

The Benchway

Salvaged Materials in Public Space

by Ella Hough

There is a certain type of person that, when passing one of the many demolition sites across Toronto, will peer through the holes of the safety fencing and take note of the way the materials are organised. “Is the lumber separated? Are the bricks stacked?” they ask themselves, trying to determine if the materials will be reused or tossed into an overflowing dumpster of demolition debris and sent to the landfill. These people are deconstructionists, circular economists, and heritage preservationists. They belong to a network of Torontonians trying to address the wasteful practices of the construction industry.

A few months ago, I met with one such group of Torontonians, informally named the ‘Reuse Collaborators.’ They are architects, landscapers, researchers, interior designers, building managers, and others who advocate for the environmental and historical value of material reuse enabled by deconstruction, the meticulous and thoughtful dismantling of a house with preservation in mind. They gather to share and support each other in their reuse ventures.

A newcomer to the group, I admitted I had only learned about deconstruction a few months ago. “How did you hear out about it?” they asked, eager to similarly spread the word. I told them it had come up in conversation with a member of my recreational soccer team. “Well...” said Stephanie Mah of Giamo architecture firm, “I guess we all need to join soccer teams!” What the ‘Reuse Collaborators’ ask themselves is how to activate a widespread cultural shift in the way we think about building materials.

There is a sense of urgency to their work. The construction industry accounts for approximately 38% of the world’s carbon emissions.¹ Approximately 50% of these emissions come from the embodied carbon of raw materials, including their extraction, processing, and transportation.² The consumption of virgin materials by the construction industry is immense— as much as 40% of raw materials consumed in North America are used in construction.³

On top of the emissions associated with raw materials, construction, renovation, and demolition activities generate up to one third of municipal solid waste in Canada.⁴ This poses a serious threat, as our landfills approach capacity. Material reuse helps to extend the life cycle of materials, reducing the embodied carbon of a building and keeping waste out of the landfill. A change like this, among other things, demands educators and trend-setters.

The infiltration of adult recreational sports leagues by a group of material reuse enthusiasts is,

1 World Business Council for Sustainable Development. Net-zero Buildings: Where do we Stand? (July 2021): 8. https://www.w_bcsd.org/contentwbc/download/12446/185553/1

2 World Business Council for Sustainable Development. Net-zero Buildings, 3.

3 Canadian Council for Ministers on the Environment. Guide for Identifying, Evaluating and Selecting Policies for Influencing Construction, Renovation and Demolition Waste Management (2019): <https://ccme.ca/en/res/crdguidance-secured.pdf>

4 Canada. Minister of Public Works and Government Services. The Environmentally Responsible Construction and Renovation Handbook. Second Edition (2001): 69. https://publications.gc.ca/collections/collection_2013/tps-gc-pwgsc/P4-53-2001-eng.pdf

unfortunately, not going to be enough. We need spaces to spread awareness and communally visualise an alternative approach to building materials. As accessible cultural venues, public spaces could fill this role. What if, for example, Toronto's public space furniture modelled circularity by using salvaged materials?

In development since 2006, Toronto's Coordinated Street Furniture Program is an ongoing plan to add, amongst other amenities, thousands more public benches to our city. The resulting document, *Vibrant Streets: Toronto's Coordinated Street Furniture Program* provides a guideline for Toronto's design principles which, as outlined in section 6.7, encourage "environmental innovations [...], including the use of recycled materials".⁵ Recycled materials are better than raw ones. But reuse offers an even more environmentally sustainable option that simultaneously fulfils another goal of the Street Furniture Program; "to encourage a Toronto-specific family of furniture, rather than off-the-shelf products common to other cities around the world".⁶ Sourcing their materials from deconstructed Toronto buildings, our public benches could trace a material history specific to our city while keeping waste out of the landfill and avoiding the environmental impact of processing new or recycled materials. By modelling material reuse, public space could be a major player in a necessary cultural shift, acting as the Ikea showroom of salvaged materials.

I decided to test this process by designing a public bench made entirely of salvaged wood for The Bentway's Under-Gardiner site. I sourced my materials from Meredith Moore of Ouroboros Deconstruction, who was taking apart the interiors of a house in Toronto's Little Italy. Meredith was my first contact of the 'Reuse Collaborators' and I credit her contagious enthusiasm for getting me hooked on the topic of material reuse. She has a background in interior design and a deep attachment to the storied beauty of the treasures she uncovers through deconstruction. Her desire to recover old construction materials, however, goes beyond the aesthetic. Compared to demolition, deconstruction reduces the release of toxic dust and airborne pollutants,⁷ is less disruptive to the neighbourhood, and contributes to circular, sustainable construction practices which significantly lower carbon emissions. The Circular Construction Lab estimates that deconstruction could salvage roughly 8.2 tons of structural members from a mid-sized home, which translates to 13.15 tons of carbon dioxide sequestered and kept out of the landfill.⁸ This is equivalent to the amount of carbon sequestered by 15.6 acres of US forests.⁹ Furthermore, studies suggest the economic benefit of waste diversion is four times greater than the net cost and could create 7 jobs for every 1000 tonnes of diverted waste,¹⁰ as well as reducing waste disposal costs by up to 30%.¹¹

Despite these benefits, Ouroboros Deconstruction has faced many barriers. While they are in the process of procuring a larger storage unit, space remains one of the major prohibitors to material reuse, limiting the number of jobs Meredith's team can take on. With each missed deconstruction job, valuable materials end up in the dump. Like many of the 'Reuse Collaborators,' Meredith believes Toronto needs a physical material reuse market. A large, central warehouse would allow for the stor-

5 Toronto. City Planning, Clean and Beautiful City Secretariat and Transportation Services. *Vibrant Streets: Toronto's Coordinated Street Furniture Program*. (July 2012): 22. https://www.toronto.ca/wp-content/uploads/2017/11/96e3-Vibrant_Streets-Documents.pdf

6 Toronto. *Vibrant Streets*: 23.

7 Delta Institute. *St. Louis Deconstruction Market Assessment*. (April 2019): 26. <https://delta-institute.org/wp-content/uploads/2019/05/St.-Louis-Deconstruction-Market-Assessment.pdf>

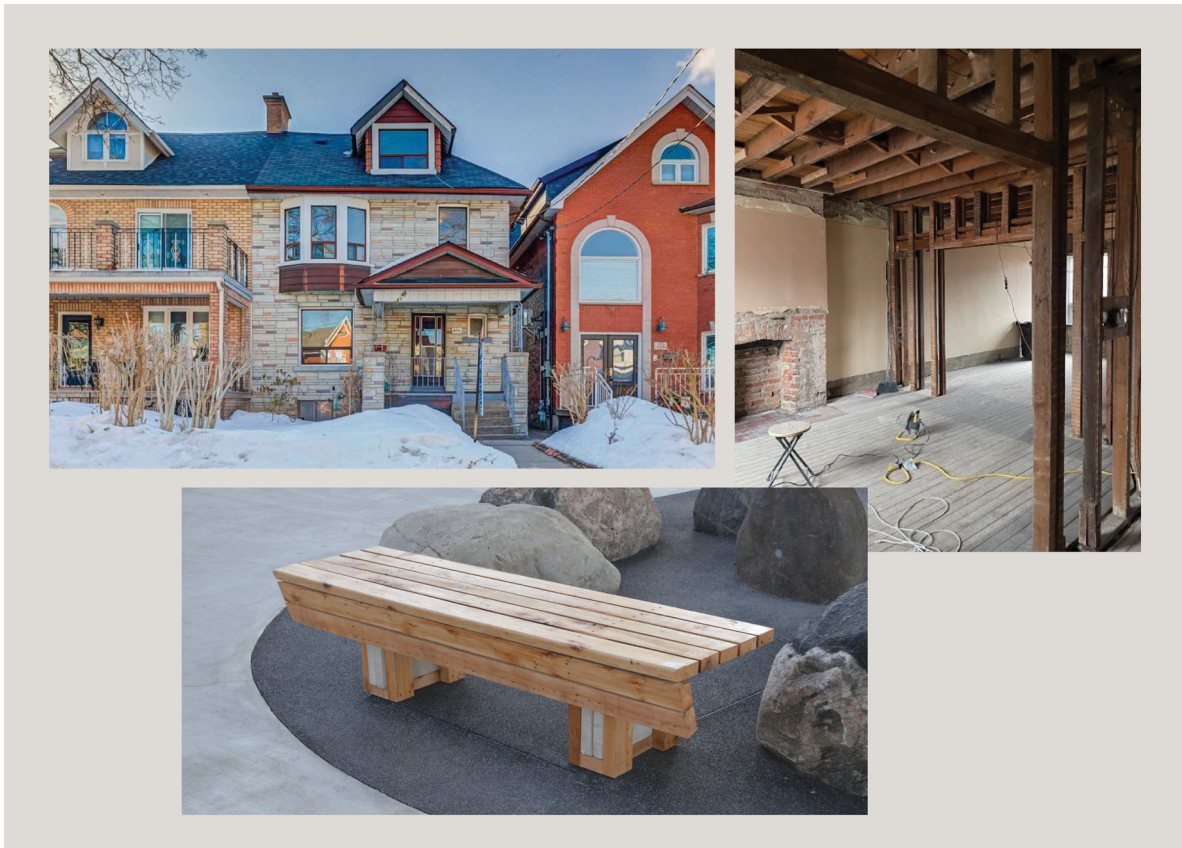
8 Felix Heisel and Allexxus Farley-Thomas. "Building Capacity and Knowledge in the Local Economy: The Catherine Commons Deconstruction Project." In *Building Better - Less - Different: Circular Construction and Circular Economy*, edited by Felix Heisel and Dirk. E Hebel with Ken Webster (Birkhauser Basel, 2022): 41.

9 Heisel and Farley-Thomas "Building Capacity and Knowledge in the Local Economy": 41.

10 Canadian Council for Ministers on the Environment. *Influencing Construction, Renovation and Demolition Waste Management* (2019): 1.

11 Canada. Minister of Public Works and Government Services. *The Environmentally Responsible Construction and Renovation Handbook*: 16.

age and display of salvaged materials for purchase, allowing designers and contractors to see what is available to them in one stop. If this existed, more people could peruse the materials that make up our city, and develop Meredith-levels of attachment to their historical, environmental, and aesthetic value, as I did with the lumber I acquired for The Bentway's bench.



The Crawford house before deconstruction (top left), during deconstruction (top right, photo by Ouroboros Deconstruction), and in bench form.

The bench, built by carpenter Esker Gaffney-Knox, is made of two by fours which were previously the framing lumber for an early 20th century house on lower Crawford street. Meredith treats the lumber with a tenderness that testifies to its significance as old growth Douglas fir. This wood stores in its countless rings a history that far predates that of the home it supported. As Douglas fir, this lumber likely came from British Columbia, where forests that are hundreds of years old continue to be under threat by the logging industry.¹² These forests offer a structural complexity and diversity irreplaceable by new forests.¹³

These stunning, spiritually rich forest giants continue to be cut down, while the existing remains of their ancestors are thoughtlessly tossed into demolition dumpsters. As Mattia Thillaye-Kerr of Ouroboros Deconstruction explained, “so many homeowners don’t know about the concept of embodied carbon, or about the strength and high quality of older building materials. At Ouroboros, the first step isn’t advocating for deconstruction - it is often advocating for the structure to be kept intact.”¹⁴ When this isn’t possible, Ouroboros crafts a plan for the careful extraction of architectural

12 Karen Price, Rachel F. Holt, and Dave Daust. BC’s Old Growth Forest: A Last Stand for Biodiversity. (April 2020). <https://veridian-ecological.files.wordpress.com/2020/05/bcs-old-growth-forest-report-web.pdf>

13 Price, Holt, and Daust. BC’s Old Growth Forest: 13.

14 Mattia Thillaye-Kerr, interview by author, Toronto, May 20, 2023.

finishes and structural elements in a way that ensures maximum reusability.¹⁵

The lumber from the Crawford house, now acting as a public bench, might have come from a 200-300 year old tree. This tree would have been harvested during a time of mass logging which supported the rapid growth of colonial settlements in North America and exports to Britain and, increasingly, the United States.¹⁶ This salvaged lumber, and by extension the bench, functions as a time capsule, or perhaps more accurately a gravestone, for the irreplaceable forests of yesteryear.



Top Left: An early 20th century logging camp (Library and Archives Canada / PA-061812). Bottom Right: Logging Manager G. Wellburn counts the rings of a Douglas Fir cut near Duncan, B.C., 1954 (Library and Archives Canada). Bottom Left: Render of the salvaged lumber bench.

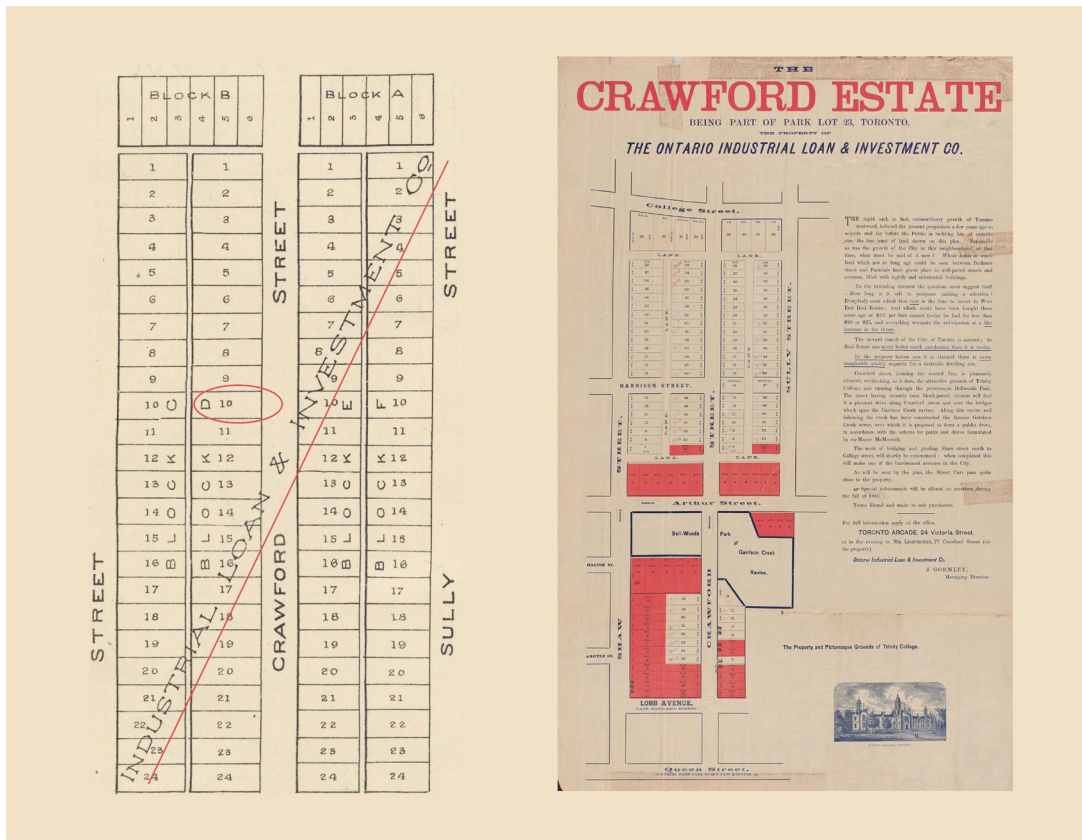
This ecological significance intermingles with a historical one, traceable through the archival records of the house from which the lumber was retrieved, provided by the Ouroboros team. Ouroboros compiles these histories not just to underline the significance of the materials but also to assist their material auditing and deconstruction process. Mattia explained, “the methodology of deconstruction is contrary to destruction; things must be taken apart with the care that it took to put them together. It requires respect for the trades of the past [...]; Each nail you take out of a piece of trim was put in place by a craftsman.”¹⁷ Ouroboros’ plan of extraction is informed by the trade practices at the time the house was built.

These records provide a fascinating context for the lumber. The Crawford address first appears on a Toronto Fire Insurance Plan in 1913, suggesting the home was built around this time with Mr. William J. Henderson and Mrs. Emily Henderson as its original occupants. An advertisement dated to 1885 suggests that the home was part of a housing development owned by The Ontario Industrial Loan and Investment Company. The posting urges investors to get in on these empty plots of land while they can, citing the rising prices of West End real estate. By 1913, the area was fully developed. The historical context of the salvaged lumber provides a snapshot of Toronto’s rapid growth in the early 20th century.

¹⁵ Thillaye-Kerr, interview.

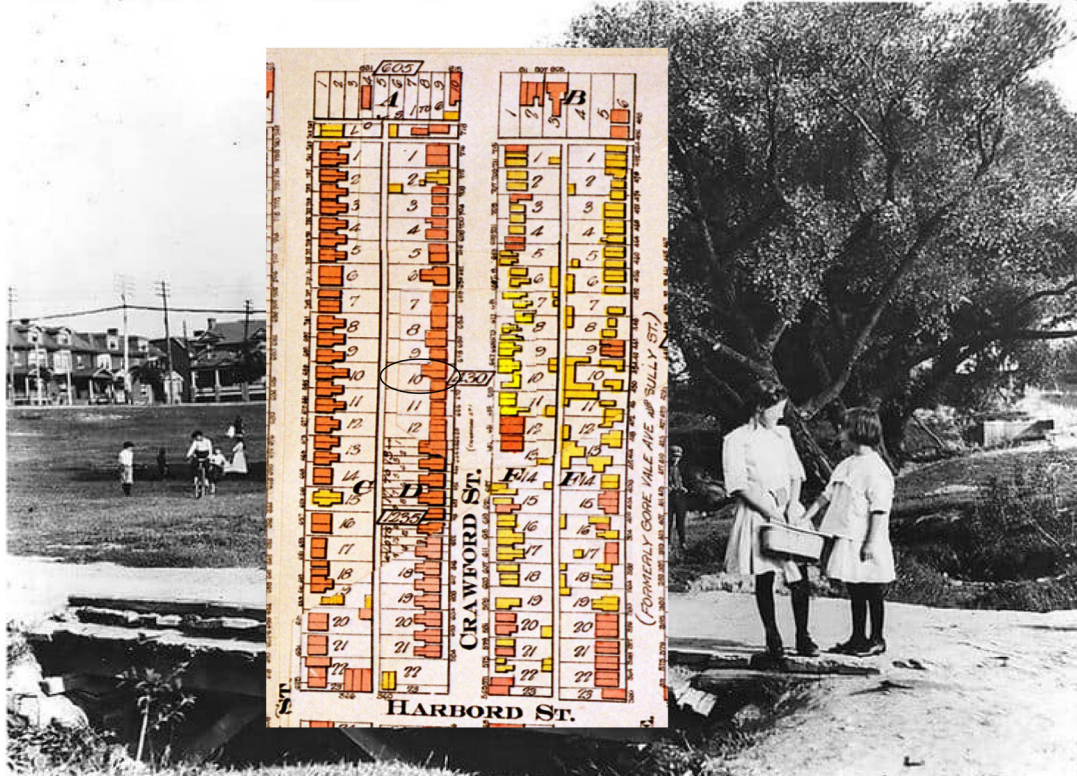
¹⁶ Graeme Wynn. “Timber Trade History.” The Canadian Encyclopedia. Historica Canada. Article published July 16, 2013; Last Edited July 24, 2015. <https://www.thecanadianencyclopedia.ca/en/article/timber-trade-history>

¹⁷ Thillaye-Kerr, interview.



Left: An 1884 Toronto Fire Insurance Plan shows an empty plot 10 where the future Crawford house will be (City of Toronto Archives, Fire Insurance Plans 1884, Plate 19). Right: An 1885 advertisement from The Ontario Industrial Loan and Investment Co., who own the undeveloped land, directed at investors (Toronto Public Library Digital Archives).

Christie pits (Willowdale Park 1910)



Front: A 1913 Toronto Fire Insurance Plan shows plot 10, now developed (City of Toronto Archives, Fire Insurance Plans 1913, Plate 24). Back: An image of the nearby Christie Pits park in 1910, around the time the house was built (City of Toronto Archives, Fonds 1244, f1244_ it1258).

Alison Creba's research picks up from here. Alison is a founding 'Reuse Collaborator' and principle investigator at Local Technique, a Toronto not-for-profit that carries out interdisciplinary research and projects on the topic of architectural conservation and waste tracing. Her essay *Demolishing the City, Constructing the Shoreline*, written with J. Hutton, follows the growth of the construction industry and its evolving waste management practices. In the early 1900s, when the Crawford house was built, deconstruction-style hand-wrecking was standard practice, which allowed demolition companies to turn an additional profit by selling recovered materials like bricks, steel beams, marble, granite, plumbing fixtures, pipes and especially wooden timbers.¹⁸ Salvage yards made these materials easily available to buyers. At this time, it was common to pass by a demolition site and see materials stacked and separated. It's this visual cue, amongst other things, that helps Alison Creba identify material reuse practices in Toronto's archival photographs. Over time these photographs tell a different story.



Evidence of deconstruction practices in early 20th century Toronto. Top Right: A house on Asquith Avenue being taken apart, February 20, 1931 (City of Toronto Archives, Globe and Mail fonds, Fonds 1266, Item 23219). Bottom Left: A car loaded with salvaged bricks from a deconstructed house on College Street, October 8, 1928 (City of Toronto Archives, Globe and Mail fonds, Fonds 1266, Item 15178).

Creba traces the 20th century changes which led to today's wrecking practices. The period of rapid growth encapsulated in the history of the Crawford house was met, in the latter half of the century, with a time of large-scale urban renewal. Fuelled by a growing population and a wave of funding

18 Alison Creba and J. Hutton, "Demolishing the City, Constructing the Shoreline." *History of Construction Cultures*, (2021): 353. <https://www.taylorfrancis.com/chapters/oa-edit/10.1201/9781003173359-46/demolishing-city-constructing-shoreline-creba-hutton>

in the 50s and 60s, old neighbourhoods were cleared to make room for new, often government-funded, high rise housing developments.¹⁹ This slum clearance, by another name, often targeted poor, racialized, and politically less-empowered communities.²⁰ It was accompanied by a transition away from hand-wrecking towards wrecking balls, bulldozers, and dynamite, all of which led to an unprecedented accumulation of demolition waste with nowhere to go.²¹ Shoreline dumping offered a solution.



The demolition of an unidentified building near Adelaide and Portland, between the years 1974-1977. (City of Toronto Archives, Fonds 200, Series 1465, File 755, Item 8)

Most of the land south of Front Street didn't exist when the city was first settled. Toronto's shoreline has slowly crept into Lake Ontario on a foundation of timber cribbing filled with a man-made concoction of sewage, municipal and construction waste, and material dredged from the harbour bottom.²² These practices began in the 1850s but only really picked up a century later in the post war era. With the rate of demolition waste being generated in the 1950s and 60s, lakefilling provided a waste management solution for the construction industry.²³ Material reuse became increasingly rare, limited mostly to components with ornamental value.²⁴

19 Creba, "Demolishing the City," 351.

20 Creba, "Demolishing the City," 352.

21 Ibid., 353.

22 D. Robertson, Stage 1 & 2 Archaeological Assessment of Waterpark City, 640 Fleet Street, City of Toronto, Ontario. Archaeological Services Inc. (2001): 6.

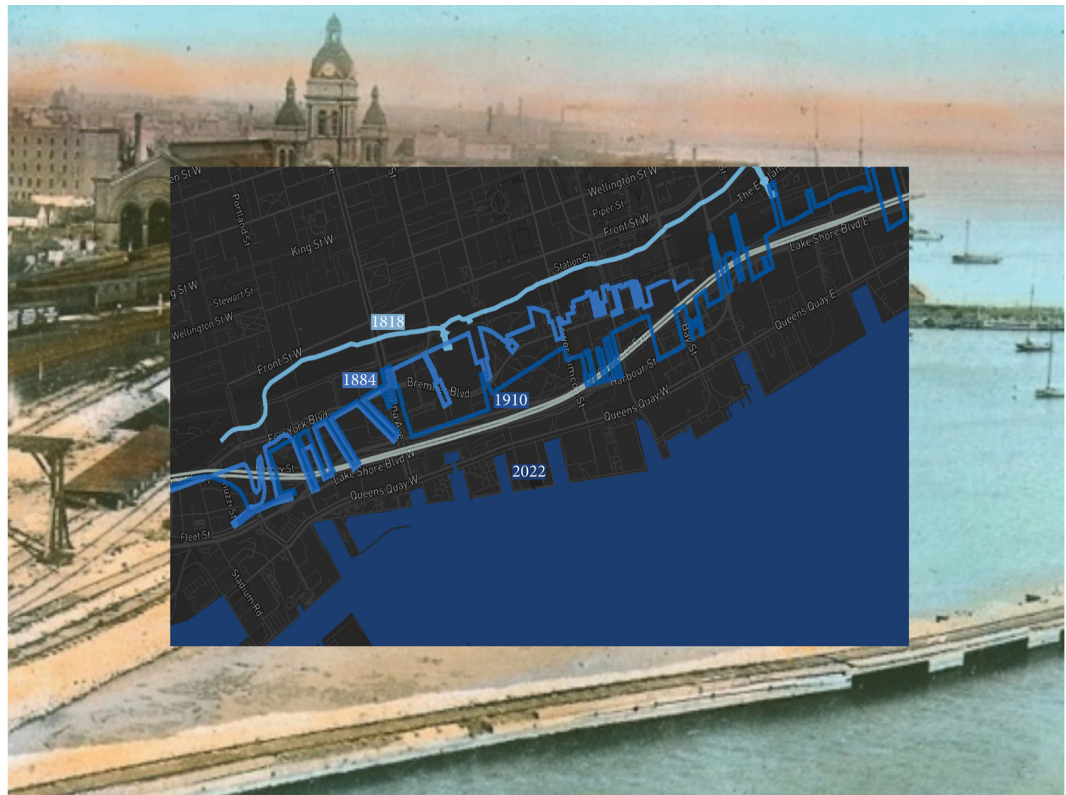
23 Creba, "Demolishing the City," 352.

24 Ibid., 354.

Construction waste fill became the foundation for many of the city's lakefront public spaces and parks throughout this time. In the 1960s, the Toronto Harbour Commission got permission to develop a second harbour, Leslie Spit.²⁵ Archaeological assessments of this human-made land off the east end of Toronto reveal a layered timeline of construction debris and household rubble which can be attributed to the aforementioned 'urban renewal' of the 1960s and a later period of development in the 1980s.²⁶

Leslie Spit set a precedent for other lakefilling projects. In 1969, 9000 truckloads of fill were transported to the shore as the foundation for Ontario Place.²⁷ Between the years of 1971 and 1984, Humber Bay Park surfaced from 51 million cubic metres of construction debris.²⁸ By the 1980s, 2000 acres of land had been added to Toronto's shoreline,²⁹ much of which continues to be used as public space today.

Foreground: The shifting Toronto Shoreline (Under Gardiner Archival Map <https://undergardinerprp.ca/learn/>). Background: Toronto Waterfront, 1886 (McCord Stewart Museum, MP-0000.25.197). The demolition of an unidentified building near Adelaide and Portland, between the years 1974-1977. (City of Toronto Archives, Fonds 200, Series 1465, File 755, Item 8)



By embracing material reuse, our public spaces could reference the history of our city's parks and their relationship to construction waste. Our city's benches, in line with the design principles of environmental innovation and Toronto-specificity, could tell of ancestral forests, the development of our neighbourhoods, the growth of our construction industry, the creeping expansion of our land into our lake, and the evolving relationship to materials which led to our present day practices.

Today, landfilling persists in place of lakefilling. Most of our construction materials become

25 Ibid., 351.

26 Heidy Schopf and Jennifer Shaffer Foster, "Buried localities: Archaeological Exploration of a Toronto Dump and Wilderness Refuge," *Local Environment* 19 (2014): 1087. <http://dx.doi.org/10.1080/13549839.2013.841660> 1087

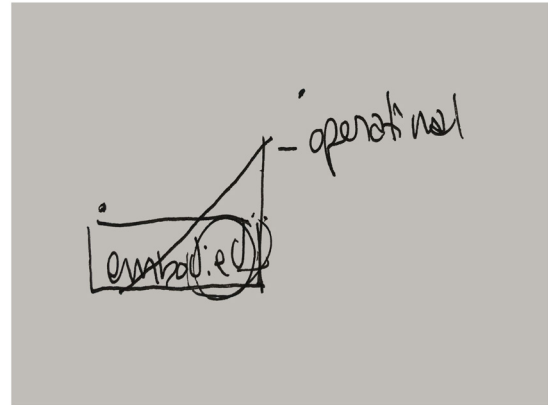
27 Creba, "Demolishing the City," 352.

28 Ibid., 352.

29 Ibid., 351.

waste, thrown into a bin and picked up by a private waste management firm.³⁰ These materials primarily consist of wood, asphalt roofing and drywall, followed by metals, plastics, concrete, asphalt paving, bricks, glass and cardboard.³¹ Some materials, like steel and concrete, are separated for recycling. This is good, but the adage ‘reduce, reuse, recycle’ is not arbitrarily ordered; recycling is the last resort to prevent waste, not the first. While recycling offers a partial environmental solution, it green washes waste management in a way that undermines the principle of reuse.

The environmental consciousness that does exist in the building world often focuses on operational energy, the CO₂ emissions that result from the day to day energy consumption of a building. The other day, I sat down for coffee with circular economy strategist Haley Anderson, another ‘Reuse Collaborator.’ She drew a diagram for me representing the embodied versus operational emissions of a building. As she explained,



the embodied emissions, which encompasses the manufacturing of materials and the construction process, happen largely at the beginning of the building’s life cycle. At this point, they represent 100% of the building’s carbon emissions. Once the building is in operation, the operational emissions start to rise, but it takes years, and a significant portion of the building’s life span, before they begin to match the embodied emissions. As much as 50% of whole life carbon emissions in a building come from embodied carbon.³² Given that Ontario’s power grid draws largely from renewable energy sources, there is even more reason to shift our attention from operational emissions to the embodied carbon and sourcing of our materials.³³

Haley Anderson’s master’s thesis at Toronto Metropolitan University, *Circular Solutions for CRD Waste in Toronto*, succinctly captures the issues relating to construction, renovation, and demolition waste in our city. I learned from her that the greatest amount of emissions aren’t from large, industry-scale developments, as one might think; 61% of all construction waste is residential, 57% of which comes from renovations.³⁴ If you’ve spent any time walking around Toronto, this isn’t surprising. In neighbourhoods undergoing gentrification (as are most neighbourhoods in Toronto), almost every block has one or more houses actively shedding their aged interiors for the sake of a modern home makeover.

This reality raises questions about private responsibility in the age of climate change. The Solid Waste Division at the City of Toronto does not have mandates around construction, renovation, and demolition waste, other than to say that it is prohibited from the residential waste stream.³⁵ The Toronto Green Standard includes a tier 2 (non-mandatory) recommendation of 75% waste diversion,

30 Haley Anderson, “Circular Solutions for CRD Waste in Toronto.” Master’s Thesis, Toronto Metropolitan University, 2021: 17. https://ecologicaldesignlab.ca/site/uploads/2021/06/ANDERSON_HALEY_MRP_FINAL.pdf

31 Canadian Council for Ministers on the Environment. *Influencing Construction, Renovation and Demolition Waste Management* (2019): iii.

32 World Business Council for Sustainable Development. *Net-zero Buildings*, 3.

33 Kelly Alvarez Doran, “Carbon Positive: Can We Halve Carbon in the Built Environment?” *The Journal of the American Institute of Architects*. (April 2023). https://www.architectmagazine.com/carbon-positive/carbonpositive-can-we-halve-carbon-in-the-built-environment_o

34 Anderson, “Circular Solutions for CRD Waste in Toronto,” 8.

35 Ibid., 40.

which applies only to large construction projects, those with a total floor area greater than 2000m².³⁶ Smaller residential buildings are overlooked. This leaves residential construction waste as a private responsibility, its disposal left to the discretion of homeowners and contractors.³⁷ Without government incentives, there is little impetus for private actors to embrace circularity.

Anderson suggests that we need policies to “encourage, enable, engage and enforce” a circular economy.³⁸ Municipal policies could promote deconstruction and material reuse through tax cuts, subsidies, refunds and reward schemes, while enforcing through penalties and fines.³⁹ Vancouver, for example, has a Green Demolition Bylaw. Demolition permit holders with houses built before 1940 are charged a down payment of \$15,000, \$14,650 of which is returned to them if they follow through on the reuse, recycling, and salvage of the building’s materials in compliance with the bylaw.⁴⁰ Portland, Oregon, passed a similar Deconstruction Ordinance that requires that all homes built before 1940 or designated as historic to be deconstructed.⁴¹ The local government in Palo Alto, California, requires deconstruction for all properties designated for full removal.⁴² Demolition is no longer allowed. These kinds of policies are partly effective, but they need to be met with consumer interest, lest the materials sit around in a storage space somewhere, collecting dust. Alongside policy, Haley Anderson argues that “business, design, and community-based approaches can influence the system and change policy in turn”.⁴³ Public space can represent one such community-based approach to raising awareness and creating change.



The salvaged lumber bench at The Bentway under-Gardiner site.

The Bentway Conservancy is a fitting host for my proto-typical salvaged material bench. Nuzzled under the wing of the existing Gardiner Expressway, The Bentway’s public space is a prime example of infrastructure reuse, the sister to material reuse. Its shoreline location makes it another public space built upon 20th century construction debris, connecting it to the history of construction waste in this city. Below the Bentway, amongst layers of cinder, ash, and charcoal, one can

36 Toronto. City Planning Division. Waste and the Circular Economy: SW 4.2 Construction Waste Diversion. <https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/toronto-green-standard/toronto-green-standard-version-4/low-rise-residential-version-4/waste-and-the-circular-economy/>

37 Anderson, “Circular Solutions for CRD Waste in Toronto,” 40.

38 Ibid., 43.

39 Ibid., 44.

40 Vancouver. General Manager of Planning, Urban Design and Sustainability and General Manager of Engineering Services. Green Demolition By-law Update. (2018). <https://council.vancouver.ca/20180516/documents/pspc2c.pdf>

41 Portland. Planning and Sustainability. Deconstruction Requirements. (2019). <https://www.portland.gov/bps/climate-action/decon/deconstruction-requirements>

42 Gretchen Worth, Felix Heisel, Antea Fernandes, Jennifer S. Minner and Christine O’Malley.

“The Case for Deconstruction: How Cities Can Stop Wasting Buildings,” Building Better - Less - Different: Circular Construction and Circular Economy, eds. Felix Heisel and Dirk. E Hebel with Ken Webster (Birkhauser Basel, 2022): 34-35.

43 Anderson, “Circular Solutions for CRD Waste in Toronto,” 43.

find brick fragments, glass, and other construction refuse used to transform lake into land.⁴⁴ Above ground, the site's concrete contains a mixture of recycled glass, porcelain, and construction debris. The concrete around The Bentway's bioswales is composed of Leslie Spit debris, which serves as a functional stormwater management system and references the history of the city.

The Bentway's public art commissions have also reflected an awareness of the role construction materials and waste play in urban spaces. The Conservancy's first ever commission, *Photos for a Project in Progress* by Jimmy Limit, captured the detritus found lying around during The Bentway's own 2018 construction phase. The brightly coloured still-life photographs, which grant aesthetic value to what is otherwise perceived as garbage, can still be seen hanging on the fencing that encircles The Bentway's own material storage space. As I toured the site with The Bentway's Facilities Manager Michael Clarke, he pointed out the growing pile of shipping skids that he hopes to find another use for. While The Bentway makes a concerted effort with artists and suppliers to source a second home for their materials, the Conservancy is faced with the same problems as many of the 'Reuse Collaborators': limited space and a lack of city-wide coordination in reuse efforts.



From Jimmy Limit's *Photos for a Project in Progress* (2018). Background: The Bentway site under construction (2018).

This coordination depends on the visibility of these materials and the actors who engage with them. The 'Reuse Collaborators' accomplish on a small scale what public spaces have the potential to magnify on a larger scale— to make our climate actions feel collective and therefore more achievable. Public space, at its best, offers visibility, community, and collaboration.

The goal is not for public spaces to single handedly take on material reuse or become repositories for these materials; the construction industry is the one in dire need of change. But, by building reuse networks across private and public spheres, we promote the idea that materials can move between projects and efforts, finding a home wherever they're wanted. The divide between public and-

44 Robertson, Stage 1 & 2 Archaeological Assessment, 12.

private is weakened by the climate crisis;⁴⁵ We now understand that private actions have a cumulative effect on the wellbeing of our planet, and climate action must be treated as a collective effort across industries and spheres.

Public spaces should take an educational approach to material reuse to underline this effort. Whether by using QR codes or plaques, public furniture could provide information about the materials used in their construction. Just as many of our city benches have plaques commemorating loved ones, they could also honour their materials and in so doing connect the public to the value of the ‘waste’ that surrounds them everyday.

An educational approach towards circularity should also include industry outreach and training.⁴⁶ We need a labour force trained to support a transition towards deconstruction and material reuse. This must coincide with a number of initiatives. More data and research are needed on material availability and circular processes which could lead to the further development of circular methods and guides.⁴⁷ Technological advances like material passports could aid the material auditing and cataloguing process. Deconstruction and material salvage should be incentivized through tax reductions, and enforced and encouraged through levies, fees, and charges as well as building codes, environmental standards and certificates.⁴⁸ Limits and additional costs should be applied to virgin materials and waste disposal.⁴⁹ All of this must be accompanied by a shift in the design process and a willingness to embrace the aesthetics of salvaged materials.

As for storage, reuse warehouses could be run on a community-level, as seen with the Community Reuse Centre model, developed in Ithaca, NY, which includes a brick and mortar reuse centre owned and operated by the local community, as well as deconstruction, delivery, and pick-up services.⁵⁰ This community-based approach embraces convenience, affordability and visibility.⁵¹ Centres like this include volunteer positions as well as offering career opportunities for disenfranchised and vulnerable people.⁵² These changes could transform the construction industry in Toronto from a wasteful and gentrifying force into a circular industry that relies on the active participation and employment of community members.

Construction sites characterise our city; Scaffolding, red safety fencing, and debris act as the visual identity of an exponentially growing metropolis, a motif dotting the urban landscape and historically staging the grounds on which we stand. Rather than throwing out the bits and pieces of a discarded Toronto, we could gather around them, sit upon them, and build with them.

Through the process of getting this bench made, I connected to a new community and a (literal) piece of Toronto’s history. It changed the way I see my city. Despite being surrounded by these materials, they previously only peppered my periphery. I paid no mind to their afterlife. Now, when I pass one of the many demolition sites scattered across Toronto, I peer through the holes of the safety fencing and take note of the way the materials are organised, trying to determine if they will be reused or sent to the landfill. Maybe you will too.

45 Dale Jamieson and Marcello Di Paola. “Climate Change, Liberalism, and the Private/Public Distinction,” *Philosophy and Climate Change*, eds. Mark Budolfson, Tristram McPherson, and David Plunkett (Oxford Scholarship Online, 2021) DOI: 10.1093/oso/9780198796282.001.0001

46 Canadian Council for Ministers on the Environment. *Influencing Construction, Renovation and Demolition Waste Management* (2019): 1.

47 Felix Heisel and Allexxus Farley-Thomas. “Building Capacity and Knowledge in the Local Economy: The Catherine Commons Deconstruction Project,” *Building Better - Less - Different: Circular Construction and Circular Economy*, eds. Felix Heisel and Dirk. E Hebel with Ken Webster (Birkhauser Basel, 2022): 38.

48 Canadian Council for Ministers on the Environment. *Influencing Construction, Renovation and Demolition Waste Management* (2019): v.

49 Ibid.

50 Diana Cohen and Robin Elliot. “Reuse Infrastructure: An Essential Foundation of the Circular Economy,” *Building Better - Less - Different: Circular Construction and Circular Economy*, eds. Felix Heisel and Dirk. E Hebel with Ken Webster (Birkhauser Basel, 2022): 57.

51 Cohen and Elliot, “Reuse Infrastructure,” 56.

52 Ibid., 59.

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