approach or the reveal/reinterpret approach. These two approaches are typically presented in opposition to each other, which limits the design potential of these sites

The kintsugi framework blends these two operating modes, creating an exciting and interesting operating field for the transformation of post-industrial sites. Based on the traditional Japanese method of repairing broken pottery with gold inlay. This technique incorporates damage as the central element for metamorphosis and change.

*KINTSUGI*: A NEW FRAMEWORK FOR POST-INDUSTRIAL  
TRANSFORMATION

by

Katelin Marie Posthuma

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Advisory Committee:  
Professor Kelly Dianne Cook, Chair  
Professor Garth Carl Rockcastle  
Professor Victoria Chanse

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## Chapter 1: Introduction

The focus of this thesis lies in the development of a new approach for understanding and designing post-industrial sites - the *kintsugi* framework and its application on the Morse Chain Company site, a large-scale industrial area that is currently in transition to become the Chain Works District – a mixed-use neighborhood centered around the adaptive reuse of the Morse Chain factory building. The *kintsugi* framework is inspired by the Japanese technique of ceramic repair. Like a broken plate or cup, post-industrial sites are often considered to be useless or worthless areas. Like the golden joints of the *kintsugi* repair, this framework strives to mend these damaged areas in a way that acknowledges and incorporates the site's damaged history.

Post-industrial sites contain an incredible amount of complexity. This thesis focuses on the relationship between post-industrial sites and their historic/cultural context, and how this relationship influenced how designers have worked with these spaces. In application, this thesis is primarily an investigation of the cultural and industrial history of the Morse Chain site, and its relationship to Ithaca. This thesis is not a detailed study of the on-site contamination of the site or an investigation of remediation techniques. While the site has a history of contamination over the course of its 100 years of operation, a detailed investigation of the extent of the contamination is still ongoing. Therefore, I focused my research on the historic and cultural qualities of the site, leaving the question of remediation open for further study at a later point.

## Chapter 2: Defining the Post-Industrial

On the surface, the term “post-industrial site” appears straightforward - these are sites that were previously used for industrial purposes that have now transitioned to other uses. This is not a new concept as the adaptive reuse of past generation’s materials and forms is at the core of urban development. One of the most notable examples in landscape architecture is the Parc des Buttes Chaumont a public park built on top of a former quarry and refuse dump in Paris, France. This sounds like many modern parks, but Parc des Buttes Chaumont was designed by Jean Charles Alphand in the mid nineteenth century.<sup>1</sup> What then, makes these contemporary post-industrial sites different from these historic examples?

### **Waves of Industrialization**

The landscapes of 19th and 20th century were shaped by industry, both by the processes of industry itself and the impact of industry on urban planning and design. Understanding the patterns of industrial development can be used glean information on the relationship between landscape and industry and its evolution through time. Industrialization can be thought of as a series of three waves, each one building off of the first. The first wave of industrialization occurred from 1830-1850.<sup>2</sup> This period marked the transition from an agrarian society to an industrial one. This

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<sup>1</sup> Ann Komara. "Concrete and the Engineered Picturesque the Parc Des Buttes Chaumont (Paris, 1867)." *Journal of Architectural Education (1984-)* 58, no. 1 (2004): 1.

<sup>2</sup> Ellen Braae, *Beauty Redeemed: Recycling Post-Industrial Landscapes* (Risskov: IKAROS Press, 2015), 21.

fundamentally changed the relationship between people and the environment, as Ellen Braae describes:

“...the development of processing units, either in homes or in the form of actual factories, [comprised] the first break with the links to how the landscape was organized around units determined by cultivation of the soil, animal husbandry or forestry. It meant the breakup of what can be called coexistence units in which the economy and organization were adapted to the framework provided by the natural environment.”<sup>3</sup>

The first wave of industrialization derived its power from water and later coal and is linked to a number of innovations that increased the speed and efficiency in the production of goods. For instance the development of the steam engine allowed for improved efficiency in the extraction of coal, the establishment of factories that could function independently of water power, and the development of steamships and steam locomotives.<sup>4</sup> The cumulative effect of this cascade of innovation on the landscape can hardly be overstated. The increasing separation between the land where raw materials would be extracted, and the production centers where those materials would be refined into products started a pattern that would continue in the subsequent waves of industrialization. The most visible marks on the landscape left by this first wave of industrialization are the transportation networks - canal systems and railway networks that transported raw materials and finished products.<sup>5</sup>

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<sup>3</sup> *Ibid.*, 21

<sup>4</sup> *Ibid.*, 22

<sup>5</sup> *Ibid.*, 22

The second wave of industrialization scaled up the patterns established in the previous wave.<sup>6</sup> New advances in this period such as electrification and motorization marked the transition to mass production and mass consumption.<sup>7,8</sup> The gulf between industry and the land continued to widen. Where before factories relied on water power and required proximity to a source of flowing water in order to function, electrification allowed factories to operate independently. Generating power became less important than developing efficient ways of transporting raw materials and finished products. Consequently, factories were positioned to maximize their relationship with transportation networks and urban development.<sup>9</sup> The second wave of industrialization was a period of explosive growth and innovation particularly in the Industrial Heartland of the northeast and midwestern United States.<sup>10</sup> These industrial cities were placed in proximity to both natural resources needed to generate raw materials for production, as well as access to transportation networks.<sup>11</sup> All of these lead to wholesale changes in the physical environment which visibly manifested

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<sup>6</sup> *Ibid.*, 22

<sup>7</sup> *Ibid.*, 22

<sup>8</sup> Laura Lovell-Anderson, "Urban Morphology Phenomena: Post-Industrial Landscapes" in *Innovations in Landscape Architecture*, ed. Jonathon R. Anderson and Daniel H. Ortega, (New York: Routledge, 2016), 166.

<sup>9</sup> Ellen Braae, *Beauty Redeemed: Recycling Post-Industrial Landscapes* (Risskov: IKAROS Press, 2015), 22

<sup>10</sup> William Bowen and Kelly Kinahan. "Midwestern Urban and Regional Responses to Global Economic Transition" in *The Road through the Rust Belt: From Preeminence to Decline to Prosperity*. (Kalamazoo, Michigan: W.E. Upjohn Institute for Employment Research, 2014.)

<sup>11</sup> Laura Lovell-Anderson, "Urban Morphology Phenomena: Post-Industrial Landscapes" in *Innovations in Landscape Architecture*, ed. Jonathon R. Anderson and Daniel H. Ortega, (New York: Routledge, 2016), 166.

in the development of large, interconnected roadway networks and the explosive growth of urban areas.<sup>12</sup>

The third wave of industrialization marks the shift from a manufacturing economy based on the distribution of tangible products, to a service economy centered around the intangible - services and data.<sup>13</sup> While the first two waves of industrialization are defined by rapid industrialization and urbanization, the third wave is of a different character altogether. This period, beginning in the late twentieth century and still ongoing today is defined by deindustrialization coupled with the exposure of the environmental degradation caused by the widespread unsustainable use of resources.<sup>14</sup> Changes in the global economy, coupled with advances in automation triggered the large scale redistribution of many industrial centers as they moved to other, less expensive places of operation, namely from Western countries to overseas<sup>15</sup>. These trends affected many cities that relied on industry and manufacturing as the foundation for their economic success. The industrial cities in America's Northeast and Midwest went from "economic powerhouses to basketcases".<sup>16</sup> America's "Industrial Heartland" was redefined as the "Rust Belt".

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<sup>12</sup> Ellen Braae, *Beauty Redeemed: Recycling Post-Industrial Landscapes* (Risskov: IKAROS Press, 2015), 22.

<sup>13</sup> Laura Lovell-Anderson, "Urban Morphology Phenomena: Post-Industrial Landscapes" in *Innovations in Landscape Architecture* (Lovell-Anderson 2016)ure, ed. Jonathon R. Anderson and Daniel H. Ortega, (New York: Routledge, 2016), 166.

<sup>14</sup> Ellen Braae, *Beauty Redeemed: Recycling Post-Industrial Landscapes* (Risskov: IKAROS Press, 2015), 22.

<sup>15</sup> Bowen and Kinahan, "Midwestern Urban and Regional Responses to Global Economic Transition", 11-12.

<sup>16</sup> Steven High. *Industrial Sunset: The Making of North America's Rust Belt, 1969-1984*. (Toronto: Buffalo: University of Toronto Press, Scholarly Publishing Division, 2003), 56.

This term, with its prevailing images of disinvestment, shuttered buildings, abandoned factories and demolition became a powerful signifier of the loss of industry, widespread unemployment, and environmental degradation continues to affect the region today.<sup>17</sup>

The abandoned factories, mills, and other industrial areas that rose out of the third wave of industrialization are the sites of contemporary post-industrial sites. Many of these sites were planned without consideration of the potential long-term consequences of the impact of industrial activity.<sup>18</sup> The impact of industrial activity affect cultural, social, economic and environmental systems.<sup>19</sup> Contemporary post-industrial sites have not only been shaped by their specific industrial uses over time<sup>20</sup>, but also embody the complex relationship of the fallout of industrial activity on the physical and cultural landscapes on the site.<sup>21</sup>

### **Ithaca: A Case Study of Industrialization**

Ithaca is a city in the Southern Tier region of New York. It is the largest city in Tompkins County, with a population of 30,788.<sup>22</sup> The Southern Tier is comprised

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<sup>17</sup> *Ibid.*, 56

<sup>18</sup> Niall Kirkwood. *Manufactured Sites: Rethinking the Post-Industrial Environment*, (London: Spon Press: 2001), 4

<sup>19</sup> Laura Lovell-Anderson, "Urban Morphology Phenomena: Post-Industrial Landscapes" in *Innovations in Landscape Architecture*, ed. Jonathon R. Anderson and Daniel H. Ortega, (New York: Routledge, 2016), 167.

<sup>20</sup> Joern Langhorst, "Re-covering Landscapes: Derelict and Abandoned Sites as Contest Terrain," *ICON: Journal of the International Committee for the History of Technology*, 10 (2004), 65.

<sup>21</sup> Laura Lovell-Anderson, "Urban Morphology Phenomena: Post-Industrial Landscapes" in *Innovations in Landscape Architecture*, ed. Jonathon R. Anderson and Daniel H. Ortega, (New York: Routledge, 2016), 165.

<sup>22</sup> "Population Estimates, July 1, 2015, (V2015)." Ithaca City New York QuickFacts from the US Census Bureau. <http://www.census.gov/quickfacts/table/PST045215/3638077>.

of the counties that form the state's southern border (Figure 1). This region is the birthplace of several influential manufacturing centers. Corning Inc. is headquartered in Corning, New York. Binghamton, New York is home high-tech industries, such as IBM and Link Aviation Devices, Inc.

## Project Overview - Site Context



*Figure 1 Southern Tier Map*

Ithaca can be thought of as a microcosm of the First and Second Industrial Revolutions, and the subsequent deindustrialization beginning at the end of the twentieth century. Ithaca's early industries were founded along the banks of the creeks that flowed through the town emptying in Lake Cayuga.<sup>23</sup> These waterways

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<sup>23</sup> Daniel Snodderly, *Ithaca and Its Past: The History and Architecture of the down-Town*. (Ithaca, N.Y.: DeWitt Historical Society of Tompkins Co., 1982), 11.

were essential for both industrial operations and the establishment of trade routes. The Cayuga Seneca canal linked Ithaca to the Erie Canal, which connected the small town to the larger trade cities of Buffalo and New York City (Figure 2).<sup>24</sup> Two major railways

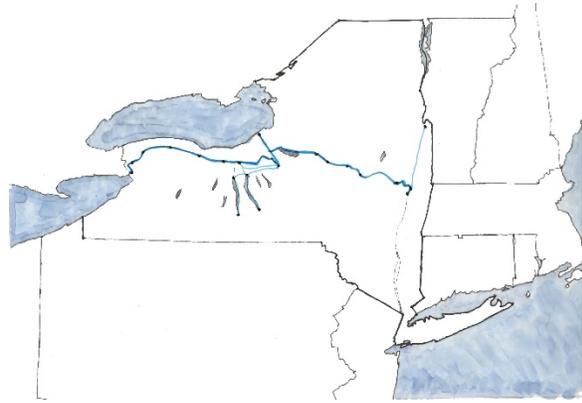


Figure 2 Erie Canal Map

- Lehigh Valley and Delaware, Lackawanna, and Western connected Ithaca to the coal producing regions of Pennsylvania (Figures 3 and 4).<sup>25</sup> These railroads spurred more industrial development in Ithaca, the town's largest manufacturing employer Morse Chain<sup>26</sup> was built along the tracks of the Delaware Lackawanna and Western Railroad in 1906.<sup>27</sup>



Figure 3 Lehigh Valley RR Map

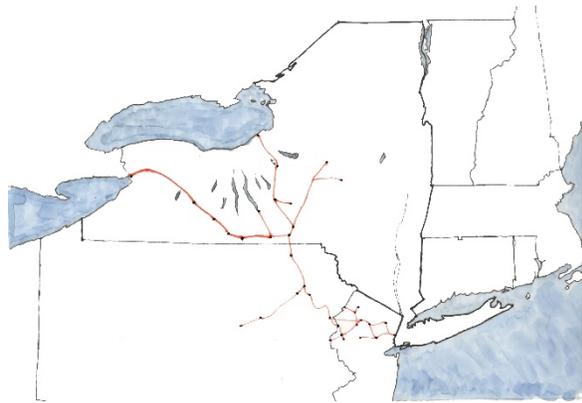


Figure 4 Delaware Lackawanna and Western RR Map

As coal production declined in the twentieth century, so did the

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<sup>24</sup> *Ibid.*, 12.

<sup>25</sup> Brian Solomon and Patrick Yough. *Coal trains: The History of Railroad and Coal in the United States*. (Minneapolis, MN: MBI Pub. Company, 2010). 29.

<sup>26</sup> For information on the history of the Morse Chain Company please refer to Chapter XX - Site Analysis.

<sup>27</sup> "The Morse Chain of Events", 11

railroads that ran through the town.<sup>28</sup> Ithaca's railroads were gradually replaced by Interstate Highway System in the mid-twentieth century.<sup>29</sup> Two highways connect Ithaca to the rest of the state - Route 96 to the north and south and Route 79 to the east and west.

Like other Northeastern cities, Ithaca experienced a decline in industry in the tail end of the twentieth century. In 1983 Morse Chain the town's largest manufacturing employer sold its main plant in Ithaca to Emerson Power Transmission Company.<sup>30</sup> After weathering two recessions, one in the early 1990s and the other in 2001, Emerson Power Transmission closed the Ithaca plant in 2007<sup>31</sup>. The closure of the Emerson Power Transmission plant reflects a larger decline in Ithaca's manufacturing sector. Ithaca's manufacturing sector peaked in 2000 at 4,600 employees. By 2009 - 2 years after the Emerson plant closed - employment in this

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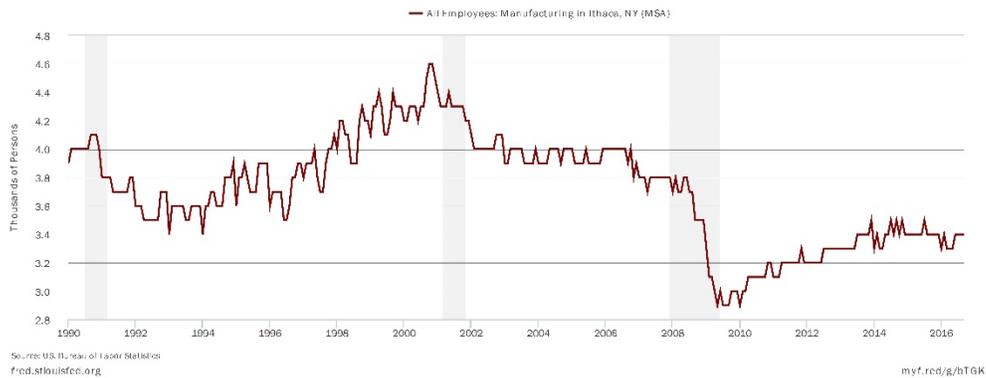
<sup>28</sup> Solomon and Young. *Coal trains: The History of Railroading and Coal in the United States*. 37.

<sup>29</sup> Hardy Campbell Lee, John Marcham, and Winton G. Rossiter. *A History of Railroads in Tompkins County*. The History Center in Tompkins County, 2008.  
<http://ecommons.cornell.edu/handle/1813611518>.

<sup>30</sup> "The Morse Chain of Events", 6.

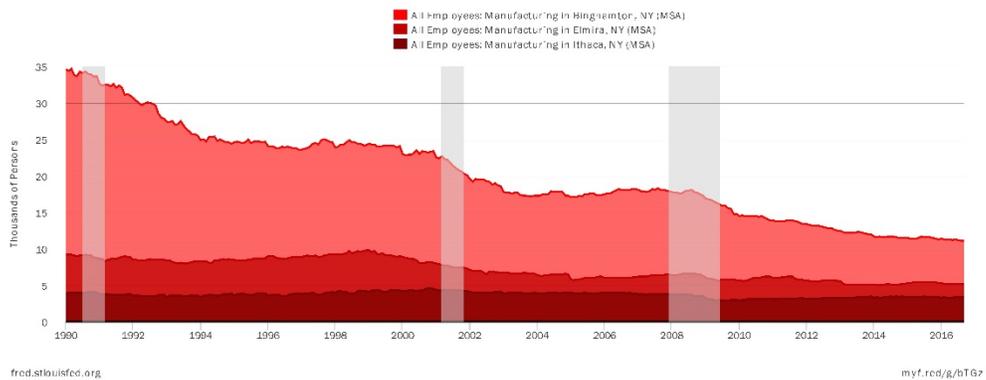
<sup>31</sup> Lou Gulino, "Emerson Closing Ithaca Parts Plant," WSTM, August 12, 2009,  
<http://cnycentral.com/news/local/emerson-closing-ithaca-parts-plant>.

sector bottomed out at 2,900 employees (Figure 5).<sup>32</sup>



*Figure 5 Ithaca Manufacturing Sector 1990-2015*

The decline of Ithaca’s manufacturing sector matches most of upstate and central New York. The Southern Tier region, where Ithaca is located, is still reeling from the 2008 recession (Figure 6). “Since 2010, the Binghamton region lost 19 percent of its manufacturing jobs...Elmira lost 16 percent of its production positions.”<sup>33</sup>

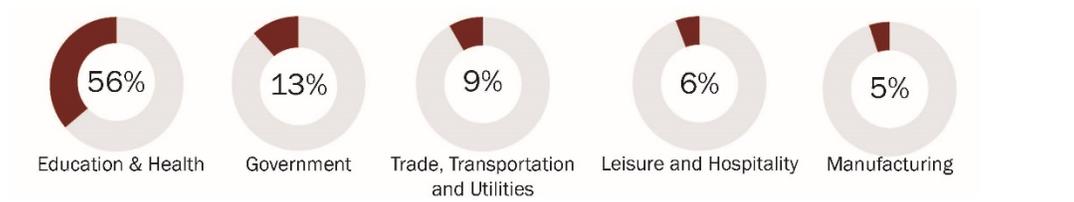


*Figure 6 Southern Tier Manufacturing Sector 1990-2015*

<sup>32</sup>US. Bureau of Labor Statistics, All Employees: Manufacturing in Ithaca, NY (MSA) [ITHA036MFGN], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/ITHA036MFGN>

<sup>33</sup> Jeff Platsky, "IN THE HOLE: New York State's Suffering Economy," Ithaca Voice, March 7, 2015, <http://www.ithacajournal.com/story/news/local/2015/03/06/tier-economy-sputters/24520807/>.

Ithaca is the sole center of economic growth in the Southern Tier, with a 10% growth in private sector jobs since 2010<sup>34</sup>. Ithaca's resilience can be attributed to its economy - which is based in the educational services sector and less reliant on manufacturing (Figure 7).<sup>35</sup> This is reflective of the larger patterns of the third wave of industrialization, namely the rise of the service-based economy and the decline of the manufacturing-based economy.



*Figure 7 Ithaca Employment Sectors 2015*

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<sup>34</sup> *Ibid.*

<sup>35</sup> *Ibid.*

## Chapter 3: Shifting Narratives of Post-Industrial Sites

As previously discussed, post-industrial sites are tied to the forces and trends of industrial production. They have been shaped by the economic needs and opportunities that are mostly outside the control of local municipalities<sup>36</sup>. The physical form and configuration of the industrial buildings are shaped by specific processes and maximized for efficiency of production<sup>37</sup>. This creates many places that are fairly homogeneous in terms of building form and orientation. What differentiates these sites is the spectrum of meanings and narrative treatments that are applied to these places<sup>38</sup>. These can be broken down into two broad archetypes - ruins and wastes.

### **Ruins**

The definition of the word “ruin” varies depending on its context. In general usage, “ruin” is weighted with many negative associations - to ruin your wealth with reckless spending, or your health with unhealthy behaviors, or social standing with mean-spirited actions. However, archaeological ruins are often thought of positively for their unique aesthetic qualities.<sup>39 40</sup>

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<sup>36</sup> Wolfram Hofer, and Vera Vicenzotti. “Post-Industrial landscapes: evolving concepts” in *The Routledge companion to landscape studies*, edited by Howard, Peter, Ian H. Thompson, and Emma Waterton. New York: Routledge, 2013. 405.

<sup>37</sup> Hugh Hardy. “The Romance of Abandonment: Industrial Parks.” *Places: Forum of Design for the Public Realm* 17, no. 3 (2005): 32–37.

<sup>38</sup> Hofer and Vicenzotti “Post-Industrial landscapes: evolving concepts” in *The Routledge companion to landscape studies*, edited by Howard, Peter, Ian H. Thompson, and Emma Waterton. New York: Routledge, 2013. 405.

<sup>39</sup> Peter Lamarque. “Reflections on the Ethics and Aesthetics of Restoration and Conservation.” *The British Journal of Aesthetics*. 16

<sup>40</sup> Elisabeth Clemence Chan. “What Roles for Ruins? Meaning and Narrative of

What is considered to be a ruin varies wildly from the impressive (castles, monasteries, temples) to the humble (old village halls, cottages, huts). Whatever form they take, ruins serve as markers of past civilizations and cultures which can be appreciated for their aesthetic appeal in addition to their educational value (Figure 8).<sup>41</sup> These aesthetic qualities range from the physical - the visual character of the ruins masses and voids, to the emotional. As repositories of the past, ruins provoke many questions - “What was it like to live here? What led to its ruination?”<sup>42</sup> The visual and emotional resonance of ruins can trigger a sense of decay and loss.<sup>43</sup>



*Figure 8 Ruined Arch at Kew Gardens (c)Thomas Jefferson Foundation*

The aesthetic qualities of ruins make them a desirable feature in the landscape. The use of ruins in garden design is commonly associated with the Picturesque era of landscape design. Gardens of this era were literally planned around ruins, or if none were available, mock-ruins were built into the gardens.<sup>44</sup>

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Industrial Ruins in Contemporary Parks.” *Journal of Landscape Architecture* 4, no. 2 (2009): 20–31.

<sup>41</sup> Peter Lamarque. “Reflections on the Ethics and Aesthetics of Restoration and Conservation.” *The British Journal of Aesthetics*. 16-18.

<sup>42</sup> *Ibid.*, 18.

<sup>43</sup> *Ibid.*, 18

<sup>44</sup> Elisabeth Clemence Chan. “What Roles for Ruins? Meaning and Narrative of Industrial Ruins in Contemporary Parks.” *Journal of Landscape Architecture* 4, no. 2 (2009): 20–31

Abandoned industrial sites share the same aesthetic qualities of traditional ruins. Like traditional ruins, abandoned industrial sites are often perceived simply “as ruins” - as new objects from the original buildings. This perception often overshadows the complex industrial histories of the site.<sup>45</sup>

Recent thought has been given to expanding the definition of ruins as applied to post-industrial sites. In his essay *Re-presenting transgressive ecologies*, Joern Langhorst states that post-industrial sites are a combination of both ruins of nature and ruins of culture. Any act of construction can be said to produce “ecological ruins”<sup>46</sup>. These can be banal or dramatic, compare the difference between a paved road bisecting a patch of woodland to a multi colored hue of a polluted river (Figure 9).



*Figure 9 Ruins of Nature (Nickel Tailings - Edward Burtynsky, 1996)*

With industrial sites, the boundaries of these ecological ruins extend beyond the immediate borders of an individual factory, mill, or processing plant to the sites

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<sup>45</sup> *Ibid.*, 20–31

<sup>46</sup> Joern Langhorst. “Re-Presenting Transgressive Ecologies: Post-Industrial Sites as Contested Terrains.” *Local Environment* 19, no. 10 (November 26, 2014): 1110–33. doi:10.1080/13549839.2014.928813.

used for the extraction of raw materials, the development of transportation networks to deliver materials and products, and the landfills where those products go when they've become obsolescent. When an industrial site is abandoned, natural processes such as weathering, erosion, and colonization by spontaneous plant species slowly unmake the built environment while simultaneously creating the natural environment (Figure 10).<sup>47</sup>



*Figure 10 Ruins of Culture (Shipmaking #20, Edward Burtynsky, 2001)*

### **Waste lands - Drosscapes and *Brachland***

Like ruins, waste commonly carries a distinct negative connotation. For instance, a “wasteland” is a space that is commonly considered to be barren areas devoid of human habitation. Abandoned industrial areas, with their empty, rusting

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<sup>47</sup> Joern Langhorst. “Re-Presenting Transgressive Ecologies: Post-Industrial Sites as Contested Terrains.” *Local Environment* 19, no. 10 (November 26, 2014): 1110–33. doi:10.1080/13549839.2014.928813.

structures and toxic soils have often been characterized as such. As will be discussed later, conceptualizing these sites in this manner is limiting. Contemporary thinking in landscape architecture has begun to consider waste differently, which in turn has shifted the view of abandoned industrial sites. This section focuses on two terms - drosscape and *Brachland*.

In his book, *Drosscape: Wasting Land in Urban America*, landscape theorist Alan Berger posits that any healthy urban landscape produces “dross”, which is comprised of abandoned industrial areas or under-utilized urban areas<sup>48</sup>. Berger builds on the concept of “dross” outlined in Lars Lerup’s essay “Stim and Dross”. Lerup characterizes the city’s landscape as a “holey plane...more wilderness than a datum of a man-made city...it is a surface dominated by a peculiar sense of ongoing struggle: the struggle of economics against nature. Both the trees and the machines of this plane emerge as the dross of this struggle”<sup>49</sup>. Berger expands on this concept, characterizing dross as waste landscape. The production of dross increases as the city grows and the economy shifts from an industrial economy characterized by “long-term accumulation of capital through large-scale industrial production facilities [to] a more flexible, transit-oriented [post-industrial] economy”<sup>50</sup>. The city cannot function without waste, so the challenge is to integrate dross into flexible design strategies.

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<sup>48</sup> Alan Berger *Drosscape: Wasting Land in Urban America*. 2006.

<sup>49</sup> Lars Lerup. “Stim & Dross: rethinking the metropolis.” *Assemblage* 25. (Cambridge: MIT Press, 1995.), 88.

<sup>50</sup> Hofer, Wolfram, and Vicenzotti, Vera. “Post-Industrial landscapes: evolving concepts” in *The Routledge companion to landscape studies*, edited by Howard, Peter, Ian H. Thompson, and Emma Waterton. New York:Routledge, 2013. 411.

Drosscapes reconceptualize these “abandoned and toxic landscapes” as “valuable city assets” that are full of potential<sup>51</sup>.

Berger’s drosscapes share a similar theme to the German concept of *Brachland*. Originally referring to farmland left fallow, the term *Brachland* has been expanded beyond this context and has been applied to abandoned industrial sites<sup>52</sup>. In its original agricultural economic context, growth is measured in annual yield, and the goal is continuous production *Brachland* represents an investment in future yields as the land is allowed to regain its fertility<sup>53</sup>. In an industrial economy, growth is measured in annual profits with the goal being “linear, financially maximized profits”<sup>54</sup>. When this goal is no longer attainable, the factory is abandoned and left to waste. In the context of post-industrial sites, *Brachland* refers to the mental readjustment needed to transition between these two meanings, allowing the site to withdraw from its earlier use, while preparing for its new use<sup>55</sup>.

### **Shifting Narratives of Post-Industrial Reclamation**

Just as the broad concepts of ruins and wastes have evolved over time, so to has the narrative treatments of reclaiming post-industrial sites. Waste, with its associations of unwanted or damaged objects lead to the conceptualization of post-industrial sites as dangerous spaces that need to be made safe for the public, at least in

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<sup>51</sup> Berger, Alan. *Drosscape: Wasting Land in Urban America*. 2006. 36.

<sup>52</sup> Brae, *Beauty Redeemed: Reconstructing Post-Industrial Landscapes*. 47

<sup>53</sup> Brae, *Beauty Redeemed: Reconstructing Post-Industrial Landscapes*. 47

<sup>54</sup> Brae, *Beauty Redeemed: Reconstructing Post-Industrial Landscapes*. 47

<sup>55</sup> *Ibid.*, 47

the United States.<sup>56</sup> The policies for post-industrial remediation grew out of the EPA Superfund program, which placed a heavy emphasis on environmental cleanup and remediation.<sup>57</sup> This led to the clean slate approach, which prioritized complete (or as complete as possible) remediation at the expense of the “cultural heritage [and] spatial qualities” of industrial sites.<sup>58</sup>

The original conceptualization of ruins and their connections to memory and preservation led to what can be described as “smokestack nostalgia”.<sup>59</sup> Like the follies of the picturesque era, elements of the site’s industrial past are preserved as decorative elements. While these remnants are aesthetically appealing, they have little relation to the site’s historic context, and can be read as “historically neutral”<sup>60</sup> at best, or meaningless at worst.

The expanded definitions for ruins and waste have both hit upon a new way of thinking about post-industrial sites. A connection can be drawn between Langhorst’s “Ruins of Nature/Ruins of Culture” and Berger’s Drosscapes. As more industrial sites become “dross” due to closure and abandonment, nature begins to colonize the space. This emerging ecosystem is constructed from the ruins of nature at the expense of the built structures. The newly born ruins of culture/construction of nature is a site of latent potential waiting to be discovered. In other words, it can be said to have entered

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<sup>56</sup> Hofer and Vicenzotti “Post-Industrial landscapes: evolving concepts” in *The Routledge companion to landscape studies*, edited by Howard, Peter, Ian H. Thompson, and Emma (Waterton. New York: Routledge, 2013.), 410

<sup>57</sup> *Ibid.*, 410

<sup>58</sup> *Ibid.*, 410

<sup>59</sup> *Ibid.*, 410

<sup>60</sup> Elisabeth Clemence Chan. “What Roles for Ruins? Meaning and Narrative of Industrial Ruins in Contemporary Parks.” *Journal of Landscape Architecture* 4, no. 2 (2009): 20–31.

the transitory period of *Brachland*. The challenge for designers is to find ways to uncover and communicate this to the public.

How designers perceive post-industrial sites - i.e. what version of the ruin/waste archetype they are using to understand and interpret the place affects the constructed reality of the place. This section presents case studies in post-industrial site design - Gas Works Park, *Landschaftspark* Duisburg-Nord, the High Line, and the Steel Yard.

## Chapter 4: Case Studies in Post-Industrial Design

How designers perceive post-industrial sites - i.e. what version of the ruin/waste archetype they are using to understand and interpret the place affects the constructed reality of the place. This section presents case studies in post-industrial site design: Gas Works Park, *Landschaftspark* Duisburg-Nord, the High Line, and the Steel Yard.

### Gas Works Park

As the first contemporary example of a degraded site that was reclaimed in a way that avoids the clean slate approach<sup>61</sup>, Gas Works Park has served as an inspiration for many designers working on sites with complicated histories.<sup>62</sup>



Figure 11 - Gas Works Park © Dianne Harris

Hagg's design intent was to preserve the entirety of the site's industrial past by incorporating both the gasification structures and the contaminated soil.<sup>63</sup> The

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<sup>61</sup> Thaisa Way. "Landscapes of Industrial Excess: A Thick Sections Approach to Gas Works Park." *Journal of Landscape Architecture* 8, no. 1 (May 2013): 28–39. doi:10.1080/18626033.2013.798920.

<sup>62</sup> Joern Langhorst. "Re-Covering Landscapes: Derelict and Abandoned Sites as Contested Terrain." *Journal of the International Committee of the History of Technology* Volume 10 (2004): 65–77.

<sup>63</sup> Thaisa Way. "Landscapes of Industrial Excess: A Thick Sections Approach to Gas Works Park." *Journal of Landscape Architecture* 8, no. 1 (May 2013): 28–39. doi:10.1080/18626033.2013.798920.

remnants of the main gasification plant stand as ruins, while some of the accessory structures have been repurposed into children's play areas and picnic pavilions. The toxic soils were remediated *in situ* using phyto-bioremediation techniques, and were shaped into the rolling hills and lawns that contrast against the rusting towers of the gas works (Figure 11).

Since its opening in 1975, Gas Works Park has become a Seattle landmark. People enjoy flying kites on the Great Mound that overlooks the Puget Sound, picnicking on the open lawns amongst the ruins, and playing in the brightly colored Play Barn. In essence, industrial history that drew Haag to the site and inspired his design has become a backdrop for the activities of the park goers. Or as Elisabeth Chan describes it - "The gorgeous views and rolling lawns deny the contaminations lurking beneath".<sup>64</sup>

Part of reason for this can be attributed to the public's lack of direct access to the industrial ruins. People can only engage with the towers visually, as the fencing and razor wire that surround the towers prevent any other kind of interaction. This separation prevents people from engaging with the park's industrial history on a deeper level<sup>65</sup> and reinforces the nostalgic interpretation of the industrial history that the structures represent<sup>66</sup>

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<sup>64</sup> Elisabeth Clemence Chan, "What Roles for Ruins? Meaning and Narrative of Industrial Ruins in Contemporary Parks." *Journal of Landscape Architecture* 4, no. 2 (2009): 20–31.

<sup>65</sup> *Ibid.*, 20–31

<sup>66</sup> Hofer and Vicenzotti "Post-Industrial landscapes: evolving concepts" in *The Routledge companion to landscape studies*, edited by Howard, Peter, Ian H. Thompson, and Emma (Waterton. New York: Routledge, 2013.), 410

## **Landschaftspark Duisburg-Nord**

*Landschaftspark* Duisburg-Nord is often considered to be the spiritual successor to Gas Works Park.<sup>67</sup> Both sites retained and incorporated their industrial history into their respective designs. But where cracking towers of Gas Works Park are primarily appreciated for their aesthetic appeal and are separated from their historic or environmental context, landscape architect Peter Latz recognized that the site's industrial structures were one layer of a complex strata of meaning and information.<sup>68</sup> Latz worked to understand how the industrial processes shaped the land, and used that information to drive the programmatic elements of the park.<sup>69</sup> The majority of the active areas of the park are concentrated in the built structures of the park, many of which have new programmatic uses. The ruins of Thyssen Stahl serve as climbing walls, its water tanks for diving practice. People gather for events in the shell of the blast furnace. The rail system that linked the plant's structures together has become the main circulation network that allows park visitors to move through the park and to the new recreational facilities and neighborhoods on the park's fringes.

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<sup>67</sup> Udo Weilacher, *Syntax of Landscape*, (Basel ; Boston: Birkhäuser Architecture, 2007), 106

<sup>68</sup> *Ibid.*, 109

<sup>69</sup> *Ibid.*, 109



*Figure 12 Landschaftspark Duisburg Nord*

The ecosystem that grew up during the years where the “former factory site lay fallow”<sup>70</sup> became another layer that Latz integrated into the design. The emergent plant communities were combined with deliberately planted and maintained gardens. “Over time, they create a complex mosaic of different conditions...planted-spontaneous, maintained-not maintained...creating a continuous process that blurs any distinguishing lines between nature and culture.”<sup>71</sup> In this way, *Landschaftspark* can be described as an ongoing process of creation and destruction, or a simultaneous ruin of nature/ruin of culture (Figure 12).<sup>72</sup>

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<sup>70</sup> Joern Langhorst. “Re-Presenting Transgressive Ecologies: Post-Industrial Sites as Contested Terrains.” *Local Environment* 19, no. 10 (November 26, 2014): 1110–33.

<sup>71</sup> *Ibid.*, 1110–33.

<sup>72</sup> *Ibid.*, 65–77.

## The High Line

One of the most well-publicized parks of the twenty first century, the High Line not only created a park out of the abandoned rail trestle but it also redefined the surrounding neighborhood (Figure 13).<sup>73</sup>



Figure 13 The High Line

Much of the High Line’s appeal lies in the rich planting design that was inspired by the landscape that grew up on the abandoned tracks. This original landscape captivated the urban explorers that toured the abandoned rail line, and is preserved in photographs the most well-known being the work of Joel Sternfeld. Sternfeld’s photographs captured the “ongoing processes of growth and decay” at work on the tracks - the creation of nature and the destruction of culture.<sup>74</sup>

However, saving this landscape proved to be at odds with the goal of creating a park. In order to make the space appealing, the rail line had to be “stripped to the foundations”<sup>75</sup> replacing the existing vegetation and emergent ecologies and gritty character of the abandoned rail line with a carefully maintained garden, and “slick,

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<sup>73</sup> Adam Sternbergh. "The High Line: It Brings Good Things To Life". *NYMag.com*. N.p., 2016. Web. 14 Nov. 2016.

<sup>74</sup> Joern Langhorst. “Re-Presenting Transgressive Ecologies: Post-Industrial Sites as Contested Terrains.” *Local Environment* 19, no. 10 (November 26, 2014): 1110–33. doi:10.1080/13549839.2014.928813.

<sup>75</sup> Adam Sternbergh. "The High Line: It Brings Good Things To Life". *NYMag.com*. N.p., 2016. Web. 14 Nov. 2016.

sophisticated design elements with refined materials and finishes.”<sup>76</sup> The High Line post-design is a designed and choreographed simulation of the original, visitors are guided through a series of different ecotones, many of which have little to do with any imaginable outcome of succession of the original landscape.<sup>77</sup> Like Gas Works Park, the aesthetic qualities of the High Line dominates the visitor’s experience, which conceals the underlying history of the site,<sup>78</sup>

### The Steel Yard

The history of the Steel Yard reflects the larger history of the Providence Industrial Valley. The Yard was originally home to the Providence Iron and Steel Company, a small-scale steel fabrication center that created custom details for architectural ornament (LAM, pg. 87). Providence Iron and Steel went out of business in 2001, following decades of decline in the American steel industry. When the founders of the Steel Yard purchased the site in 2003, it was a shadow of



*Figure 14 The Steel Yard*

its former self, a “mixed collection of...stained and rusted buildings”, gantry cranes,

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<sup>76</sup> Joern Langhorst. “Re-Presenting Transgressive Ecologies: Post-Industrial Sites as Contested Terrains.” *Local Environment* 19, no. 10 (November 26, 2014): 1110–33. doi:10.1080/13549839.2014.928813.

<sup>77</sup> *Ibid.*

<sup>78</sup> Elisabeth Clemence Chan, “What Roles for Ruins? Meaning and Narrative of Industrial Ruins in Contemporary Parks.” *Journal of Landscape Architecture* 4, no. 2 (2009): 20–31

and wild grasses (LAM, pg. 87). This quote identifies two major characteristics of the site that the designers and clients wanted to incorporate into the design of the Steel Yard - the gritty, industrial character of the site coupled with the “unkempt” character of the ecology that had grown up during its abandonment (Figure 14) (The Steel Yard, pg. 158).

Like *Landschaftspark*, the Steel Yard is an example of the active reuse of the sites industrial structures. Due to the Yard’s use as an industrial arts incubator, the reuse is more literal than the layering of new uses and reinterpretation of structures seen in *Landschaftspark*. The existing gantries create an overhead network that allows the artists to move materials and finished works between buildings.<sup>79</sup> The buildings function as offices, workshops, and rented commercial space.<sup>80</sup> A centralized paved “carpet” grounds the buildings and gantries, creating a multifunctional space for large and small events.<sup>81</sup>

The Steel Yard is an interesting example of the incorporation of waste as a feature. First, much of the abandoned site’s ecology - the native and volunteer plants that colonized the site was retained and supplemented with plants of a similar character. Materials such as scrap metal bales and recycled steel were incorporated as design elements.<sup>82</sup> Although these elements are primarily aesthetic, the fact that they were used at all allows for people to engage the space on a deeper level.

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<sup>79</sup> "The Steel Yard Providence, RI." ASLA 2011 Professional Awards | The Steel Yard. <https://www.asla.org/2011awards/183.html>.

<sup>80</sup> *Ibid.*

<sup>81</sup> *Ibid.*

<sup>82</sup> *Ibid.*

## Conclusions from Case Studies

Although not an exhaustive survey of post-industrial site design, these four case studies offer insight into how designers have conceptualized such sites and how that has changed over time. These can be broken into two approaches- the conceal/camouflage approach demonstrated by Gas Works Park and the High Line and the reveal/reinterpret approach of *Landschaftspark* and the Steel Yard. This thesis recognizes that post-industrial sites are a unique combination of the messy collisions between human systems and ecological systems. Retaining this quality and character is just as important as preserving the physical structures. The reveal/reinterpret approach does more to capture than the conceal/camouflage approach. However, that is not to say that the conceal/camouflage approach should be avoided entirely. For instance, in the case of environmental remediation, it would be difficult to balance maintaining public safety while completely revealing the toxic legacy of post-industrial sites.

While at first glance, the conceal/camouflage approach and the reveal/reinterpret approach appear to be in direct opposition to each other. In reality, these two approaches lie at opposite ends of a spectrum of design methods. The choice of when to conceal and when to reveal can vary from project to project.

## Chapter 5: Design Methods

Post-industrial sites are complex spaces, layered with meaning and nuanced interpretations. The traditional systematic and qualitative approach to site analysis can often fail to capture these subtle qualities. Therefore, a new approach to understanding and designing the site is needed.

### **Trace Concepts in Landscape Architecture**

In his essay, Four Trace Concepts in Landscape Architecture, Christophe Girot outlines “four operating concepts that serve as tools for landscape investigation and design”<sup>83</sup> - landing, grounding, finding and founding. Each takes place at a different stage of visiting a site and each successively buries deeper into understanding the place. Developing this deep understanding of the place is essential, as designers are rarely from the places that they are tasked to design. This method is designed to help designers understand the place even though it is unfamiliar to them.<sup>84</sup>

The four trace concepts are:

1. Landing: The first visit that the landscape architect makes to the site. Girot describes this as the “first moment of site introduction”<sup>85</sup>, a moment that only

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<sup>83</sup> Christophe Girot, “Four Trace Concepts of Landscape Architecture,” in *Recovering Landscape*, ed. James Corner (New York: Princeton Architectural Press, 1999). 60

<sup>84</sup> *Ibid.*, 60

<sup>85</sup> *Ibid.*, 61

happens once and marks the beginning of the project or the “passage from the unknown to the known.”<sup>86</sup>

2. Grounding: Girot characterizes this as the process of “reading and understanding the site.”<sup>87</sup> This is done through multiple studies and on the ground observations that build off of the first impression of the landing.
3. Finding: Finding builds off of the results discovered through grounding with the discovery of the unique qualities and features of the place. Finding relates to both the discovery of physical objects, and also the “experience of relating and associating ideas...and themes.”<sup>88</sup>
4. Founding: The synthesis of landing, grounding, and finding to create a new and transformed construction of the site.

Girot’s trace concepts helped guide my investigation into the Morse Chain site.

My initial landing occurred in the Summer of 2015, when I had the chance to tour the site with Scott Whitham, the director of the Chain Works project and my advisor, Dr. Kelly Cook (Figure 15). During this initial tour I was struck by the imposing mass of the main factory space. Moving through the building mass was like moving through a maze. I felt a sense of disconnect between the site and Ithaca, until we reached the roof of the main production area. Seeing the rooftop panoramic views of the downtown area allowed me to regain my bearings and helped me to connect the site with its larger context.

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<sup>86</sup> *Ibid.*, 61

<sup>87</sup> *Ibid.*, 62

<sup>88</sup> *Ibid.*, 63



*Figure 15 Photos from Initial Landing*

Grounding proceeded with an additional, self-guided site visit occurred in the winter of 2015. This site visit coincided with research at the Tompkins Historic Society and Cornell University's Map and Geospatial Information Library which provided a wealth of material for my site investigations focusing on the history of the Morse Chain Company and its relationship to Ithaca.



*Figure 16 Site Investigations produced through Grounding*

The primary method of investigation were the production of overlay diagrams and collage (Figure 16). The overlay diagrams were a deep dive into the evolution of the Morse Chain Company through time. By tracing the maps of the Morse Chain Company at specific moments in time, and then layering these diagrams on top of each other. Collage techniques allowed me to focus on the site in the present. Finding and founding occurred simultaneously, with my development of a new approach to understanding post-industrial sites - the *kintsugi* framework.

### **Kintsugi Framework**

*Kintsugi* refers to the Japanese technique of repairing broken pottery with lacquer dusted with powdered gold.<sup>89</sup> Techniques for mending broken objects can be broken into two broad categories - integrative methods that strive to hide the damage as much as possible, and purist methods that repair the object but the evidence of the repair visible.<sup>90</sup> *Kintsugi* takes this one step further by intentionally drawing attention to the joins, the damage becomes the “central element for the metamorphosis of the damaged ceramic into a new object...with new characteristics and appearance.”<sup>91</sup> This concept is interwoven with the aesthetic philosophy of *wabi-sabi* which describes that beauty is found in the “imperfect, impermanent, and incomplete.”<sup>92</sup>

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<sup>89</sup> Charly Iten, “Ceramics mended with lacquer - fundamental aesthetic principles, techniques, and artistic concepts,” in *Flickerwick: the Aesthetic of Mended Japanese Ceramics* (Ithaca, N.Y.: Herbert F. Johnson Museum of Art; Munster: Museum fur Lackkunst, 2008), 19

<sup>90</sup> Peter Lamarque. “Reflections on the Ethics and Aesthetics of Restoration and Conservation.” *The British Journal of Aesthetics*. 10-11.

<sup>91</sup> Charly Iten, “Ceramics mended with lacquer - fundamental aesthetic principles, techniques, and artistic concepts,” in *Flickerwick: the Aesthetic of Mended Japanese Ceramics* (Ithaca, N.Y.: Herbert F. Johnson Museum of Art; Munster: Museum fur Lackkunst, 2008), 19

<sup>92</sup> Leonard Koren. “Wabi-Sabi for Artists, Designers, Poets and Philosophers,”(1994)

*Kintsugi* is one technique of the larger technical body of Japanese lacquer repair. Lacquer acts as the gluing agent that binds the broken ceramic pieces together - reinserted fragments of the original object (*tomotsugi* - “original patches”) or replacement fragments from different objects (*yobitsugi* - “borrowed patches”).<sup>93</sup> Evidence of these techniques date back to the beginning of the art form, and all three continue to be used today.<sup>94</sup> *Kintsugi* is used for repairing a variety of damage types such as filling in the cracks with gold, or layers of lacquer could be applied to fill in larger spots of damage.<sup>95</sup> As *tomotsugi* uses pieces from the original object as the base materials for the repair, it is only practical if the fragments are sufficiently reuseable.<sup>96</sup> The *yobitsugi* approach uses alternate pieces to repair the object, and is useful for repairing large areas of damage or when the artist wants to deliberately use alternative material. *Yobitsugi* can be divided into three distinct categories- the use of fragments that closely resemble the original appearance of the piece, mixing similar pieces with “distinct and original shards”, or the insertion of pieces which look “distinctly unlike the original.”<sup>97</sup> The techniques of *kintsugi*, *tomotsugi*, and *yobitsugi* can be combined with one another, “broadening the range of the creative spectrum”<sup>98</sup> (Figure 17).

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<sup>93</sup> Charly Iten, “Ceramics mended with lacquer - fundamental aesthetic principles, techniques, and artistic concepts,” in *Flickerwick: the Aesthetic of Mended Japanese Ceramics* (Ithaca, N.Y.: Herbert F. Johnson Museum of Art; Munster: Museum fur Lackkunst, 2008), 21

<sup>94</sup> *Ibid.*, 23

<sup>95</sup> *Ibid.*, 22

<sup>96</sup> *Ibid.*, 24

<sup>97</sup> *Ibid.*, 24

<sup>98</sup> *Ibid.*, 24



*Figure 17 Kintsugi Techniques*

Although it is difficult to draw a direct connection between the concepts of *kintsugi* and the spatial design professions, similar concepts have been employed particularly in the field of architectural restoration. For instance, when a large portion of the Newburgh Priory, a 12th century English monastery turned boarding school was damaged by fire in 1940s, a portion of the damaged area was not restored. Instead the ruins of the original structure were incorporated into a walled garden that fills that void.<sup>99</sup> This restoration approach of inserting a novel area that complements the surrounding context is analogous to *yobitsugi* method of repair.

Within the context of post-industrial reclamation, the underlying philosophy of *kintsugi* represents a holistic approach to design, one that respects and embraces whole the history of the place, including its recent history of disturbance. The act of

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<sup>99</sup> Peter Lamarque. "Reflections on the Ethics and Aesthetics of Restoration and Conservation." *The British Journal of Aesthetics*. 14.

repair also becomes a part of the place in a way that is made visible and celebrated.

To this end, the *kintsugi* framework can be expressed in two parts:

1. The careful identification of the fragments and fractures of the site. These can be physically visible - such as a cleared pathway cut through a wooded area, or the invisible traces of the cultural and historic uses of the site.
2. Reassemble these fragments, paying special attention to the joints and transitions between them

## Chapter 6: Site Investigation

### **Why this site?**

The Chain Works site contains many qualities that make it ideal for exploring the applications of the *kintsugi* framework. First, it is large site located on the edge of the City of Ithaca and the Town of Ithaca. This allows for the opportunity to develop many underutilized links between the two districts. Second, the Morse Chain Company has had over 100 years of operation in Ithaca. The years of operation has left many traces on the site, which can be uncovered and incorporated into the design. Finally, plans are underway for developing the site. Much of the initial groundwork as to what changes will be made to the building masses, and the uses of the buildings that will remain has already been established. This allowed me to focus my efforts on the application of my *kintsugi* framework to the site.

### **Linking Outwards: Site Context**

#### Context

The site is the former Morse Chain/Emerson Power Transmission Company plant in Ithaca, New York (Figure 18). Ithaca is the largest community in Tompkins County, and is located on the southern shores of Cayuga Lake. Ithaca's development was largely influenced by the environmental conditions that characterize the Finger Lakes region. Ithaca is centralized in the Cayuga Lake valley and is surrounded by steep hills to the West, East, and South. Cayuga Lake forms Ithaca's northern boundary. The Lake's water supply comes from three large creeks that cascade down

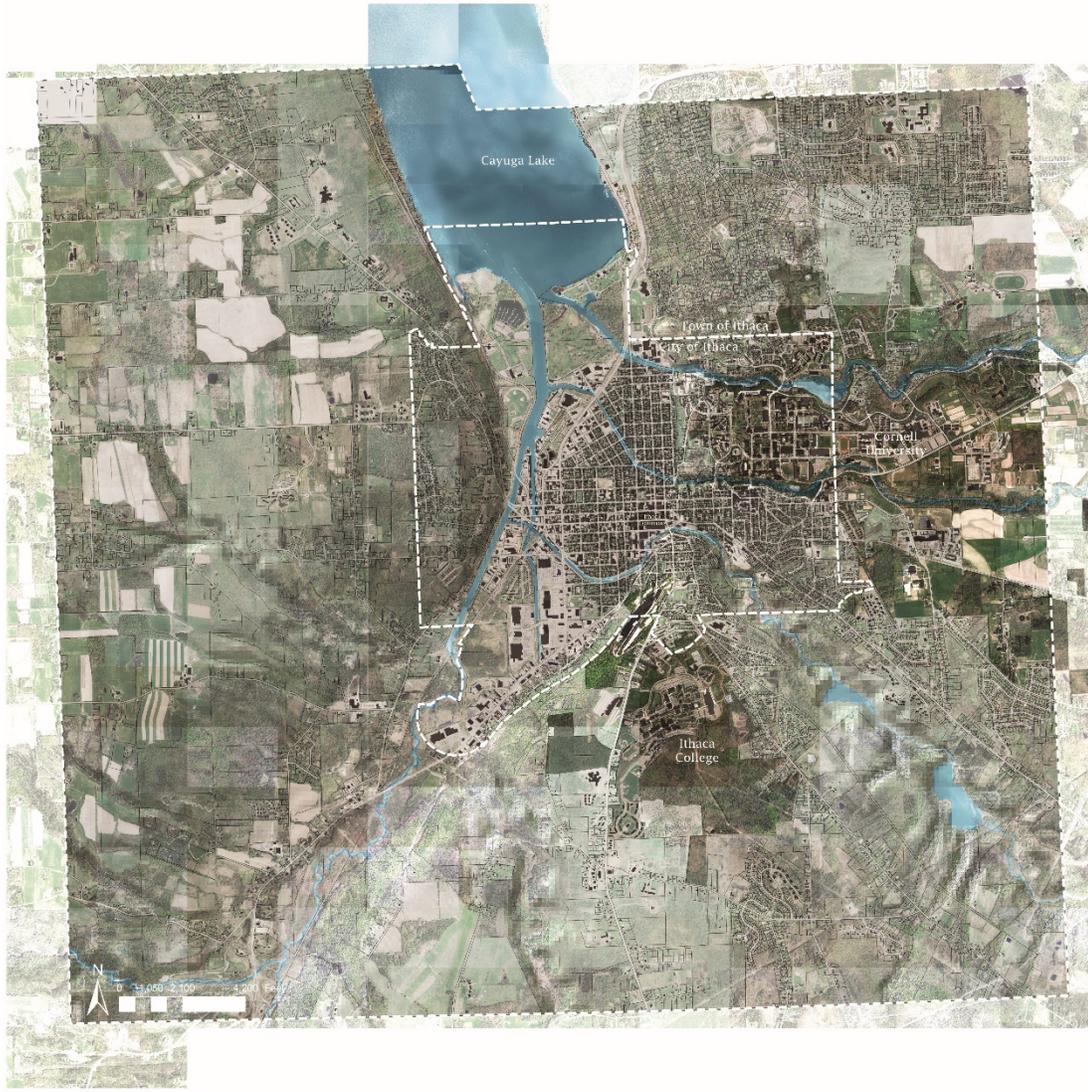
the valleys and flow through the town - Cascadilla Creek, Fall Creek, and Six Mile Creek.

The unique and challenging terrain of Ithaca has also affected the community's administration. Ithaca is divided into two administrative districts, the City of Ithaca and the Town of Ithaca. The City of Ithaca is centralized in the flats of the Cayuga Lake Valley, and is characterized by relatively dense urban development organized by a regular street grid. Ithaca is home to a number of cultural institutions, the most well-known being Cornell University, a private Ivy League institution that was established in 1865. Cornell is located on Ithaca's East Hill, partially in the City and partially in the Town. The Ithaca Commons, a three block pedestrian mall is centrally located in the City of Ithaca.

The Town of Ithaca surrounds the city center, and is a mosaic of rural, suburban and urban areas. Ithaca College, a private liberal arts college relocated from the City of Ithaca to the South Hill area in 1960. The 93-acre site is located on the border between these two districts, with roughly half of the site belonging to the City, and the remaining half belonging to the Town.

Although this site is on the edge of the City-Town divide, it is not isolated from the larger fabric of the community. Cayuga Street and Aurora Street form the major links to the City of Ithaca's downtown core. Aurora Street becomes Danby Road/98B, the main connection to the Town of Ithaca. The site is directly adjacent to Ithaca College. While the site is accessible to either the City or the Town of Ithaca, there is no direct connection between the two locations that moves through the site. The most direct connection between the City and the Town is Aurora Street/Danby

Road, which completely bypasses the site. Moving from City to Town through the site requires negotiating a series of switchbacks up the hill.



*Figure 18 Site Context Map*

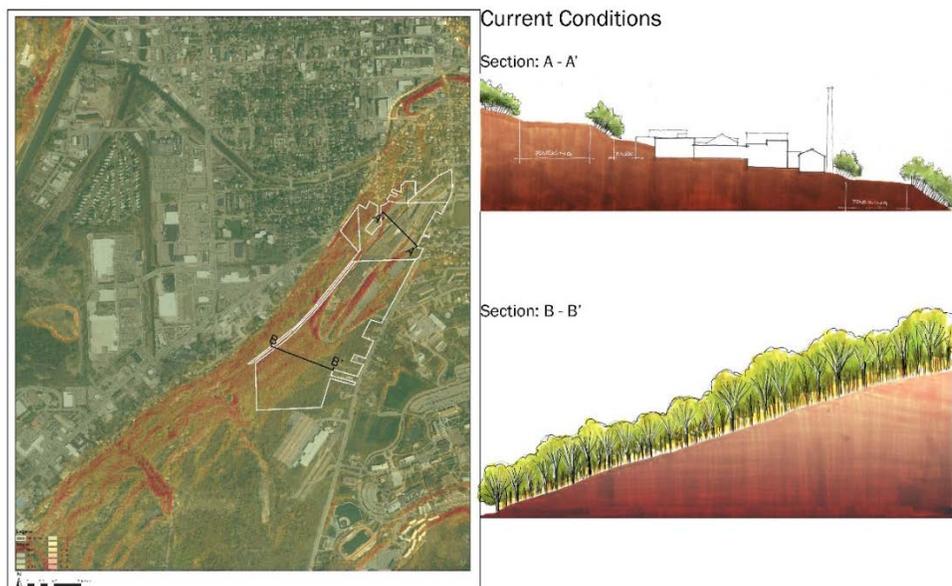
### Topography

Ithaca is known for its dramatic topography of steep hillsides, rivers and gorges surrounding Cayuga Lake. Originally a river valley, it was deepened and

widened through long periods of glacial advance and retreat during the Pleistocene epoch.<sup>100</sup>

Ithaca was founded on the flat land just south of Cayuga Lake. Since its founding, the city has spread to the adjacent hillsides - East Hill, South Hill, and West Hill. These hills rise several hundreds of feet above the lower central flats and are characterized by steep slopes cut by streams that flow into the lower valley.

The site is located on the South Hill, which rises to a total elevation of 778 feet (Figure 19). The steepest slopes range from 25-45 degrees and follow the curve of the hill. The factory complex sits on a plateau that has been carved out of the hillside, with the steepest slopes creating barriers between the different levels of parking and building areas. A large area of moderate to steep slopes exists on the south side of the property which is covered by mixed hardwood forest.



*Figure 19 Slope Map and Existing Sections*

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<sup>100</sup> O.D. von Engeln, *The Finger Lakes Region: Its Origin and Nature*, Cornell University Press, pg 8  
38

## Views and Viewshed

Ithaca's unique topography creates a number of distinct views, both in and out of the site. However, there is a distinct difference between the views from the site to town, and from the town to the site (Figure 20).

Due to the main production area's orientation and profile, it is difficult to see the entirety of the building at any one time. Much of the main production area is obscured by vegetation for the majority of the year, leaving the smokestack as the main point of orientation. During the winter, it is possible to see the main production area from the lower elevation of the City of Ithaca. In contrast, the site has impressive views out towards the City of Ithaca and Lake Cayuga. The spectacular panoramic view can be seen from the interior of the main production area, and the rooftop offers a view to the bell tower of Cornell University.

The views and viewsheds are one of the main defining features of the site, but the stark contrast between the views to and the views from means most people are unfamiliar with the site at all. Finding ways to bridge this divide and introduce Ithacans to the site will be important to the success of the project.

View from Site towards Downtown + Lake Cayuga



Views to Site from City



*Figure 20 Views and Viewshed*

### Unique Natural Areas

Ithaca is known for its areas of natural beauty, many of which are located in the gorges and creek valleys that flow through the town and into Cayuga Lake. Tompkins County has designated many of these spaces as “Unique Natural Areas” (UNA). In order to qualify, a space must have “significant ecological, biological, geological, or aesthetic characteristics”. Out of the 192 UNAs in Tompkins County, 12 lie within the City of Ithaca, and 30 lie within the Town of Ithaca.<sup>101</sup> Although the UNA distinction does not carry any legal protection, and contains both publicly owned land and privately owned land, many of the areas that have been designated as

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<sup>101</sup> “The Unique Natural Areas” *Tompkins County Environmental Management Council*, pg. 3  
[http://www.tompkinscountyny.gov/files/planning/nri/eco\\_resources.pdf](http://www.tompkinscountyny.gov/files/planning/nri/eco_resources.pdf)

a UNA are New York State Parks or Forests, which are public lands that are legally protected.<sup>102</sup>

Three Unique Natural Areas are fairly close to the site, and deserve special mention (Figure 21). The first is Buttermilk Falls State Park, named for the waterfall formed by the Buttermilk Creek as it flows from the steep valley into Cayuga Lake. Buttermilk Falls State Park consists of an upper park, which contains hiking trails along the gorge and rim, and a lower park, which contains a campground and a natural swimming area. The second is the Six Mile Creek Valley, a wooded valley surrounding Six Mile Creek, which contains the reservoir that supplies Ithaca with water. The Six Mile Creek Valley also contains trails that loop through the valley, including the South Hill Recreation Way, a 3.3-mile trail that connects the City of Ithaca with the Town of Ithaca. The third is the Natural Lands owned by Ithaca College. The Natural Lands are two separate areas - South Hill Natural Area West, 67 acres of woodland adjacent to Buttermilk Falls State Park, and South Hill Natural Area East, 365 acres of wetlands and forests that surround Ithaca College. The Natural Lands are accessible to the public, and are an important tool for environmental education for Ithaca College.

Understanding how the site relates with these connections is important. First, and perhaps most obviously, the site contains a large wooded area that is proximally located to the Natural Lands and Buttermilk Falls State Park. Preserving this wooded area would allow for the movement of plant and animal species.

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<sup>102</sup> *Ibid.*, 1

Second, there is an important connection between the can be drawn between these Unique Natural Areas and industry. The Fall Creek UNA contained many industrial operations, most notably the Ithaca Gun Company. While these operations have ceased, many traces of this past industrial use are visible in the landscape. When I had the opportunity to visit Fall Creek in the summer of 2015, I observed many people exploring the ruins of the mills, hiking along the raceways, and of course viewing the Falls themselves. Clearly, the public enjoys spending time amongst these ruins, even if they are unaware of their original purposes. The Chain Works site represents another version of a “Unique Natural Area”, one that presents the industrial history of the place with a shifting landscape in a way that is engaging to the people living, working or just visiting the place.



*Figure 21 Unique Natural Areas Map*

### **Linking Back: History of the Morse Chain Company**

In 1880 the Morse brothers founded the Morse Equalizing Spring Company in Trumansburg, New York a small town about 12 miles away from Ithaca.<sup>103</sup> The company first made horse drawn carts and buggy springs, moving onto manufacturing bicycle chain following their patenting of the rocker joint in 1892.<sup>104</sup> The success of

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<sup>103</sup> “The Morse Chain of Events”, 1

<sup>104</sup> *Ibid.*, 1

this product lead to their incorporation as the Morse Chain Company in 1898.<sup>105</sup> The development of the first silent power chain in 1901 lead to the construction of the South Hill plant.<sup>106</sup> The Morse Chain Company moved into the 80,000 square foot space in 1906.<sup>107</sup> Plant size quadrupled in the 1910s as the company began manufacturing a variety of products in addition to automotive parts, including adding machines, electric clocks, and most famously, airplanes for the U.S. forces in World War One.<sup>108</sup> The company continued to expand in the 1920s, adding additional plant space in Ithaca, and building new plants in Letchworth, England and Detroit, Michigan.<sup>109</sup> In 1929, Morse Chain was incorporated into the BorgWarner Corporation, a global automotive industry parts and components supplier. The company refocused on developing and improving automotive parts, selling the adding machine division to Allen-Walles the forerunner of the National Cash Register Company.<sup>110</sup>

Morse Chain continued to grow following the Great Depression, adding additional square footage to the Ithaca plant as well as building new plants abroad.<sup>111</sup> In 1983 BorgWarner sold the Morse Industrial Products Division and the Ithaca plant to the Emerson Power Transmission Company and moved Morse Automotive to the newly constructed 500,000 square foot plant in the nearby town of Lansing.<sup>112</sup> This

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<sup>105</sup> *Ibid.*, 1

<sup>106</sup> *Ibid.*, 1

<sup>107</sup> *Ibid.*, 1

<sup>108</sup> *Ibid.*, 1-2

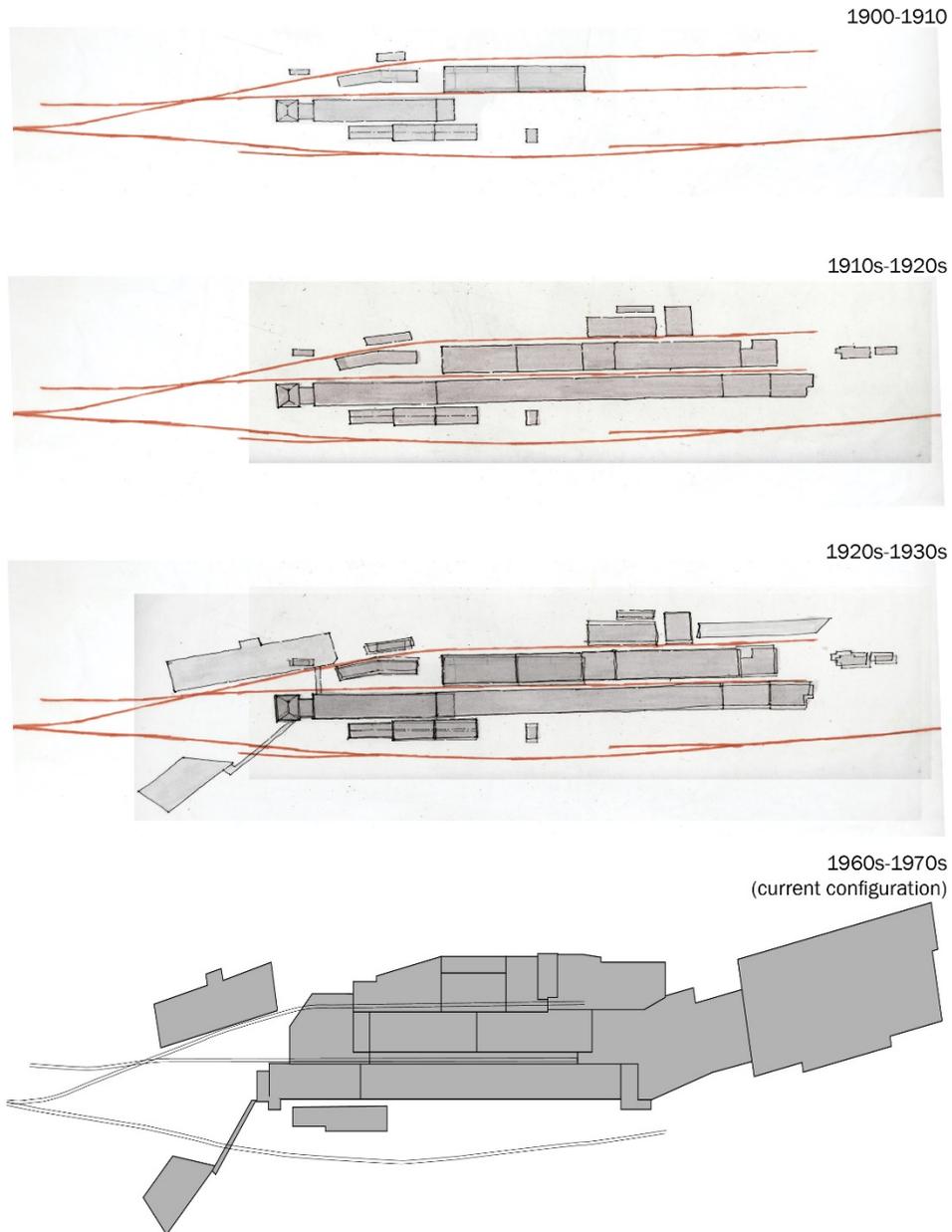
<sup>109</sup> *Ibid.*, 2-3

<sup>110</sup> *Ibid.*, 3

<sup>111</sup> *Ibid.*, 3-5

<sup>112</sup> *Ibid.*, 6

sale marked the beginning of the end for the Ithaca plant. In 2007 Emerson moved its headquarters from Ithaca to Cincinnati, and finally closed the plant in 2009.<sup>113</sup>



*Figure 22 Morse Chain Plant Expansion Timeline*

<sup>113</sup> Lou Gulino, "Emerson Closing Ithaca Parts Plant," WSTM, August 12, 2009, <http://cnycentral.com/news/local/emerson-closing-ithaca-parts-plant>.

Traces of the plant's 100-year history of operation exist throughout the site. From afar, Morse Chain reads as three buildings, a one large structure nestled into the slope of South Hill flanked by two smaller buildings. On closer inspection, it becomes clear that this seemingly large building mass is actually a collection of smaller structural units. Some of these structures date back to when the Morse Chain company first opened in 1906. Others are from the Morse Chain Company's later expansions. The buildings form a visual record of the company's 100-year history of expansion (Figure 22).

Additional traces of the plant's history can also be read in the surrounding landscape. While the Delaware, Lackawanna and Western rail line no longer exists, the rail bed of the main track still has a visual presence on South Hill. Two spurs split off of the main track, flanked on each side by buildings. Insight on Morse Chain production process can be gleaned by dissecting the relationship between the landform of South Hill, the rail tracks, and the organization and use of the buildings. The plant fits into the curve of South Hill. The main building is built into the hillside, with the main production space oriented towards the northwest to capture the maximum amount of natural daylight.<sup>114</sup> The generator that supplied power for the plant's operations is downhill from the main building, followed by the main track of the DL&W line. The buildings that processed raw materials were separated from the production area by one spur of the DL&W railroad. The second spur wrapped behind the material processing space.

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<sup>114</sup> Price, Cedric. *The Story of Morse Chain*, 1

Although these tracks were all a part of the DL&W railroad, they were specialized according to the specific needs of power generating, processing of raw materials, and transport of the finished products. A 1924 report entitled The Story of Morse Chain explains how the tracks and building are integrated by “the slope of the ground on which the plant is built”.<sup>115</sup> Trains on the uphill track supplied the raw materials necessary for steel production- anthracite coal, iron ore, and sand. The coal and ore were combined to form molten steel. From there, the molten steel was cast into shapes using sand molds. The steel castings then moved to the annealing building, where they would undergo heat treatment to improve the casting’s workability. The refined steel castings moved across the track to the main production space, where it would be machined and assembled into the final product. Once packed, the finished product would be loaded onto a train on the middle track for transport. Trains on the downhill track carried bituminous coal to the generator, which would supply the power needed to operate the whole Morse Chain plant.

While these three operations were physically separated from each other, either by the train tracks or by the topography of South Hill, they were linked due to the transport and transformation of materials and energy through the site (Figure 23). Together, the buildings, train tracks, and terrain formed a working

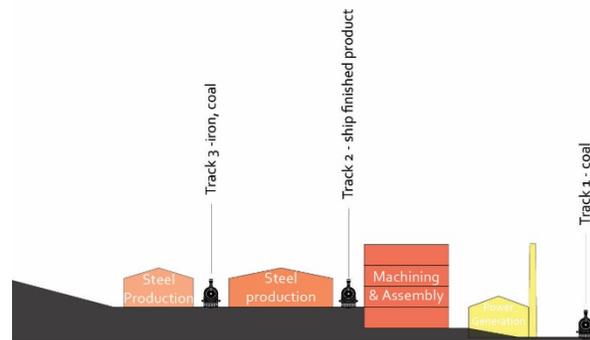


Figure 23 Morse Chain Plant Section

<sup>115</sup> *Ibid.*, 5

landscape. Understanding how this landscape worked is important as it acts as a foundation for new uses and design to be layered on top of (Figure 24).

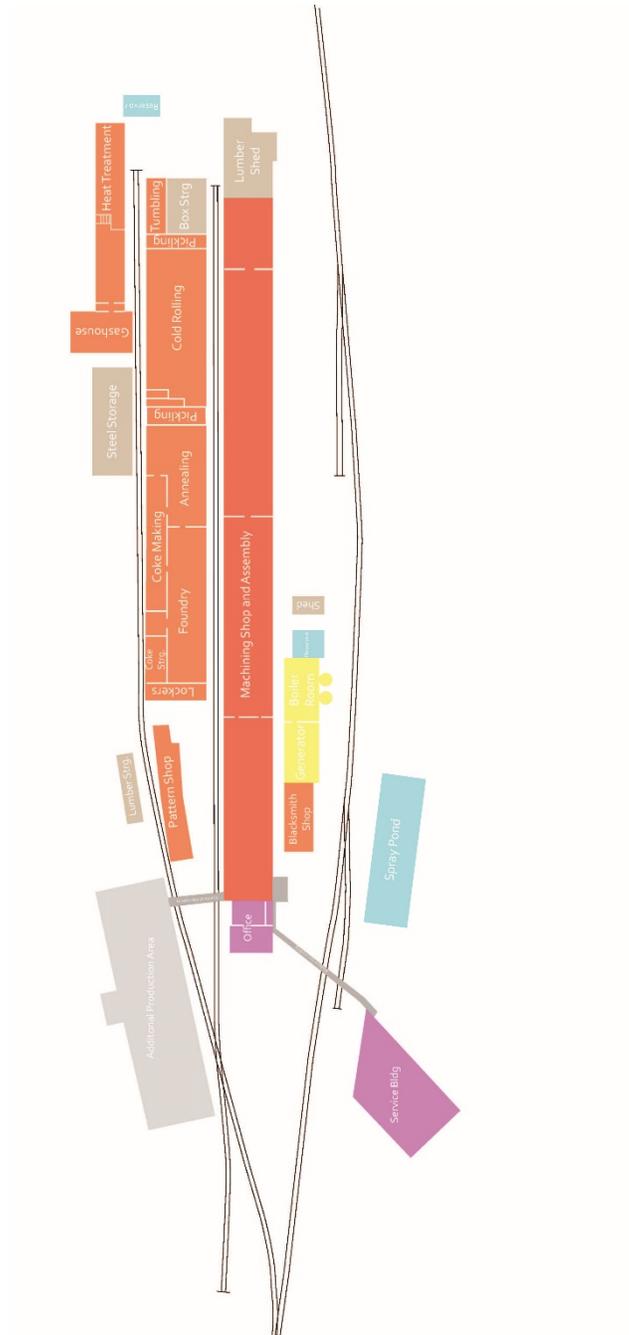


Figure 24 Morse Chain Plant Layout

## **Linking Forward: The Chain Works District**

Following the closure of the Emerson Power Transmission in 2009, the property sat abandoned until 2011. At that point the property was purchased by Unchained Properties, LLC with the intent of developing it into a mixed-use “live-work-play” neighborhood - the Chain Works District.<sup>116</sup>

With over 90 acres of land to be developed over a 7 to 10-year timeframe, it is necessary to break the project into stages. Phase one involves the adaptive reuse of the existing factory buildings, starting on the northern and southern fringes of the site and then working inwards.<sup>117</sup> This phase also involves the selective demolition of some of the existing core buildings to create courtyards and an open space connection that traverses the site (Figure 25).<sup>118</sup> These structures that will be removed are later additions and infill to the overall factory building, and generally “lack the quality, character, and historical significance” of the original structures.<sup>119</sup> Removing these structures increases the porosity of the factory complex, and allows for a variety of uses (apartments, offices, retail, and light manufacturing) to coexist in the same space (Figure 26).

Subsequent phases will also include the development of new multifamily housing consisting of apartments and townhomes. This new construction is concentrated on the eastern and northern boundaries of the site, working with the existing topology.<sup>120</sup> Slopes that are greater than 20% will be preserved in their

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<sup>116</sup> About the Project. <https://chainworksdistrict.com/about-2/>

<sup>117</sup> Chain Works District Draft Environmental Impact Statement, 2.4

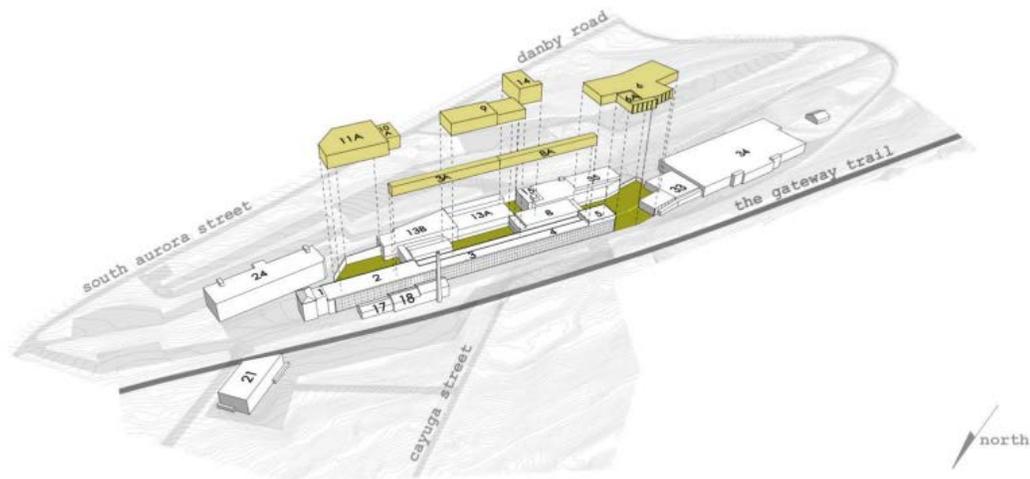
<sup>118</sup> *Ibid.*, 2.2.

<sup>119</sup> *Ibid.*, 2.29

<sup>120</sup> *Ibid.*, 2.22

existing forested condition, with slight modification for the development of a trail network.<sup>121</sup>

So far, much of the focus on the development of the Chain Works District has been centered on the architecture. What attention that has been put on the surrounding landscape has been fairly general in nature. The overall landscape scheme can be broken into two broad categories - public urban development in the form of public open space and courtyards. There has been very little definition of these spaces, or how they fit in with the surrounding landscape apart from filling in the voids left from developing the space. The bulk of my design for the Chain Works site focuses on defining and characterizing these spaces and their relationship to the surrounding landscape context.



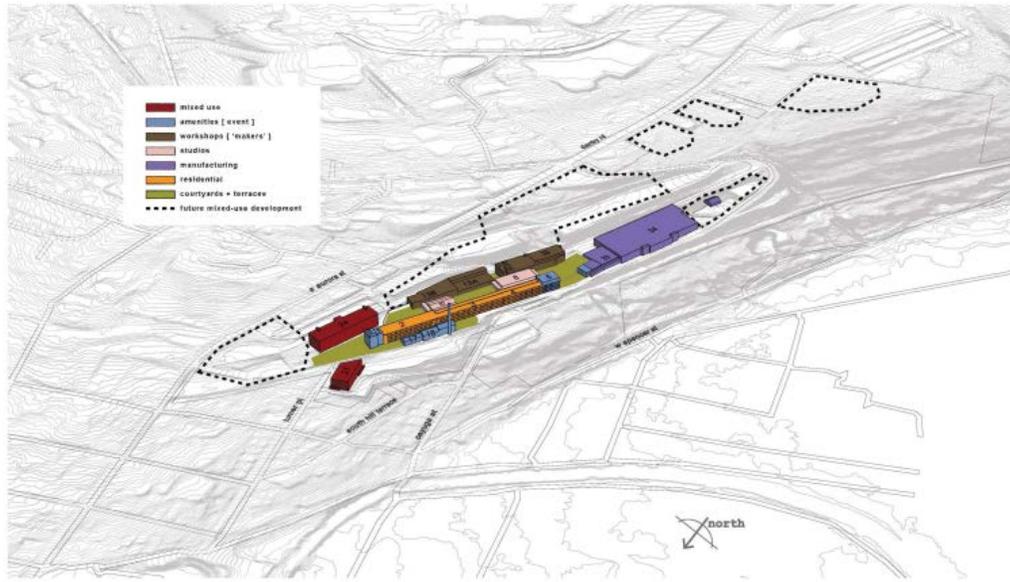
BUILDINGS TO BE REMOVED  
11.18.2014

UNCHAINED PROPERTIES LLC

CHAIN WORKS DISTRICT

Figure 25 Chain Works Plan Removed Buildings

<sup>121</sup> *Ibid.*, 2.22



PROGRAM DIAGRAM  
11.18.2014

UNCHAINED PROPERTIES LLC

CHAIN WORKS DISTRICT

Figure 26 Chain Works Plan Programmatic Diagram

## Chapter 7: Design

### ***Kintsugi* techniques as inspiration**

The three techniques of Japanese lacquer repair - *kintsugi*, *tomotsugi* and *yobitsugi* were translated into three distinct design moves (Figure 27). The straight, linear forms of *kintsugi*+*tomotsugi* repair can be interpreted as linear forms of connection and distribution, such as paths, trails, and roads. The patch technique of *kintsugi* repair can be translated as large surfaces or patches for collection and massing. The deliberate insertion of new ceramic fragments of *yobitsugi* can be interpreted as distinct, defined areas for gathering and event space.



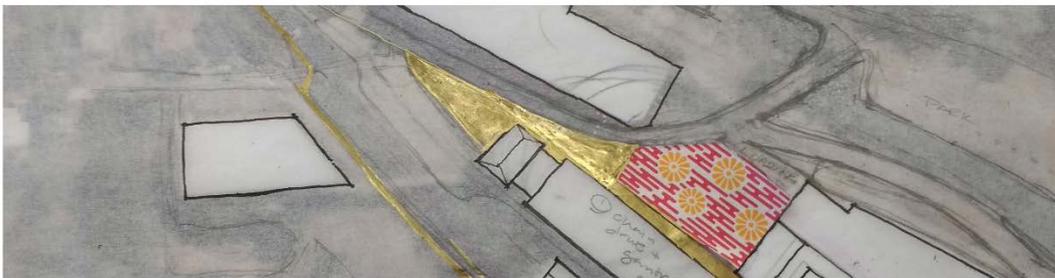
*Figure 27 Kintsugi Techniques as Inspiration*

### **Master armature**

My design for the Chain Works District uses the existing plan as the baseline for the application of the *kintsugi* framework. The established plan provided the basic structure for this application - what buildings will be removed, what buildings will stay, and what use will the remaining buildings have.

The selective demolition of the Morse Chain factory mass created one fragment of the site - one that will intentionally be created as the site develops. Additional fragments were identified during the site investigation phase - such as abandoned rail bed of the Delaware Lackawanna and Western rail line on the downhill side of the site, and the utility right-of-ways that cut through the wooded area. Once these fragments were identified, the three design moves were applied as a method of “gilding” these areas (Figure 28).

Three distinct areas for gathering identified in the Chain Works plan - the Gantry Garden, the Annealing Courtyard, and the Assembly Yard are an application of the *yobitsugi* method. Two pathways - Chain Drive and the Gateway Trail connect the fragmented edges of the site and these new gathering areas together (Figure 29).



*Figure 28 Master Armature Close Up*

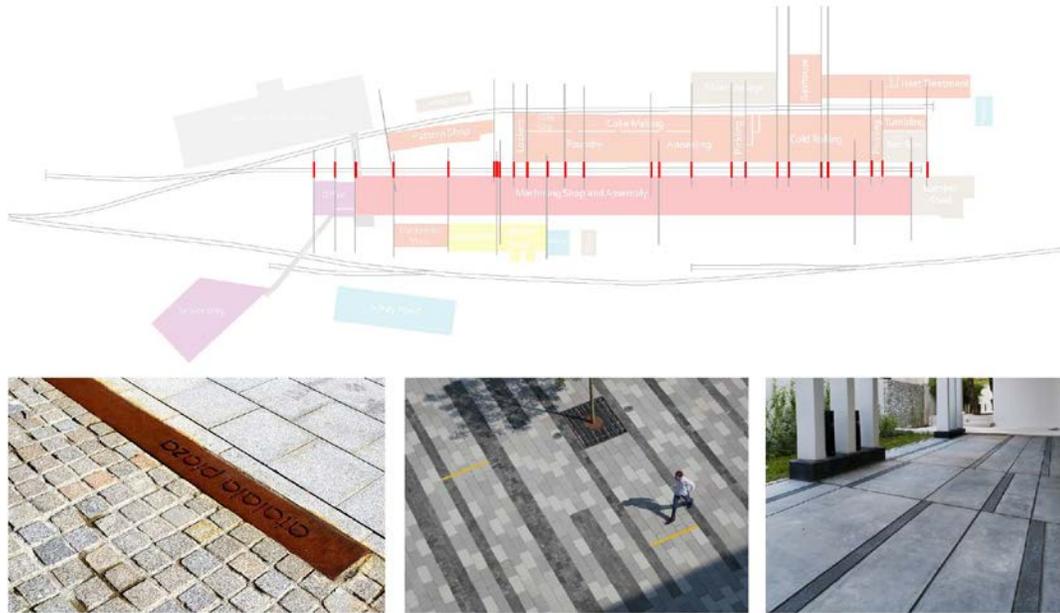


*Figure 29 Master Armature*

**Focus area 1: Chain Drive**

Chain Drive forms the main connection through the factory space. This area recalls the original layout and circulation of the Morse Chain Company. Chain Drive is envisioned as a shared street between pedestrians and vehicles. In order to break up the large paving expanse, as well as incorporate the historic layout of the factory

space as a layer in the design, impressions from the building foundations could be struck in the paved area. These could be done with a material that contrasts with the surrounding paving area, such as metal inlays or paving banding (Figure 30).



*Figure 30 Chain Drive Banding Locations*

## **Focus area 2: Trail network**

The Gateway Trail is built on the remnants of the abandoned Delaware Lackawanna and Western rail bed. This trail bridges the gap between the South Hill Recreation Way and the Buttermilk Falls State Park, creating an important link on Ithaca's South Hill. The Gateway Trail connects to the wooded area on the site's southern boundary. This area could be improved with a trail network that will allow people to explore this area, as well as connect to the trails of the Ithaca College Natural Lands.

The Gateway Trail is an important link, both through the site and across the site (Figure 31). As the Gateway Trail follows the boundaries of this site’s downhill boundary, it will allow people to have closer access to the Morse Chain factory than they currently do. This will allow people to observe the Chain Works District as it develops.



*Figure 31 Gateway Trail at Cayuga Street*

### **Focus area 3: Gantry Garden**

The Gantry Garden is the “front entry” of the Chain Works District. Located in the footprint of one of the shipping buildings that was constructed in the 1950s, the Gantry Garden is a palimpsest of the Morse Chain company through the ages. In order to make up the grade from removing the building that stood there, a series of terraces take up the slope downhill towards the Pattern Building Lawn, an unprogrammed open lawn set in the original footprint of the Pattern Building that

originally occupied the space (Figure 32). The eponymous Gantry Garden is downhill from the Pattern Building Lawn. This area is comprised of elements from the current building - the gantries and support beam that run parallel to Chain Drive, and large irregular concrete paving stones cut from the building's foundation and replaced. These elements, coupled with trees form the designed baseline of the garden. The rest of the garden will be established by self-seeding volunteer plants that will fill in the gaps of the concrete pavers over time.

The Gantry Garden's proximity to the main residential buildings of the Chain Works District, as well as the artist studios and makerspaces allow this area to function as an event space for the District, as well as everyday gathering.



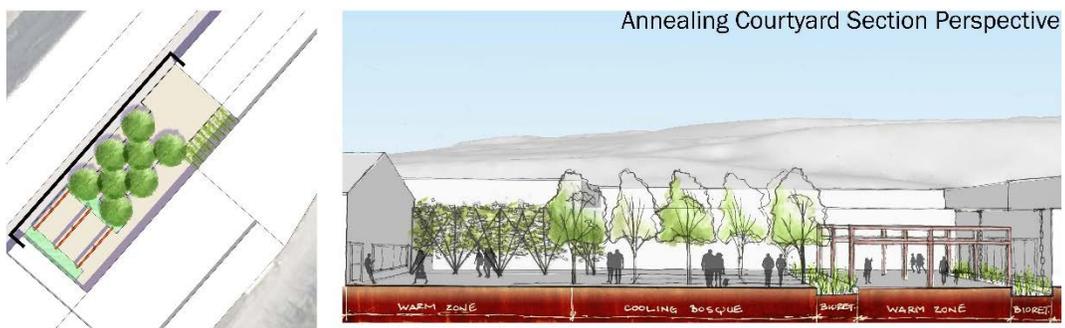
*Figure 32 Gantry Garden Plan and Section Perspective*

#### **Focus area 4: Annealing Courtyard**

The Annealing Courtyard is the central gathering area in the revitalized Morse Chain building. The Annealing Courtyard is in the footprint of the original Annealing Building and is surrounded on all sides by buildings with a variety of uses - the main residential buildings to the west across Chain Drive, and is bordered on both sides by artist studios/makerspaces, and a light manufacturing area along the courtyard's

eastern edge. These buildings define the boundaries of the Annealing Courtyard and give it a more internalized character.

The surrounding buildings also create the unique microclimatic condition of the Annealing Courtyard. Due to the orientation of the Morse Chain factory, the space is exposed to the sun for the majority of the day. As it is sheltered by buildings, the space will retain much of this captured solar energy. A centrally located bosque of trees provides a shaded area for people to gather. The experience of moving from these sun-warmed, exposed areas to the shaded, cool areas replicates the annealing process - where metal is heated up and then slowly cooled down (Figure 33).

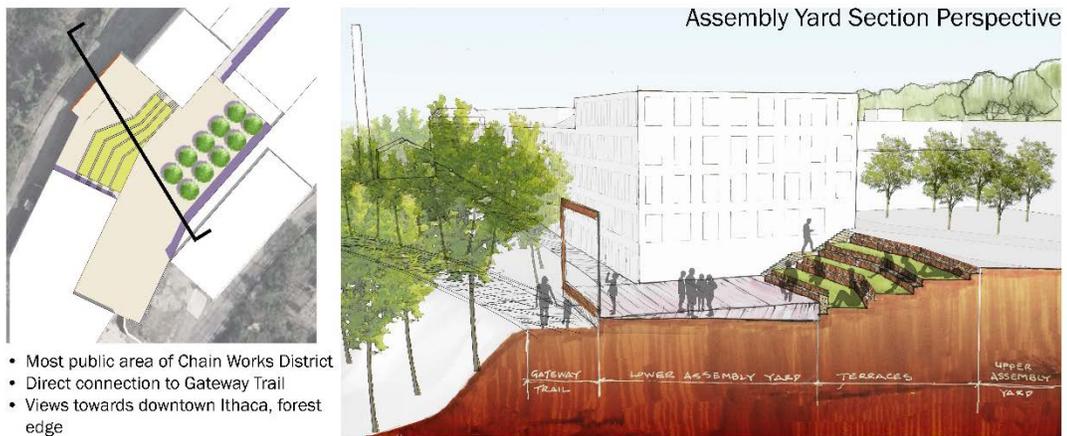


*Figure 33 Annealing Courtyard Plan and Section Perspective*

### **Focus area 5: Assembly Yard**

The Assembly Yard is the node between multiple connection points. The Yard has a direct connection to both the City of Ithaca from the Gateway Trail, the Town of Ithaca from the upper levels of the site, and an internal connection from Chain Drive. Due to these connections, the Assembly Yard is a space for both Chain Works residents and the larger community of Ithaca to come together.

This space uses the impression of the Dry Kiln building to create the form of the terraces that make up the grade from the removal of the buildings. The terraces are a combination of large grass panels, steel retaining walls, and aggregate recycled from the building demolition. These terraces are angled to direct views down the hillside, through the site's forested boundaries to downtown Ithaca. An oversized observational frame both defines this viewshed, as well as provides a visual landmark for the Assembly Yard (Figure 34).



*Figure 34 Assembly Yard Plan and Section Perspective*

## Chapter 8: Reflection and Next Steps

This thesis was born out a desire to understand the underlying complexity of post-industrial sites, and how this understanding could be used to impact design decisions. As more industrial sites transition to postindustrial sites, there is a greater need to understand this complexity. In order to understand this complexity, it is necessary to reduce complexity enough to understand the relationships between different forces and their interplay on the landscape, therefore a delicate balance must be struck between reducing this complexity while avoiding oversimplifying these complex relationships.<sup>122</sup> This thesis analyzed the impacts of deindustrialization at multiple scales - from the regional scale of the Rust Belt and New York's Southern Tier, to the site scale of the Morse Chain Company. Although the scale shifted from large to small, the story did not. The story of the Morse Chain Company, from its rise and decline is reflective of the larger patterns of deindustrialization of the Southern Tier and the Rust Belt.

I consider the development of the *kintsugi* framework to be the bridge between site investigation and analysis to site design. Through this method I was able to analyze the various fragments of the site, where they came from and how they fit together. The *kintsugi* framework also provided structure to the design process, unifying these fragments and “gilding” them.

The *kintsugi* framework can be thought of as an intermediary between the conceal/camouflage approach and the reveal/reinterpret approach discussed in

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<sup>122</sup> Joern Langhorst, “Between a Rock and a Hard Place: On the Dialectics of Landscape and Representation”, *Journal of the Design Communication Association*, 57

Chapter 3: Case Studies in Post-Industrial Sites. The three gathering areas - the Gantry Garden, the Annealing Courtyard, and the Assembly Yard exemplify this approach. Each takes up the foundation of a removed building, reinterpreting and redefining these areas. At the same time, this reinterpretation conceals the original use of these areas. Investigating other ways that the dynamic between reveal and conceal could take place is another opportunity for further study.

One way that this dynamic could be explored is in the addition of remediation into the *kintsugi* framework. Site contamination could be thought of as another fragment on the site, albeit one that is mostly invisible in the physical landscape. Incorporating remediation could be thought of as simply bringing in another layer to the *kintsugi* framework, or it could evolve the method, or change it entirely.

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