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Architecture and Extraction

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Christopher Alton's work focuses on mine afterlives and critical conservation related to mining, interested in how territories are communicated and transformed across and through extractive infrastructures and landscapes. He is an instructor at the School of Architecture and Urbanism at Carleton and has taught courses at Waterloo, TMU, and with the Centre for Biocultural Landscape and Seascapes (CBLS). With OPSYS Landscape Infrastructure Lab, he was project manager and lead researcher for the Canadian Pavilion at the 2016 Venice Biennale of Architecture and is a co-founder of the Beyond Extraction collective. He is currently a PhD candidate in Environment at Waterloo.

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Zannah Mae Matson is an Assistant Professor in the Program in Environmental Design at University of Colorado Boulder. Her research focuses on the intertwined processes of colonization, extraction, and infrastructure development, both within Colombia's eastern piedmont as well as Canada's extensive mining sector. Zannah is on the Editorial Board of the *Journal of Architectural Education* and is an active member of Beyond Extraction, which is a collective of researchers, writers, artists, and activists who come together to critically investigate and resist extraction in its various forms.

From the shimmering gold façade of the RBC Plaza in Toronto to the iconic headframes that define the Abitibi Gold Belt in northern Ontario and Quebec and beyond, the extractive industry has had an indelible impact on Canada's built environments. As noted by Naomi Klein, "Canada was an extractive company... before it was a country. And that has shaped us in ways we have yet to begin to confront."¹ While this historical context has permeated all parts of Canadian society, its impact on the architectural record and practice within the country has received only moderate attention. In our effort to bring together scholarship that addresses how Canadian architectural histories and extraction are entwined, we have been struck by the need to understand the issue across scales and disciplines, as a territoriality of extraction. In so doing, we have had to contend with embodied carbon in architectural practice, the particularities of materials, the labour of mining, and systems of funding which all come together to shape and supply the built environment. Globally, buildings account for 39% of annual carbon emissions, 11% from their materials and construction alone.² When viewed through this lens, extractive activity lays a very literal foundation for architectural practice, and in this account, we put forward a disciplinary critique both willing and able to confront conventional approaches to building.

Set within the wider context of architectural scholarship that addresses matters of extraction, this issue expands on work that has begun to define the relationship between resource extraction and architecture as a material, environmental, social, economic, and political construct. Within this body of literature, research that has explored the relationship between material extraction geographies and the sites of architectural consumption and form-making meticulously documents how these subtle connections manifest across uneven geographies, highlighting the points of friction with specific materials. Jane Mah Hutton's characterization of reciprocal landscapes linking the dispersed networks of material exchange concentrated in the built form of New York has fundamentally impacted disciplinary approaches to the study of materials within the built environment, reflected in the scholarship in this issue.³ Gavin Bridge contends that the spatial logic of extraction constitutes a heterogeneous "resource archipelago" that includes nodes, accumulations, and forces connected by a web of relationality.⁴ These relationships are what Stephanie Carlisle and Nicholas Pevsner classify as expanded questions of the 'material' in their introduction to their edited issue of *Scenario Journal* focusing on extraction. Approaching the theme of extraction with an eye towards landscape, Carlisle and Pevsner suggest addressing the various forms of extraction (both monumental and concealed) as well as the implications of financial mechanisms and logistical affordances that shape our extractive present.⁵

The Space Caviar collective's 2021 edited volume *Non-Extractive Architecture Volume 1* highlights the relationship between extraction and architecture and pushes us to consider the externalities of architectural construction, while imagining what design without depletion could be.⁶ The ethos of *Non-Extractive Architecture* reinforces the importance of practices of care in reuse and repair that have been the focus of radical scholarly work and studio

provocations by Charlotte Malterres-Barthes calling for a building moratorium and revealing “how to do no harm.”⁷ Amidst a growing extractive boom to fuel the green energy transition that is precipitating and amplifying ecological and humanitarian crises from Congo to Chile, a deep critical engagement with the material repercussions and responsibilities of architecture is imperative.⁸

A growing body of literature addresses the Canadian dimension of architecture’s extractive footprint, focusing on how the built environment negotiates materially and symbolically extractive practices in the history and contemporary identity of the country. Pierre Bélanger’s curatorial work and scholarship have highlighted the entanglement of Canada’s built environment and the nation’s long colonial legacies of extraction.⁹ This work is located within a longer history of scholarship, including the critical work of Alain Deneault and William Sacher, who argue that Toronto’s financial district takes advantage of legal and administrative instruments within international development to promote and protect the mining industry on a global scale.¹⁰ Increasingly, scholars have demonstrated that Canadian industries spearhead a political foreign policy understood as New Extractivism, a model of imperialism disguised as development.¹¹ The economies of extraction themselves produce architectural forms that have become central to the identity of Canada’s built form. The plans for development of northern Quebec have long had mining and mineral exploration as central mechanisms to advance colonization within the province, as is detailed by Alessandra Ponte and Stephan Kowal in their work on the histories and contemporary initiatives of infrastructure investment and construction supporting the extraction of iron ore in the Labrador Trough.¹² Lucie K. Morisset’s research on Arvida as a company town—developed for the Aluminum Company of America on the south bank of the Saguenay River—demonstrates the entanglement of the extractive industry with celebrated urban and architectural design, as Canada’s first Garden City was constructed for the production of the era’s magic metal.¹³ Lucie K. Morisset and Jessica Mace further trace the significant scope and impact of company town planning on the construction of cultural landscapes in the country, with the plans exposing utopian values alongside territorial claims, and themselves becoming cultural artifacts of corporate placemaking within Canada.¹⁴

Expanding upon the important work of these authors, this issue considers architectures that contain, conceal, facilitate, and negotiate spatial extractive practices involving labour and property, the unearthing of matter, the theft of land and water, corporate spaces and geographies, and structures of extractive financing. In this way, we move beyond a focus on the relatively simple act of mining, to understand extraction as a mode of production, consumption, and wasteful practices enabling states and corporate actors to hoard wealth. We are further interested in how architecture itself has been extractive, a phenomenon which remains a source of unresolved tension in many contemporary manifestations of practice. In the introduction titled *Non-Extractive Architecture*, British architect and critic Joseph Grima argues that designing “without depletion” requires “an approach to the designed environment that takes complete responsibility for itself, and whose viability does not depend on the creation of externalities elsewhere—whether that ‘elsewhere’ is removed in time or space.”¹⁵ Understanding existing and possible externalities requires an expanded sense of sites, to track what Charlotte Malterre-Barthes suggests is an “expansionist global enterprise of extraction [that] spans across all scales.”¹⁶ As editors, we have grappled with the multi-faceted and bedevilling question of what kinds of scholarship are needed to work across scales and confront the issues thoroughly, from forms of power and state formation to manifestations of the material within the design professions.

As editors of a special issue for the *Journal of the Society for the Study of Architecture in Canada*, we feel especially compelled to interrogate colonial capital systems of extraction and to articulate how these structures have normalized particular practices within the architectural domain. As such, this special issue is predicated on the fact that the story of architecture in Canada is premised on extractive narratives. As we begin to re-tell this story, we reflect on the unique duality of the Canadian industry and its landscape, simultaneously the hub of extractive companies and their financing, while also containing untold numbers of depleted sites within the settler colonial borders of the state. Considering the spatial manifestations of these sites alongside one another, connections become apparent: the flow of resources from the mine pit to metropolitan centres provides the building blocks of urban life. Through the economic logic of extraction facilitated by technological developments, capital is generated by way of exploitation of the environment and labour, the outcome of which emerges as of generous shareholder returns, luxurious headquarters, and high-profile philanthropy within the realm of art and design. This accumulation of wealth necessitates a revaluation of the cultural spaces and practices that have become normalized under colonial and capital relations.

To address the expansive nature of the question of extraction and architecture, we have gathered original articles from an exciting group of authors who are approaching architectural history in new ways. The authors are diverse in their disciplines and approaches—from architectural history to landscape architecture, from museum studies to geography—and include writers and curators, all coming together to address the entanglements of extraction and the built environment at different scales, geographies, and temporalities. Assembling this group of early-career scholars became an important imperative within our editorial process given the creativity and analytic acumen that they offer outside the established positions of the discipline. The articles in this volume are necessarily critical, but they reveal at their core a reverence for the land, materials, and labour that have produced the architectural record of the nation.

An issue on architecture and extraction is inherently a material one, where matter tells manifold stories about landscape formation, land sustenance, capitalism, aesthetics, symbolism, and waste, to name but a few. These stories are tactile: they are liquid and solid; creamy and dizzying; rusty-red and brittle; shiny and smelly; granular and rugged; toxic and fibrous; glowing and prismatic. Matter is shaped by countless agencies, from geological time at the scale of the subcontinent, where tectonic plates and seas produce layers of metamorphic, sedimentary, and magmatic rock to the quick process of chiselling and stacking stone. As matter is severed from ecological relations and landscapes, extractive processes and architecture make for new arrangements of elements in space and time. Matter also meets questions of visual expression in built environments, political and economic imperatives, processes of knowledge-making, and cultural practices embedded in collective memories. In the Daedalic tradition of architecture, matter is subject to transformation, experimentation, and reuse. But matter can also “speak,” holding forth like a forensic scientist concerned with ecological catastrophes.¹⁷ The seven texts in this thematic issue are, in various ways, attempts to make matter speak to our environmental anxieties and urge us to consider how our built environments are connected and formed from extracted materials wrenched from the ground. More than a simple condemnation of extraction, the friction that the material brings to each of these explorations further allows us to honour the materials that construct Canada’s architectural history, while at the same time affording a critical engagement with the historical and cultural context from which they have been extracted. This careful attention

to material histories is at the core of the work that is featured on the cover of this issue, which is an image excerpt from Madeleine Reinhart's research into the colonial and extractive entanglements of limestone in Montreal's built context.¹⁸

Abigail Auld's paper transports us to the Red River Formation, to think with and through the "active surface" of Tyndall limestone, a signature building material extracted from around Tyndall-Garson, Manitoba, and commonly used for institutional buildings in Canada. Studying the Prairie limestone as rocks and stones, and ultimately a "more-than-material substance," Auld pursues an incisive exploration at the scale of geologic time, industrialization, extraction, and accumulation, arguing that Tyndall limestone "solidified and substantiated the Canadian Dominion [...] all the while realizing a national image reified in stone."¹⁹

Lingering in the Prairies near the kisiskâciwanisîpiy, Banafsheh Mohammadi ponders the bricks of Edmonton's built environment and Medicine Hat's landscapes, linking not only the trajectories of Cypress Hill's clay extraction but also its entanglements with local fossil fuel industries and Indigenous land dispossession. On the role of infrastructures of transportation for extraction, Mohammadi notes the importance of the "tripartite network of fossil fuel, clay extraction, and a railway system piercing through Indigenous lands."²⁰ To that effect, contributors to the current issue, namely Auld, Dubois, and Braiden also trace the relationships between extraction sites and how the transcontinental railway system provided a crucial network of material exchanges from these sites to urban markets.

Still in the hydrocarbon region of the Western Canada Sedimentary Basin, Meredith Gaglio tells the tale of an unlikely building material, sulfur concrete blocks, which emerged from an equally unusual process: desulfurization. The author discusses the work of McGill University's Minimum Cost Housing Group, whose material research in the 1970s involved experimenting with a petroleum industry byproduct as construction material to create low-cost, self-built housing. Gaglio traces the context and outcomes of two experiments in Quebec (Sainte-Anne-de-Bellevue and Saint-François-du-Lac) and in Alberta (Saddle Lake), thus providing a complex image of what extraction entails as a material process when entangled with extraction, waste, and environmental awareness.

While Gaglio points out the "paradoxical convergence of Canada's robust extractive industry and its burgeoning environmental sensitivity,"²¹ Sarah Sheehan highlights architectural maintenance of Canada's protégé Centennial style—brutalism—provocatively suggesting that "brutalism is extraction is Canada."²² Reminding us of the sheer magnitude of sand and aggregate extraction that goes into the making of concrete, the author frames architectural conservation as "a form of sustainability."²³ Sheehan's paper looks at five Canadian brutalist renewal projects in Hamilton (2), Toronto, Quebec City, and Calgary to trace patterns of adaptation of brutalist heritage, thus revealing environmental concerns and the renewal of architectural values.

In line with Sheehan's exploration of heritage and extractive histories, Samuel Dubois and Heather Braiden dig deep beneath the Appalachian Mountains, in the community of Thetford Mines, Quebec, reminding us that "asbestos is omnipresent in the built environment that surrounds us."²⁴ Centring the spaces of extraction, labour, and cultural life, Dubois and Braiden foreground the connections between memory and place while deepening the legacy of extractivism in Canadian societies. The authors locate the symbolic and material presence of asbestos in the built environment, including architectural details, local landmarks, legal

arrangements, collective memory, and curatorial practices to illustrate how asbestos has and continues to define the contours of the rural community of Thetford Mines.

Further examining curatorial practices and extraction with a focus on museum spaces, Camille-Mary Sharp guides us through the second floor of the Royal Ontario Museum (ROM) in Toronto. The author connects the mining industry to the curatorial practices of the *Teck Suite of Galleries* where geological science, knowledge production, the mining industry, and funding infrastructure collide. Sharp uses the ROM's Michael Lee Chin Crystal to situate the machinations of corporate extraction money within iconic cultural spaces while underscoring what is absent within the museum's curated spaces: the "social, economic, and environmental implications entailed by the acts of extraction and commodification."²⁵

Lastly, we share an interview with designer Elsa MH Mäki and the three editors of this thematic issue. The conversation opens by calling into question architecture as a discipline, instead of simply calling for a practice of responsibility, stewardship, negotiation, and mediation. Through various examples, such as her research on man camps and work in the region of Marseille, Mäki challenges the presumed conceptions of material cycles and buildings, considering instead reuse and afterlives as broader networks that make and remake built environments. Building on her experience with the #NoDAPL movement, she evokes potential architectural forms that are anti-extractive in nature and foregrounds geographies of extraction and resistance by discussing creative and decentralized sites of refusal.

As a final commentary, Mäki's contribution further reminds us that despite the tangible impacts of borders within our world, "to study borders is to realize that they aren't a thing."²⁶ The cross-border flow of resources, as well as the networks of solidarity emerging to resist extractivism, all serve to challenge the very framing of these histories of architecture and extraction as recounted *within* the state framework of Canada. As editors, we see this volume not as a comprehensive history of extraction in the architectures of Canada, nor as a singular approach to telling such a history. Instead, we view this work as a series of provocations from emerging voices that provide a multiplicity of approaches for how to begin writing more expansive and inclusive architectural histories. In addition to challenging the fixity of national boundaries, the scholarship presented here works across disciplines and extends outside academic institutions, both steps being necessary transgressions in order to move beyond colonial distinctions and institutional rigidity. We further hope that these works can be the starting point for understanding multiple architectural afterlives. If indeed we sit at the edge of a supposed revolution in green building and energy transition, we hope lessons from these pieces will help to foster vigorous critiques of extractivism, as the next generation of architectural practice and research situates such work within the larger systems of material flows and the various forms of resistance engendered by the process.

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