A ~~NEW~~ RESOURCEFULNESS

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This thesis reflects on our relationships to the materials and objects that we are surrounded with, the agency they carry, as well as the responsibility we have to the places and communities we inhabit. This context makes way for a narrative on localization, circularity, and resiliency. A ~~New~~ Resourcefulness offers auto-ethnography woven throughout theory and design practice, as experienced in British Columbia, Canada.

material, place, responsibility, redirective practices, localization, community, circularity

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Contents

"Because lived experience is central to my writing and to the subject of place." (Lippard, 1998, p.5)

The research featured in this thesis begins with my entry into design studies and is greatly informed by my practice as I have come to know it since I have landed in Canada. I came to this work through explorations of place and material, a means of wayfinding in my new home of British Columbia (B.C.) beginning in 2018. Efforts to better understand my relationship and responsibilities to this rich and complex landscape initially took the form of engaging with local materials I had access to around me. I gained a sense of groundedness to and awareness of my new home through the creation and sharing of the final artifacts made. They carried with them that which is difficult to find in physical forms – a sense of place[1] and belonging.

This practice matured in the company of the Place-Based Graduate Collective,[2] which took shape through the coordination and direction of Laura Kozak and Jean Chisolm at Emily Carr University, and introduced me to the concept of place-based responsibility.[3] This introduction weighed heavily on me, and continues to affect

1 Lucy Lippard offers a thoughtful foray into the concept and cliche of a 'sense of place' as a sense of intellectual property, a way for nonbelongers to belong, momentarily all the while offering them, as an invaluable cultural and social tool, much needed connections to nature and sometimes cultures otherwise not considered to be their own (Lippard,1996, p. 33)
2 The Place-Based Collective is a group of design & art students coordinated by Laura Kozak and Jean Chisolm at Emily Carr startimg in 2021. This group met weekly to discuss a series of roundtables that occurred in the Spring of 2021, and built relationships that ultimately culminated in a series of projects and partnerships founded on the notion of place-based responsibility, inluding pl.lab (p,48-63)
3 Place-based responsibility can be understood as processes that centre relationships with community and place (Kozak & Chisholm, 2021)

my design practice as well as how I navigate my way around the spaces I inhabit. It immersed me into an acute awareness of my surroundings, and the necessary steps of slowing down, asking questions, listening to, and coming alongside our community members. It encourages a rich and flexible practice that embeds flexibility, collaboration, and generosity into its fabric, allowing for human and non-human stakeholders to pass back and forth, leaving behind only what they wish to be shared. It enabled me to reimagine my understanding of the *local* from a perspective more attuned to my upbringing in the southern U.S. to that of a coastal rainforest, abundant with unique knowledge, life, and responsibilities. It has encouraged me to read more, listen closely, act wisely, and take ownership of my role and responsibilities as a designer within this specific community and landscape.

It is from this posture I explore these sentiments within the bounds of a research-through-design practice, and continue to do so. That I am able to start with a material of place as a speculative subject, and then to reinforce/articulate that work through supporting theory, proves that alternative methodologies not only work, but yield an intrinsically rich and relational practice. Making as research rather than research for making.

Cultures of robust craft-centric communities, rich with generational material intelligence and making practice, is present across the world. Fed by the fire of industrialization and globalization, art and crafted objects, previously regionally confined to their indigenous

places and nearby trade routes, proliferated (Dadi, 2003). This culture of craft precedes me and will outlast me, as an integral part of cultures and economies worldwide. It is because of the generational dissemination of craft knowledge, skill, and tradition across the globe, that my hands and mind are capable of practicing craft as I know it.

Through its expansive and emotional history, an overwhelmingly abundant knowledge base has been cultivated in this landscape of B.C.. There are lessons to be learned by all who seek a greater understanding of what living in this place means. Living here is knowing those pieces of knowledge, though sometimes they might seem controversial or inconvenient. These include, but are certainly not limited to, conversations around decolonization and reconciliation with First Nations communities, the Indigenous people of this land. This is an immense responsibility, to seek to learn and engage with these truths. During which we can begin to better understand the local implications for the dominant systems of industry and production, the import economy and resource extraction, policy and advocacy. We begin to understand how our efforts might be reoriented to place, if and when we can collectively become more responsible to and for it.

My time in academia has exposed me to countless land acknowledgements. Some short, scripted, rehearsed – some longer, reflective, urgent. These acknowledgments are empty words without the accountability of lasting change behind them. Through my conversations surrounding these acknowledgements with Indigenous and non-Indigenous acquaintances, I have settled here:

The place from which this research was fostered and fed is stewarded by its traditional and ancestral inhabitants, the Sḵwx̱wú7mesh (Squamish), Səl̓ílwətaʔ/Selilwitulh (Tsleil-Waututh), xʷməθkʷəy̓əm (Musqueam), Coast Salish nations. This stewardship has been irrevocably transformed due to the violent colonization that stripped the landscape of its resources, culture, and identity, to make way for white settler communities to establish – but it is stewardship that persists to this day. I acknowledge my responsibility as a new inhabitant of this landscape to think critically about where I go from here in respect to Indigenous knowledge and cultural practices. It is my responsibility to learn of and know the history of this place intimately, before I can learn how to best be responsible for it.

What follows, as an entry point into this journey, is a way of living that assumes a place-based responsibility. This means considering how we are already a part of local systems through our engagements with the material world that surrounds us, and how we can be continuously conscious, critical, and intentional with what their implications are.

Agency: the capacity of someone or something to act, create intervention, or influence

Circular Economy: retains and recovers as much value as possible from resources by reusing, repairing, refurbishing, remanufacturing, repurposing, or recycling products and materials, keeping as much material as possible in circulation within a given environment

Design: "a creative activity whose aim is to establish the multi-faceted qualities of objects, processes, services and their systems in whole life-cycles" (as cited in Manzini, 2006, p.1); the act of deliberately moving from an existing situation to a preferred one (Fuad-Luke, 2009)

Embodied: Having physical form, rather than digital or mental, to give an idea or feeling an expression, tangible, or visible; embodied knowledge is learned through the body's knowledge of how to act instinctively

Localization: the process of situating industries and businesses within a defined geographic area in which the surrounding communities have greater authority and autonomy over their input/output of resources, infrastructure, and labour

Materiality: a quality possessed by something that has a place in the physical world

Material Intelligence: "a deep understanding of the material world around us, an ability to read that material environment, and the know-how to give it new form." (Adamson, 2019, p.4)

Place-Based Design: "informed by a deep understanding of local ecosystems and culture," and should ideally amplify and connect to local perspectives and grassroots efforts (Irwin et al., 2015, p. 10)

Practice: direct experience, embodiment, and a presence of being and becoming – the application of knowledge or skill to realize some kind of end (Fry, 2009)

Practice-Based Design Research: "an activity that requires our engagement with ideas; to set ourselves the task of questioning, clarifying, challenging, proposing and developing new perspectives." (as cited in Walker, 2011 p.25)

Redirective Practice: "a new kind of (design) leadership, underpinned by a combination of creating new (and gathering old) knowledge directed at advancing means of sustain-ability while also politically contesting the unsustainable status quo." (Fry, 2009, p.57-58)

Resilience: "the system's capacity to cope with stress and local failures without collapsing (and to learn from the experience)". (Manzini, 2015, p.191)

In order to explore and develop this research, I employ materials harvesting and exploration, research-through-making, interdisciplinarity, and storytelling as my primary methods.

This toolbox has taken me from conversations with community members to the sites of harvest – to researching resource histories and processing methods – experimentation – collaboration – trial and error – and storytelling – in order to end up back with members of the community. Though now with a broader audience in mind – all those that seek connections to place and relationality with their material surroundings.

Thus the trajectory of this research, circular by nature, acts in service of a given place by committing from the outset to that place of which it is a part. This intentionality is a product of the understanding that we all carry the capacity to make a difference where we invest our time and energy, the places of which we are all a part. That this kind of practice, foundationally committed to place and community, operates for causes beyond any one researcher's self, but rather in service of something more permanent - the land.

figure 1 / A snapshot of me at Iona Beach Park in Vancouver, B.C. March of 2022. The park hosted a small group of us from the Place-Based Field School, to help clear plant invasive species, and supply me and my collegue with material for our research (as featured in p. 56-63)

Photo by Alison Boulier

Boiling oceanwater on a roaring wood stove and sifting ash from the hearth of a wood-fired bread oven - it all seemed intuitive at the time. The circumstances I'd found myself in, living in British Columbia, set me on a different path with otherwise foreign habits from what I'd previously known. Prawning, harvesting shellfish, cultivating yeast, brewing beer and cider, removing invasive plant species, and farming were not part of my upbringing in the Texas suburbs. These opportunities came forth after I moved from the United States to Canada in 2018. Here, I found myself wholly invested in the possibility that a greater intimacy with the materials around me could expedite my belongingness to this place.

Through this endeavour I learned more than I could have imagined, through my environment, family, friends, and acquaintances certainly, but more provocatively through a language[4] discovered through these material engagements. I found that, through them, I could communicate with those around me in an entirely unique way.

A bowl of sea salt[5] made from ocean water[6] I gathered off the coast of Piers Island was not just an off-beat alternative to table salt. Imbued within the salt was an intention to subvert conventionality, an acute awareness of my surroundings, and an intimacy with process. The ash I sifted from the Francis Bread[7] oven and mixed

4 The rhetoric and didactics of material language as a subject is articulately portrayed in my colleague's complimentary thesis (Schmitt, 2022)
5 As pictured in figure 2
6As pictured in figure 3
7 Francis Bread is a bakery I worked at in the summer of 2019, it is located on Salt Spring Island, B.C., see figures 4-5

into a ceramics glaze,[8] was not seen for its greenish-hue, or textural variation – but instead for the story told. It captured the time and transition it took for the tree to be felled, bucked up into firewood, dried, brought to the bakery, and loaded into the oven to make kin with naturally leavened loaves (of locally milled grains) in the oven's hearth. From this, the resulting wood ash was finally deposited into my bucket.[9]

It is because I tell the story of the ash, and offer imagery of the resulting artifacts, that the glaze begins to take on an imbued meaning – not only of the place from which it came, but also the process and community of which it is inextricably linked.

The research that follows was ignited by this lens of acute awareness to the materials and objects of place. It was fostered and fed by the individuals I encountered through my time studying at Emily Carr, as well as the countless inspirational words of literature, theory, environmental advocacy, research, and prose. In an investigation of materiality that characterizes our relationships to the materials and objects we engage with daily, this thesis offers an example of personal contextualization for the reader. Every human being is constantly interacting with the material world around them, and as such each interaction offers an opportunity. Understanding what it means to create something as a designer, and act intentionally on what it means for those creations to be held or pursued, is paramount.

8 As pictured in figure 7

9 As pictured in figure 6

Across ethical and ecological bounds, this work demonstrates alternative design and material practices that seek to subvert unsustainable norms with redirective practices. Woven through theory and practice, and founded upon a responsibility to place, is a considerate proposition for conditions we must actualize in order to foster resilient futures for generations to come.

This work is a product of this particular environment, Southwestern British Columbia, and within the bounds of the English language, but does not intend to remain here exclusively. It is translatable, transversable, and able to be embedded or suited into each and every community.

figure 2 / sea salt, 2020

figure 3 / Satellite Channel, off the piers of Piers Island, BC, 2021

figure 4 / Francis Bread Bakery, Salt Spring Island, BC, Canada

photo by Meghan Carr, co-owner of Francis Bread

figure 5 / sourdough coming out of the wood-fired oven at Francis Bread Bakery, Salt Spring Island, BC, Canada

photo by Meghan Carr, co-owner of Francis Bread

figure 6 / wood ash from the oven at Francis Bread

figure 7 / ceramic vessel glazed with the resulting wood ash

> *"[The] ability of objects to implicitly condition human actors becomes the primary means by which people are socialized as human beings." (Miller, 2006, p.6)*

> *"Objects materialize and express otherwise immaterial or abstract entities, organizing subjects' perceptual experiences and clarifying their cognitions. The very materiality of objects, there for the knowability of otherwise abstract or otherwise invisible structures..." (Keane, 2006, p.198)*

The discipline of design, implicitly or unintentionally, interacts with the relationality and intimacy of materiality itself (Ingold, 2011). In order to begin this work of investigating the materiality of artifacts and objects, we must first consider how we as humans interact with the material world that we are of and within. It is vital to be mindful of these materials and how their relationships might be examined in the context of a human-centric world, and beyond to a more-than-human perspective. Materials carry the propensity to act as *"mediators, interfaces, or in-betweens"* (Bush & Tiwana, 2005) to help us understand the world around us. To not access that opportunity is a disservice to the life of the material and all the energy that was spent to transform it into its final form. This means to which we access and experience these opportunities or implications afforded by materials is personal to each one of us, much like the unique relationships they carry the propensity to mediate.

In fact, materiality is itself subjective and lends itself to the being that interacts with it for interpretation. We take what we want out of a material or object. Objects themselves bring meaning based

on their composition, their materiality, and ultimately embody our goals (Csikszentmihalyi & Rochberg-Halton, 2012). We consciously observe, make sense of, and absorb the sum of its parts as we see fit, and allow its remaining properties (those that might expose the processes by which it is imagined, designed, and ultimately produced) to blur into the background.

To deviate from the example of a stone, as purported by Tim Ingold[10] and Stuart Walker,[11] in order to exemplify that which is considered within materiality, I want to talk about something ubiquitous and ordinary to most – a loaf of bread. At face value, when shopping for a loaf, texture is often considered, price as well, and undoubtedly flavour. Enamoured by the smell and taste we seek to unveil (or revisit), we might not question the origin of the grains that comprise it, the harvesters and millers that processed it, the farmers that planted the seeds, or where those seeds originated. There, when we consciously or subconsciously do not ask or seek to know this history, we lose the opportunity to appreciate and offer gratitude for the labour and intention that went into the loaf; all that went into the story behind its creation. This instance does not mean to suggest that an appreciation of each material interaction you have, be contemplated so exhaustively.[12] It would be difficult to get out of your house in the morning bearing the weight

10 Ingold, 2011, Ch.2 Materials Against Materiality
11 Walker, 2011, Ch.2 Sambo's Stones
12 This reflection, and this way of thinking, is made possible due to the privilege of choice and time. This research does not seek to exist in such a sphere of privilege, but instead explicates how our relationships to materials and objects can ultimately support communities of equity, resilience, and sustainability.

of these considerations. Though perhaps through an increased awareness of these material relationships we carry with us, we might notice opportunities for intervention and expansion. Every object represents a potential social connection (Adamson, 2018). Considering our relationships with materials as an extension of our social selves, offers a more thoughtful and intimate navigation of our worlds. By beginning at the foundation of materiality itself, we might begin to unpack how a heightened consciousness and appreciation of these relationships can play a role in our habits, behaviors and values.

It is in the hands and minds of designers to imbue intentionality in material choice, knowing full well that these decisions will influence those that receive their designs, physically, virtually, or subconsciously. That is our first responsibility and opportunity – to be mindful, intentional, and critical of material use. Additionally, and ideally, would be the development and implementation of a legible, apprehensible rubric that can measure value and ethics outside of a purely capitalistic lens to accompany designs. Beyond that, the onus is on the entity interacting with the design – to care enough to discover and consider these implications for themselves.

figure 8 / the loaf

This loaf of bread was made of flour from Barton Springs Mill, outside of Austin, TX, and True Grain Mill, located in the Cowichan Valley, BC. The salt that seasoned the loaf was made by me, from the Satellite Channel in B.C. (as pictured in figure 2, p.18) The water was from Vancouver, out of my kitchen tap.

This loaf was made for my application to this program, the first contribution to my first official portfolio, and was the inauguration to my investigations of place-based materials and object agency. I knew that these ingredients held embedded notions of place, and sought to better understand how that story can not only be told, but carry a greater service. To be a champion of a place, and all those that contributed to its form.

> *"We make things out of materials. Then we use them, in ways that bring us into intimate contact with their qualities. These objects in use both prompt and air our search for knowledge; we learn from the material landscape around us, and that, in turn, informs us how we make things." (Adamson, 2019, p.9)*

Look around you wherever you are reading right now, and focus on an object around you that reminds you of a place. It can be any object made by any material, made from any kind of means. Remember how you came to have this artifact.

Objects, and the materials that comprise them, carry within them stories. What story is told by the object you selected? This agency might be imbued within them through your personal experience with them, or they might seem imposed on the object by its maker or environment. Beyond the capacity of the object to tell that story, of how you came to have it, is its origin story. How exceptional or mundane that part of the story is, depending on who gave it to you, if you bought it for yourself, if you know the maker, or if you have no idea how or where it came to be, evokes something. Some objects more than others evoke connection and intention, those of place, of memory, of significance.

Our ability to 'see' these invisible histories is influenced by our awareness of the effects of its production and ultimately its implications on the natural environment – how it influences humans (including ourselves), as well as how we perceive it sensorily (Walker, 2011). These ethical understandings ultimately influence our own well-being as well as the well-being of the communities we

are a part of.

Design research that focuses on our human relationships to objects tends to favour those located within the domestic sphere (Miller, 2021) (Csikszentmihalyi, Mihaly, and Eugene Halton, 2012), as it is a pervasively relatable context and are naturally sites that reflect our priorities and values. That does not mean that the objects we engage with outside the home do not carry the same propensity for representation. Our exposure to the material world is vast and ever-changing, only scratching the surface with what lives in the space we call home. Beyond the familiar, curated zones of the domestic, must we apply theories on materiality and material culture. The food we eat, clothes we wear, transportation vehicles we possess, and tools we use, are all potential subjects of investigation when observing the comprehensive arena of materiality. They are all exemplary of who we are and what we prioritize, if they could all speak, what would they say?

> *"Thus, the process of creating the object and object itself both serve to inform the discussion and throw light on the relationship between functional objects, sustainability and deeper considerations of personal meaning and fulfillment." (Walker, 2011, p.54)*

Our modern relationships to materials and objects are not that of our ancestors. Not more than two generations back from my own, material intelligence assumed a unique role as it reflected our success in life, in the economy, and even in our interactions with the natural world – to the point of survival (Adamson, 2019). Soetsu

Yanagi, the father of the Japanese folk craft movement once said:

> *"They may simply be things, but who is to say that they don't have a heart?...They are rooted in the earth, deeply tied to the earthly life of honest, hardworking people...The world of utility and the world of beauty are not separate realms. Who is to say that spirit and matter are not one?" (Yanagi, 1933:2017, p.35).*

He envisions a return to the world where all everyday objects are beautiful, contributing to a greater collective appreciation of utilitarian artistry. This beauty is portrayed not through the fluctuating spectrum of subjective aesthetics, but indeed because they are functional, simply designed, handmade, accessible to the masses, and durable. His relationship to objects is that of reverence for use as well as the *"practical benefit that it affords,"* (Walker, 2011, p.164).

This way of living, in which we only bring objects into our lives and homes that we consider being useful and believe to be beautiful,[13] does not have to reside in books or be cast away as nostalgic romanticism – but instead has much to teach current generations. As consumers of food, materials, content, and culture, we are what we consume.

> *"We live in a world that is increasingly defined by commodities rather than place. What results from these technological patterns is the conversion of things, such as an ecosystem, and practices..., into commodities that are stripped of sinuous connection with social and natural processes." (Higgs, 2006, p.12)*

13 Famously first purported by designer and craftsman William Morris in 1880

figure 9 / turning bowls

I began woodturning to get away from emails and found a beautiful means of amplifying the story of a piece of wood. The flashing of maple, spalting of arbutus, tightness of old-growth grain, all carry tales of the cost of living, surviving, falling, and returning to the earth, or attempting to. The means to which artists and designers can not only understand these characteristics of wood but amplify them, offers a heightened opportunity for meaning-making and storytelling of history and place.

As Lippard's artists, presented in her seminal work The Lure of the Local, seek to capture special qualities of place in their work, that which she designates is *"embedded in everyday life,"* (Lippard, 1997), so too can the objects and systems of designers. This amplification of imbued regionalism offers more than an experience of a given place at face value, but an urgent glimpse of intimacy – an invitation to be in community with the place (Leopold, 1949), aware of what it needs, and how we can participate in that process.

To consider these ideals in the context of North American urban communities, where this research primarily resides, means to contextualize them for what they have come to be – luxury. The accessibility of handmade, local, and durable things, is at large finite in urban communities. Why should these more thoughtfully crafted and lasting artifacts be available only to those with the disposable income to afford it? In short, they shouldn't. We have yet to find a solution that breaks down the systems of wealth inequality and unrestrained consumption of the (North American) masses in order to tackle this dilemma. Undoubtedly, there is no one solution. There are countless. Designers must ask the question, 'Where can we even begin?' We begin in the fields of practice and communities in which we live – where we can make the most impact – making the extra effort to invest in redirective practices that serve a more equitable and resilient future.

And we refuse to design anything that does otherwise.

figure 10-11 / spalted pieced of arbutus wood woodturned by me, not always going according to plan. The spalting in the wood means the wood has begun the process of decomposition, it captures the wood at a very specific moment, when the pigment begins to fade intermittently, spreading and marbling the visable texture. Arbutus is a hardwood, and the spalting renders it more delicate to work with, a reminder that we must be responsive and adaptable to the boundaries of the material.

figure 12 / Piers Island, B.C., a section of forest where an arbutus tree was taken down by a neighbour, before it was milled and broken up to make its way into my hands. There are still a couple standing in the background of the image, one diagonally making its way to the light. This wood is often used for firewood as it burns slow, but its a remarkably charismatic wood, warping and twisting, creating the conditions for anyone working with it to act slowly, intentionally, coaxing out forms reminicent of the tree's organic, original patterns.

Photo taken by
Kevin Isherwood

> *"As designers, our actions have influence and the decisions we make have consequences — the language we use, the energy we pour into community and equity, the materials we choose. Inevitably, we design conditions. " (Clay & Schmitt, 2022, Appendix, p. 85)*

> *"Given this degree of freedom, designers have to adopt some criteria for choice and on this basis choose what, in their view, is better to do. That is, given that ethics is defined as dealing with "what is good and bad, right and wrong", they have to make ethical choices." (Manzini, 2006, p.9)*

Implicit in this work is an awareness and investigation of ethical responsibility in design and material practice, particularly in the context of our relationships to the natural world. The debate over the onus of design's implications on their eventual users/participants is both extensive and undeniable (Dilnot, 2014) and offers a reminder that designers must orient practices ethically, responsibly, and intentionally.

Though seldom do designers dream of leading an unethical practice, many are those who knowingly practice as such, but plead ignorance or blatant disregard. Current systems of design, production, and consumption[14] have bred a culture of convenience (such as that of fast fashion) where it is often preferred not to know the whole story of a design's actual development at risk of assuming responsibility for the conditions its existence consequently designs – *"what will that which has been designed design?"* (Fry, 2009). As well as for whom

14 "It is significant that studies of so-called material culture have focused overwhelmingly on processes of consumption rather than production." (Miller 1995, 1998:11)

we are designing, we have to know the implications for the 'in/visible hands' (Adisa-Ferrar, 2019) that will make them. Those that profit from the design's manufacture or implementation, or the systems of caste and inequality it might perpetuate.

> *[...] "I was told it was invisible hands*
> *Pushing needles through fibers picked by humans*
> *whose lives were and are seen as disposable*
> *Pulling the thread towards liberation*
> *Hoping to stitch a better future for their children*
> *Not the children who will perish in the same position as them*
> *But their children's children's children*
> *who will hopefully emerge wounded, but free from this current system*
> *[...]*
> *I read it was invisible hands who allowed me to lead the life I live*
> *But these people are not invisible, they are overlooked." [...]*
> *(Adisa - Ferrar, 2019, In/Visible Hands)*

As we all carry unique intentions and interpretations of what is right or useful to contribute to the world, we should yet consider that at any point that we might be wrong – ensuring space for new possibilities and perspectives to infiltrate. Furthermore, we must insist that the process of ideation and prototyping be transparent, participatory, and flexible. This ensures that we think outside of our own experience, context, individual consequences (or lack thereof) and actively participate within the social processes and conditions we are designing for.

> *"To treat the natural world ethically means loving and respecting it for its own sake, not just ours; and unless more of us do so more often, not only will we suffer more but we will destroy many more others who are themselves blameless," (Curry, 2001, p.1).*

> *"That land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics." (Leopold, 1949, p.viii)*

Ecological design[15] joins science and the practical arts with ethics, politics, and economics (Orr, 2002). It supports the idea that we cannot design for nature, or even with nature, without an *"integration with living processes"* (St. Pierre, 2019, p.99).

This way of orienting (or redirecting) practice ethically is not meant to follow a series of rules, but instead provide a particular lens from which to continue. One that is more relational and reflective. To act ethically as a citizen of the world, and especially so as a designer, means to own up to the reality that all of our decisions reap consequences. Big or small, our choices matter. Through the expression of ethical opinions while problem-solving (or designing), unique perspectives and objectives become evident. Outsourcing this ethical burden onto experts on environmentalism or critical design does not render designers immune from that liability. No one is absolved of ethical responsibility. In order to create equitable, sustainable, and ethical communities, we first must understand and

15 Ecological design can be considered as "any form of design that minimizes environmentally destructive impacts by integrating itself living processes" (Van der Ryn & Cowan, 1995)

consider broader social, cultural, and ecological implications of our respective practices. After all, *"the ecological community forms the ethical community,"* (Curry, 2001 citing Bennet & Sylvan, 1994, p.91). Aldo Leopold once said, in conversation of his Land Ethic, that *"a thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."* (Leopold, 1949, p.225). We would do well to heed this advice, and if not at least regard it for its cohesive and succinct candour. If that's all there is to it, then where did we go wrong?

> *"We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."* (Leopold, 1949, p.viii)

> *"Design must respond to place, to the roots of a location, 'sprung from the land'; nature is not absent of culture."* (as cited in Schwann, 2019, p.179).

As a product of its surrounding landscape and community, this research is what has come to be referred to as a place-based practice. Coming from a deep affinity to localization and circularity, this research was further fed by the conditions at play.

A global pandemic caused a worldwide reverberation spotlighting the value of our local economies and infrastructure. Interrupted supply chains, workplace overhauls, and regional lockdowns kept most of us exceptionally local, gaining an increased awareness of our surroundings, even if only within our own neighbourhoods. This - albeit extreme – example of a change in conditions, is a poignant and timely one. Throughout its accompanying trials and tribulations, it has generated momentum for urban dwellers to shift towards more 'sustainable' lifestyles. It has proven to the world that we are flexible, responsive, and capable of change. If we so desire.

> *"Here the currency of choice is the capacity to care, to give attention, to feel attention returned."* (Fletcher, 2019, p.197)

The idea that we have a responsibility to the places we inhabit is hardly a new one, though it can't be emphasized enough. During

a time of exacerbating climate change, we will need to rely on those around us more than ever for food, materials, services, and infrastructure. As long as we continue to operate beyond our carrying capacity,[16] we are disadvantageous to ourselves and our communities. Efforts to strengthen local networks and circular economies[17] begin to address this disconnect, streamlining material flows, infrastructure, and services at an accessible and communicable scale for community members. Through this heightened sense of awareness and connectivity to systems and networks of place, we reinforce the notion of responsibility and neighborliness to our respective localities.

Unintentionally, and slowly at first, our modern technology has displaced many of our human interactions and relationships from face-to-face interations, to digital ones. This phenomenon has been an invaluable tool, exacerbated by the necessity of pandemic-era social distancing and travel restrictions, though it has come at a cost. It has created opportunities for pervasive dissociation with our local communities, and an accompanying lack of accountability to the landscapes we inhabit (Kozak & Chisholm, 2021). Finally, it has culminated in a lack of place-based responsibility.

By investing ourselves and our labour into our community, we become a part of that community (Higgs, 2003). Our communal work is what realizes the notion of community, grounded in a place

16 A thoughtful foray into several author's perspective on how we relate to our planet's carrying capacity (Farber, Chisholm, Van Oyen, & Kozak, 2021)
17 Such as the GrIID™ (Bursey, 2020)

(whether it be virtual or physical.) The expression of place-based responsibility means to name that thing we interact and engage with when participating in community. Its articulation reinforces that by choosing to act with or for the needs of a group of beings beyond ourselves, we are investing in the future of that place and its inhabitants. It is not self-serving – it is caring, nurturing. flexible, and present.

Perhaps we take further advice from Leopold to *'think like a mountain,'* zooming out beyond what is directly in front of us in order to see things at a different pace. That we see the greater community that comprise our places, those in the soil, the sky, and everything in between. Those that our actions also impact, though at a rate and scale we might not always consider.

> *"...as the power of place is diminished and often lost, it continues – as an absence – to define culture and identity. It also continues – as a presence – to change the way we live." (Lippard, 1996, p.20)*

Summer of 2021, myself and Chiara Schmitt sought to recreate the process of creating fish leather, as was communicated during the 2020 Fibreshed Field School at Emily Carr (Schmitt & Logan, 2022). The students of the field school experienced a semester rich with material intelligence of regional textile processing and unconventional (by modern standards) material use. The fish skins, a combination of wild Pacific sockeye salmon and lingcod, was generously donated by the butchers at Finest at Sea in Vancouver, B.C.. As was the case with most material research we engaged with, this partnership opened up a dialogue with the industry source (or as close as we could get) about local and sustainable material sourcing previously unconsidered on their end. The skins were cleaned by myself, Chiara, and a couple of willing volunteers, and tanned with either oil, tea, or egg yolk.

figure 13 / These wild-caught Pacific lingcod and sockeye salmon skins were generously donated by Finest at Sea in Vancouver, BC. for the process of making fish leather. The lingcod skins are not sold on the fish, and are normally discarded after removal before they are displayed in the case. The salmon skins were from our dinner that night.

Photo by Chiara Schmitt

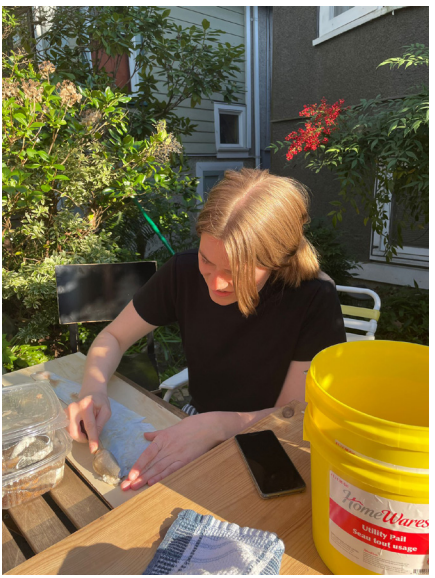

figure 14 / cleaning fish skins of any remaining flesh to prepare them for tanning. The first steps in preparing fish leather.

Photo by Nico Brand

figure 15 / several solutions were attempted in the tanning process such as oil, tea, and egg yolk, all traditional mediums for tanning.

Photo by Chiara Schmitt

figure 16 / the skins lay out to dry in the sun

Photo by Chiara Schmitt

figure 17 / one piece of the resulting leather, made from lingcod skin. Fish leather has traditional and ancestral use on the west coast of British Columbia to make coats, shoes, and other essential goods as it is water resistant and durable.

> *"Your hands itch to pull out invasive species and replant the native flowers. Your finger trembles with a wish to detonate the explosion of an obsolete dam that would restore a salmon run. These are antidotes to the poison of despair." (Kimmerer, 2013, p.339)*

My first memory of Scotch broom[19] is not knowing how to find it. Living on Salt Spring Island, B.C., freshly for the summer, my landlord hired me to help keep up the property. When tasked with my first job, Scotch broom removal, I asked no questions. I picked a playlist, donned gardening gloves, and marched a few meters from the entrance. *"It's all over the lawn between the house and the road,"* he'd said. According to these directions, I was certain it would be easy to spot – I just didn't know what it looked like. I must have spent half an hour before asking for help, and once equipped with this skill, my relationship was forever altered with the *"glistening patches of gold"* (Lee, 2010) found all over the region come springtime. I now can't help but see it everywhere – roadsides, beaches, orchards, trails – it calls to me. Instilled in me was a strong desire to remove it. As it was the first invasive species I learned to identify in B.C., it became a symbol. Removing it felt like a small act of service I could offer to my natural environment, that of stewardship and care.

Ecological restoration and conservation efforts have led to networks

18 Invasive Species are considered species whose introduction or exacerbated spread does, or is likely to, cause economic or environmental harm or harm to human health.
19 Scotch broom (*Cytisus scoparius (L.)*) is an opportunistic invasive plant species found throughout the coastal areas of the Pacific Northwest of North America.

of formalized groups and committees dedicated to the eradication, or management, of invasive flora and fauna within a specific area. Nationally in Canada, there is the Canadian Council of Invasive Species (CCIS), regionally, the Invasive Species Council of British Columbia, (ISCBC), though locally, my efforts began with the Piers Island Association's Council for Invasive Plants. The first time I thought of using Scotch broom as a material was after I volunteered with this crew of dedicated community members on Piers Island, a 'Valentine's Day Invasive Species Massacre' on February 14th, 2021.[20]

20 As pictured in figure 18

figure 18 / pulling Scotch broom on Piers Island, February 14, 2021, with a crew of others, not pictured. Gorse, another invasive species on the island, is also pictured here as the more spiky plant that can grow easily near broom. Gorse was also removed this day.

(right) figure 19 / moving the removed Scotch broom to a burn pile near Biscoe Beach.

Photo by Charlotte Young

(below) figure 20 / the burn pile

This is a common disposal method of broom. It is burned before it goes to seed, but occasionally seeds survive burning, and disturbed sites are prime territory for broom to spread. This contributed to the opportunity of diverting the broom to another fate, a resource.

I assumed from its namesake, and bristly nature, that someone somewhere had made brooms out of it, and some quick research proved my hunch correct. I prototyped a small hand broom using the long, malleable fibres bound in string, followed by another round bound with copper wire, in hopes to see if it lived up to its namesake. It was a success! The hand brooms proved their usefulness, on a small, d-i-y scale,[21] but the promise was then established. This inconvenient, labour-intensive-to-remove resource, was being contibuously removed across the region, and subsequently burned or sent to the landfill for disposal. This early research proved that it could be useful for something, and that it was worth a more thorough investigation.

21 As pictured in figures 21-22

figure 21 / preparing the Scotch broom for broom-making

figure 22 / a series of four hand brooms, made of Scotch broom, and bound with copper wire

The research that followed, fuelled by energy from my faculty and peers, fed the concept until it became something else entirely – a lab. *pl.lab,* or the place-based material lab, was co-founded by myself and Chiara Schmitt in June 2021. The original intention of the lab was to develop a home for local/place-based material ethics, protocols, and research to live. We imagined a collaborative collective where data, stories, material samples, and experimentation could be fostered and made accessible to the Emily Carr community and beyond; something of a materials library that was uniquely focussed on locality, as well as the cultural and ecological implications of material harvest and use.

> *"Calling it a lab from the outset was important: placing emphasis on process over product, and encouraging an atmosphere of questioning and experimentation over one of certainty of where it all might lead. The key to maintaining that open structure has been the inclusion of an ever-widening circle of collaborators, [...]" (Strauss, 2017, p.15)*

The lab has spent a considerate amount of time focusing not only on Scotch broom, but on relationship building. This last year, in large part due to the opportunities and visibility afforded by the return of in-person, on-campus activities, has proven that this way of working is growing in popularity. Chiara and I, who share studio space with the undergraduate Industrial Design department, have been watching more projects and practices develop from a foundation of place-based responsibility and natural materials exploration. Our welcome in this creative and academic environment was fostered by faculty and evolved into our participation in class critiques and

courses. Even this small bridge across departments and disciplines has fostered so many relationships and collaborations for pl.lab as well as for the students.

Through the process of experimentation and research, the lab decided that the most valuable work it could focus on was regarding invasive species, namely Himilayan blackberry[22] and Scotch broom. From this foundation was an urgency to find a way that these invasive resources could be better used for the community as they are already being pervasively removed. As a response to historical habits of extractivism (Parks, 2021), we thought it advantageous to propose a material we would want to run out of.

The lab's work with Scotch broom is detailed thoroughly in my co-authored 2022 paper, *Ecological Restoration Through Material Practice: Invasive Species as Resource,*[23] where we articulate the value and opportunities inherent in working through place-based design to solve local problems and fulfill local material needs.[24] Through the engagement of local knowledge keepers,[25] a little bit of YouTube, material designers,[26] and scientists,[27] we constantly reimagine what it looks like to design something of place, and who else should/can be involved in the process.

22 Another aggressive invasive plant species in British Columbia
23 Located in the Appendix
24 Process images of our work transforming Scotch broom into a spinnable thread and solid brick are illustrated in figures 23-36, p. 56-63 .
25 Sharon Kallis of Earthand Gleaners Society
26 Marnie Bowman of Franklin St. Studio
27 This research benefited from cross-collaboration with the BioProducts Institute at the University of British Columbia.

> *"We propose a restoration-driven material practice within the creative field and beyond that acts as a means to actively immerse participants in the ethical discussion of human interference in ecosystems and offer proximity as an opportune context from which to start." (Clay & Schmitt, 2020, **Appendix**)*

The research and theoretical framework documented in this paper further proves the value of collective ways of working that prioritize place as its grounding principle. Though we might all come from different cities, cultures, backgrounds, and practices, where we live at any given time is an opportunity for connection and community. The common ground we seek – to work collaboratively and solve local problems – is literally under our feet.

figure 23 / seperating the canapula, inner fibrous core, from the chlorophyll layer on Scotch broom branches

Photo by Nico Brand

figure 24 / mechanically seperating the componants of the branches by dancing on the plant material on sand particles, pulling them apart, easing the process of sorting and cleaning

Photo by Nico Brand

figure 25 / a drum carder loaded with Scotch broom. The carder has a more finite capability topull the fibres apart in preparation for spinning.

figure 26 / spinning the resulting fibres with a drop spindle, making twine

figure 27 / cleaned oyster shells donated generously from Harbour Oyster + Bar on Commercial Drive in Vancouver before being fired in the kiln

figure 28 / kiln-fired oyster shells, now effectively calcium carbonate ($CaCO_3$), or lime

figure 29 / preparing to make the bricks

Photo by Chiara Schmitt

figure 30 / grinding up the fired oyster shell into a powder (visibly indistinguishable from store-bought lime)

Photo by Chiara Schmitt

figure 31 / blending the Scotch broom to break it down to shorter fibre lengths

Photo by
Chiara Schmitt

figure 32 / materials and tools for the brick making, tile press (top left), blender (top right), pulverized oyster shell (bottom left) and Scotch broom branches cut into ~1 in lengths (bottom right)

figure 33 / filling the tile press with the mixture of Scotch broom, water, and oyster shell

Photo by Chiara Schmitt

figure 34 / pressing the brick to release excess water and shape the material

Photo by Chiara Schmitt

figure 35 / a freshly pressed brick

Photo by
Chiara Schmitt

figure 36 / six bricks, in the curing process

> *"Bio design, biomimicry, and biophilic design are attempts to see design and nature differently. They represent a search... [though] these learning spaces are constrained by mainstream design practices that prioritize human needs, rationality, mastery, and economic growth." (St. Pierre, 2019, p.101)*

> *"...design recoups its history as hope in the interests of a future that cannot any longer be assumed but must rather be brought carefully into being. This means that recovery of the past is the condition for the recovery of the future. But as we re-cover for the sake of the future we recover from it lessons we can take into the task of reconfiguring what-is in the interests of the future." (Dilnot, 2014, p.64)*

No longer on the precipice of a changing world, but in the midst of one, the only choice we have is to think and act differently. Redirecting our methodologies to prioritize investigations and intentionality of the materials we use, as well as an understanding of the implications for the designs themselves in their cultural, environmental, and social contexts, will lead to a more resilient and adaptable future.

I, thankfully, am far from the only designer in the field with the belief that the materials we have around us are not a resource to be exploited and extracted, but instead offer an opportunity for alternative or unconventional material economies that are symbiotic in nature as opposed to parasitic (Franklin & Till, 2020). For instance, material designers worldwide are developing illuminating and inspiring forays into the possibilities of alternative materials for the future. From the utilisation of materials that are carbon-negative[28]

28 Such as the work of Tim Seibert, The Colour of Air, who is capturing carbon black particles from the air and converting them into a fabric dye, pencil lead, and printing ink (Solanki, 2021)

to repurposing those currently headed for waste streams,[29] these endeavours prove that more creative and considerate ways to operate in coordination with our living environments as a part of our community exist in unimaginable forms. This research is essential, but furthermore their methodology is the most important. This way of working has been bred from a movement of designers that choose the path less traveled – using materials you can't buy, materials that must be re/discovered and tailored to accommodate the modern context. One of the subtleties in these emergent practices is the intention of leading with the agency of the material itself, allowing its properties and conditions of existence lead way to the final form rather than seeking a material to perform a given function/solution. This encourages slow and collaborative ways of working that ultimately converge in material expressions that extend beyond their physical form, to the story they are now able to express.

> *"Raw materials must not be thought of as merely physical matter, containing as they do the will of nature." (Yanagi, 1933:2017, p.41)*

Material driven design positions that the 'material' should also elicit meaningful experiences in and beyond its utilitarian assessment. This requires qualifying the material not only for what it is, but also for *"what it does, what it expresses to us, what it elicits from us, and what it makes us do"* (Karana et al, 2015, p.1). A means of furthering material design promotes the spirit of resilience and adaptability,

29 Amongst the wealth of practitioners within this category of work sits Sophie Rawley, whose practice is led by waste materials that she finds herself with (i.e. plastic, denim, glass, and newspaper) (Franklin & Till, 2018)

two characteristics necessary for surviving the years we have ahead of us. Though, a number of these projects are rather speculative (at their proof-of-concept stage) and live in a theoretical space lacking the subsistence and infrastructure of a more systems-based design approach to futuring.[30] In order for these designs to initiate lasting change, scalability and sustainability have to be the starting point – otherwise, they might exist solely in coffee table books and museums, rather than making the change they were once fated to facilitate.

Rebecca Burgess' Fibershed movement, which began with her journey to create a bioregional wardrobe comprised of materials within her local fibreshed[31] is emblematic of a dynamic and resilient practice (Burgess & White, 2019). Her work is founded on principles of community building, circularity, regenerative agriculture, and regionality of resources, to name a few, while tirelessly promoting the notion that there are other ways to adhere to the systems of capitalism and consumption North Americans are born into. Through her personal journey to farm indigo in California, engrossing herself in centuries of history of her local landscapes, while coordinating and advocating for local textile infrastructure long ago moved overseas, she is a champion for cross-industry collaboration. This effort is fueled by the belief that there are more sustainable and considerate ways to clothe ourselves and our

30 The presumption and responsibility that design/designed things are directly involved in the creation of future actions, habits, and realities.
31 A geographical landscape that gives boundaries to a natural textile resource base; a community of farmers, weavers, spinners, dyers, designers (to name a few) committed to textile resources within a specified bioregion

communities without outsourcing the environmental and social consequences of production. And instead, telling the story of an alternative - with a piece of cloth.

The objects that she makes, and facilitates the production of, are made from materials forged from the land she and her community stewards, and they are deeply representative of place. As such, they intuitively bring people together by offering material manifestations of place and land as an icebreaker towards a deeper engagement with something we all use, fibre and cloth. It takes a community to build the infrastructure and material intelligence necessary for textile economies to function. Farmers, artisans, policymakers, industry, and consumers, are all points of connection in the network bringing with them the hi(stories) of their own relationships to place and material. These networks are durable, sustainable, and impactful, and they are key to the establishment of localized and resilient economies. They form a rich and dependable system of processing and production at a community scale, as they are comprised of that same place, and as such advocate for its success through their participation. The resulting artifacts produced are certainly objects of place, but also of consequence. In their uniquely local way, they exemplify an answer to how we move forward in such a sticky system – in small ways at first, but with reckless abandon.

Rebecca's movement has travelled beyond the California context, across the United States and Canada, to Europe and Asia. This global network continues its commitment to the localization of

resources, regenerative farming practices, and an adherence to ethical production standards. It has fostered relationships up the ladder to brands and designers who have agreed this is the way of the future for the textile industry. From working closely with the Carbon Cycle Institute[32] to calculate the carbon sequestration impact these practices have to collaborating with folks at The North Face[33] to develop a line from soil to skin with Fibreshed farmers, spinners, and knitters, this work considers impact beyond a home-grown scale.

That this practice is translatable and expandable across industries and borders proves that what might be considered cottage industry[34] can be scaled up and out to broader communities. It confirms that these small and niche industries are adaptable to modern (North American) systems of consumption and convenience. Most importantly, they prove that there is a market for it.

This research does not seek to answer the question of whether material designers or farmers will save the world because undoubtedly we need both. A world's worth of problem solvers just might figure it out.

> *"The groundwork for macro-transformations and for great systemic changes is laid by micro-transformations and local systemic discontinuities (Manzini, 2006, p.10)*

32 https://www.carboncycle.org/strategic-partners/fibershed/
33 The Backyard Project, The North Face x Fibershed, 2014 (https://www.thenorthface.com/about-us/responsibility/product/backyard.html
34 Small scale, typically home-bound businesses.

The work ahead of us is immense, and the only way to approach it is in pieces. Localized, small-scale specialization and production will provide more economic (Fleming, 2012) and ecological resilience. This is a means of designing for sustainability (Walker, 2010), and also designing for more immersive and ardent relationships to place.

> *"..neighborhoods and communities will be much better placed to apply their competence and good sense than any received, large-scale, standard, and imposed practice." (Fleming, 2011, p.71)*

Beyond an authentic commitment to reducing the amount of materials we consume (Geiser, 2001), there must exist a reimagination of how we source and process materials and resources. Should the concept of place-based responsibility be combined with efforts towards the circular economy, our world would look remarkably different. . It would be markedly more resilient, sustainable, and creative. These practices go hand in hand, with energy towards one directly benefiting the other. By nature this strengthens local economies through the creation of jobs through investment in local re-skilling and production in industries currently outsourced beyond the bounds of the community. dramatically reducing carbon emissions currently created through the transportation of goods and services, all the while encouraging long-term community involvement and investment.
This proposition would be representative of David Fleming's Lean Economics (Fleming, 2016) – supporting the notion that a return to localization can reconfigure our current dominant norms of production and distribution to one that lends itself to resilience and sustainability. Away from the systems that pushed our environment to the brink of disaster, to one that offers alternatives such as place-based responsibility and restoration (Higgs, 2006) as pathways for future building. One that emphasizes and relies on community. Fleming challenges we can *"do without community, but only for a time, like holding your breath under water ....Community will need to be*

reinvented as the defining part of human society." (Fleming, 2011, p.72)

Design is not carried by a chaotic storm of unsustainable practices, it has been culpable in its establishment. To that end, it must be our mission to be "*redirectively engaged*" (Fry, 2019) towards real solutions – towards a better, more resilient future. One in which we are so immersed and enmeshed with our communities, landscapes, and materials around us that we can't imagine any other way to be. One where Manzini's *creative communities* in their *territorial ecologies*[35] have the capacity, infrastructure, and agency, to establish economies and futures that are attuned to the conditions of culture and place. One that can be sustained, is considerate, adaptable, diverse, and open-minded.

Design carries the propensity to not only facilitate this transition but act instrumentally in its evolution. We soon might have no other choice in a world where the only constant will continue to be change. The more we can invest now in a commitment to localization, the more prepared we will be for what is to come.

Donning hard hats and steel-toed boots at a construction site, I looked for clay deposits underneath cracked soil – feeling its texture for malleability and structure – how easily it comes together. I look to my collaborators, the site managers and my fellow clay enthusiast, and envision a future in which we can all work together to solve our

35 The understanding of a territory as an ecosystem of places and communities. The building or rebuilding of those places and communities in all their variety and cultural richness therefore leads to the production of a richer, more varied ecosystem, one that is therefore more resilient (Manzini, 2015)

material needs. This thoughtfulness and intention are inconvenient for each one of us at the site, taking time out of our day and interrupting established efficient material flows, but as such is more impactful in its inconvenience. That we have all made a detour of our normal process of site excavation or clay sourcing, means this way of working is possible. We just have to be willing to do it.[36]

36 This work, pictured in figures 37-40, was conducted throughout a research project funded and coordinated through Emily Carr's Shumka Centre for Entrepreneurship. The project, Design for Regional Resilience, partnered design students with industry partners seeking to incorporate more circularity into their practices. This particular collaboration, with Janaki Larsen Studio, began January 2022, and focuses on developing a high-fire ceramic body from clay directed from construction sites in Vancouver.

figure 37 / site clay collection on W 3rd Ave in Vancouver , BC , in partnership with Haebler Construction

figure 38 / collected clay from a construction site on South Cambie Drive in Vancouver, BC

figure 39 / local clay samples, fired to cone 10 at Janaki Larsen Studio

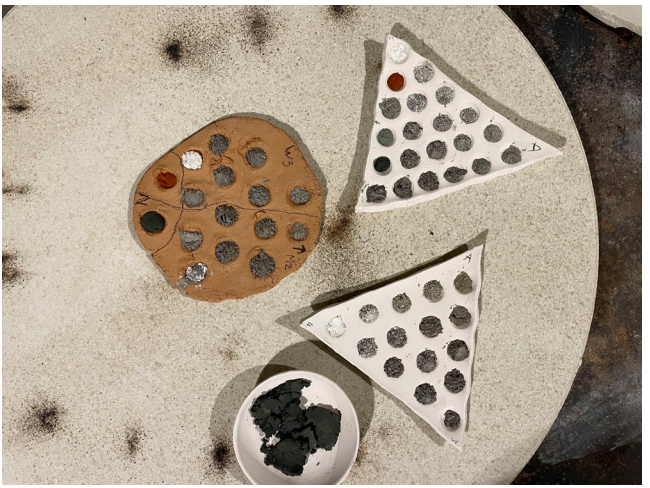

figure 40 / local glaze sampling (unfired) at Janaki Larsen Studio

At a societal scale, we have become pervasively disassociated with the material intelligence we are surrounded by every day. This 'progress' has occurred at the cost of disillusionment with the diverse ecosystems that surround us (Strauss & Pais, 2017). What once was a condition of being human - navigating the wild or unknown material world - has been transformed by massive strides in technology accompanied by the digital revolution. This work acts not as a prose of nostalgia, but rather as a microphone to champion the value of traditional skills and knowledge that has depreciated in modern urban centers over the last two generations – those of material intelligence, of trade skills, of survival.

The ways we activate the accompanying material agency as designers and makers carry a propensity to act in service of our communities and ecosystems. It is not only an opportunity but also a responsibility that we yield. As practitioners in this community, as well as members of this community, if we are not mindful of the implications of our mediums and the materials we use, then that opportunity is lost and responsibility abandoned.

The research that myself and Chiara Schmitt have been committed to in our collaborative practice, *pl.lab*, provides a unique example of a design and material practice that acts in direct service of our natural environment. This work offers an example that the more thoughtful and creative we are as design practitioners, the more life and utility our efforts have beyond our own immediate reach. Working with natural materials and materials of potential cultural

significance cannot be taken lightly, though that element is often under-considered in modern systems of design and manufacturing. When we work together as a community to source material alternatives that we have access to in our vicinity, our patterns of consumption and waste will alter in tandem. This causes a ripple effect as consciously crafted, place-based objects and materials close the loop on the life cycle of materials/products currently imported from far away places. This is not a new idea, rather a reimagining of an older way of living.

Previous generations did not have the same opportunities to outsource as us, and out of necessity they made use of what was around them. Strides in navigation, transportation, and communication have allowed humankind to achieve much, but it has come at a cost. The subsequent disconnection, fueled by industrialization and globalization, has inevitably created the conditions for fast fashion and single-use plastics, rampant unsustainable relationships with consumption. This research is not drawing on these examples to dwell on the problems of their capitalistic contributions to our communities, but instead to reinforce the value of more thoughtful relationships to the artifacts around us. It is a tempting idea, to preach Adamson's curatorial critique on this modern condition as he champions the ideal of having *"fewer, better things"* (Adamson, 2019). This research, though aligned with this notion, instead calls for a designerly commitment and thoughtfulness to the objects we make for others to bring into their lives and homes. That we are wary of their immediate and

long-term implications on the environment, human habits, and communities.

A thoughtful awareness of materiality can be a stepping stone to a larger behavioural transition. The choices that we make as designers create conditions for others through their interactions with our designs – however tangible or abstract they might be. This responsibility must start where we are, always considering how they may be received and to what future they are building – consciously crafting the ways in which we want to see the world go, in the ways that we have the capacity to do so, and how we can be more thoughtfully involving our surrounding ecologies in our processes (Orr, 2002).

> *"Design can find the best fit between economic viability, ethical and cultural acceptability, and ecological truth," (Fuak–Luke, 2009, p.xxi).*

This is where craftspeople, makers, and material designers practicing redirective design are establishing revolutionary work. The more that this work is communicated, adopted, and implemented, the more likely it is to make the change it addresses. This is some of the work ahead of us. As every idea starts with its proof-of-concept prototypical form, the task to fully realize radical work lies in its scalability. An application of scaling-up that does not follow in the footsteps of our histories of resource extraction and other contributors to the climate emergency, but a new relationship to resource use. One that has been around since time immemorial

but it will certainly take some work to get it to fit the glove of our current modern condition.

"forget design as a territory and practice that can be laid claim to (the drive of professionalization), stop talking to yourselves (the internal dialogue of design events), give up on repackaging design within design (codesign) and start talking to other people, other disciplines; broaden your gaze (beyond the design process, design objects and design's current economic positioning), engage the complexity of design as a world-shaping force and help explain it as such.' (Fry, 2009, p.7)

The opportunities I had throughout this program to conduct practice-led design research were instrumental in shaping my foundational sense of place-based responsibility. I consider the opportunities and process-driven activities held within these pages to have been full of learning and unlearning yet, incredibly privileged and biased. I continue to actively acknowledge and challenge these biases within my design and making practice.

This work was fueled by the energy, passion, and resources being dedicated to circularity in British Columbia. This level of commitment is not only inspiring and emergent – it is necessary. Implementation of circular and localized material practices will require a shift in our modern patterns of convenience or individuality at a systemic level. It is instrumental in our collective response to the climate crisis and demands a renewed relationship with the places we inhabit. It will take continual support, commitment, and flexibility from all affected community members to ever achieve lasting systemic change.

Working alongside champions of circularity and localization within my community has stimulated my acute commitment to place. This way of working demands relationality and reciprocity with the carrying capacity of our natural and urban environments and yields the propensity to ignite lasting change. We can act in service of this place, in even a small way, every day, as it is so boundlessly generous to us.

There are many community members whose voices and practices have been silenced, exterminated, and left behind, those less privileged, underrepresented minorities, and knowledge keepers of Indigenous communities. When struggling to envision solutions for the future, we don't often enough look to the past, to sovereign knowledge, to First Nations rights-holders' embodiment of land stewardship, to simply think beyond ourselves and begin to fulsomely regard the land as kin. To think of history not in the past, but in how it has transformed our present by embodying and enabling our material intelligence, collective memory, and culture.

Holistically in my creative practice and research, I earnestly consider this condition and what my responsibilities and requirements are as an inhabitant of this specific landscape – a resident byproduct of successive generations of colonization. We are all, ourselves, in some form, complicit or directly contributing to many of the wicked problems we now face. Now we move forward. Carrying the weight of this history, but freed with the truth that each day we can commit to being better, doing all that we do in a good way.

This work is living -- it is neither static nor finished -- and is sure to continuously reveal holes, mistranslations, and detours, all in the spirit of growth.

I make so that I understand, I gather so that I listen, I listen so that I can speak, I move forward so that I can be.

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Ecological Restoration through *Material Practice*

Invasive Species as Resource

by Christa Clay *&* Chiara Schmitt

↘ abstract

This paper offers a perspective on design's potential to act in service of ecological restoration. By investigating an invasive plant species as an untapped material resource of our bioregion, this work illustrates an example of how place-based material practice can benefit both our communities and landscapes.

The practice of sourcing materials from overseas rather than making better use of what we have available locally paired with the introduction of materials that are ecologically foreign in our respective latitudes, acts in disservice of a greater environmental symbiosis. Under these circumstances, we have become blind to the capacity of unconventional resources housed in our respective environments. This paper unpacks how reconnecting with local materials in design and making practice can nurture our relationships to place, community, and sustainability.

Through explorations into material properties and opportunities of Scotch broom *(Cytisus scoparius (L.)),* one of the most prolific invasive plant species in British Columbia, this work offers an alternative to the current culture of resource extraction and globalization of materials. The investigation demonstrates the temporality of our resources and their implicit ethics by proposing a material that would be advantageous to exploit, refine and deplete. This offering presents itself alongside an increase in calls towards localizing our footprints, reconnecting with our living environments, and decolonization. In order to effectively investigate the breadth of its potential, this work incorporates reflections on ecological restoration as well as material engagements.

acknowledgement

The contents and context of the following document were conceived, collected, and co-authored on the unceded ancestral territories of the Sḵwx̱wú7mesh (Squamish), Stó:lō (Stolo), Səl̓ílwətaʔ/Selilwitulh (Tsleil-Waututh) and xʷməθkʷəy̓əm (Musqueam) Nations. This work was conducted primarily by Chiara Schmitt, originally from Germany, and Christa Clay, originally from the United States. As a place-based inquiry, translatable across borders, it considers not only this particular geography—but also the pattern of our human relationships to the landscapes around the world that have impacted us—each context carrying with it a unique set of histories, language, cultural traditions, and responsibilities.

foreword

This writing acts in service of ecological restoration through design and explicates an example of how material practice can support our communities to foster more resilient and sustainable futures. The desire to reimagine our relationships to materials and place as makers and designers instigated the founding of *pl.lab*, the place-based material lab, by the co-authors of this paper. Calling the collective endeavour a *lab* established the scientific nature of exploration through process rather than working alongside certainty towards the outcome, which contrasts habitual design practices (Strauss, 2017, p.15-16). This framework embraces a culture of engaging with people through research, provoking imagination, and diversifying perspectives on material practices in ways that support our local communities. This work serves as a culmination of the process of positioning ourselves here, grappling with our local responsibilities, and the opportunities that emerged from this way of working.

> "The modern dilemma is that we find ourselves trapped between the growing cleverness of our science and technology and our seeming incapacity to act wisely." (Orr, 2004, p.29)

As designers, our actions have influence and the decisions we make have consequences—the language we use, the energy we pour into community and equity, the materials we choose. Inevitably, we design conditions.

Through studio and material practice, we prioritized this *opportunity* and *responsibility* to design conditions before we knew what would come of it. The outcomes have been fruitful, educational, and challenging. Investigating the question of how to honour our relations to place through a material practice that would be considerate of cultural and ecological integrity, as discussed in part one of this paper, led *pl.lab* to the exploration of invasive species as a resource, showcased with our personal practice in part two.

Scotch broom, one of B.C.'s most prolific and invasive plant species, is presented here as an untapped material resource of our bioregion. In light of a changing climate—socially, politically, ecologically—this research offers a way of working well suited to flexibility. As a design research tool and a methodology for making in a changing world, the prioritization of responsibility and opportunity cannot be understated. It is the only reason this research continues within the scope of this lab—and that it acts in service of the environment in which it is inextricably linked.

Restoration, by definition, describes the action of returning something to a former owner, place, or condition through holding the intention to re-establish, renew, and revive[1]. While *restoration* pursuits to recover conditions of the past, *design practice* has the ability to envision, mediate and initiate alternate conditions that allow for new realities to happen (Strauss, 2017, p. 26). Those realities ought to think into the future but connect it to the past.

[1]Definition by Oxford Languages

Creating this bridge that reconciles the unpredictable future with the imperishable marks of our ancestors on Earth requires not only science and technology but also diverse embodied knowledge. It asks for a collaborative practice that works toward a common goal, joins forces, and advocates a shared ecological ethic that puts the planet and its healing at its centre. This eco-centric worldview allows for *ecological* integrity and an ethic that respects life on Earth (Fleming et al., 2016, Chapter 16) restores its diversity while preserving and nourishing human values and culture instead of advancing their destruction. It asks for appropriate action, a shift in our predominant relation to the natural systems and decolonization of our imagination[2].

[2]Stands as a counter-theme and in reference to the article „Colonizing the imagination: Disney's wilderness lodge" in which the authors Eric Higgs and Jennifer Cypher discuss the manipulation of our perception of *nature* and *wilderness* through corporations. As a stand-point we here call for a reimagination and disentanglement of these colonial images. Cypher J., Higgs E. 1997.

Using the two terms restoration and design and further proposing that one can benefit the other is based on the belief that cross-disciplinary assets seem worthwhile to investigate. What starts with the cautious intention of restoring ecosystems and "regenerating old and new ways to bring us closer to natural processes" is understood as "the power and promise of ecological restoration."(Higgs, 2003, p.2) On the other hand, this *intentionality* is what leads the discipline of design as well. Whether designing for humans, more-than-humans, or together for the earth and its needs, designers need to be intentional about how to approach those problems to make sure they ultimately act with accountability to their true values.

Intention, no matter how focused, will not stand alone as a driving force against ecological and cultural problems of the world. Assisting a recovery of an ecosystem or establishing a behavioural shift are long-term endeavours that require perseverance. Though what unites both practices—restoration and design—is the fundamental understanding that initiation will not result in actual implementation unless the *community* is involved. "Rather than burying human agency behind a wall of ecological justifications, design acknowledges that restoration is also and always about people working with and within natural process." (Higgs, 2003, p.14) Looking at restoration as a design practice opens up the opportunity of action that goes beyond the discipline itself and asks for collaboration and community engagement on a larger and more impactful scale, believing that the ecological community will eventually form the ethical community (Sylvan et al., 1994, p.91).

Anne Whiston Spirn wrote, "The moment people come to a place, even as reverent observers, they alter what they came to experience."(Spirn, 1995, p.94) The Earth is constantly changing. We experience day and night, summer and winter, notice calm and storm, fire and flood, witness tides and shifting tectonic plates, and the increasingly irrefutable effects of climate change. As our choices will have consequences after our death, beyond our foresight, in places that we have never been to and for species that we don't know (Fleming et al., 2016, Chapter 16). It is up to us, as global citizens, to ensure these choices are in line with our *values* and our *responsibilities* not

only for our own sake, but for the sake of future generations.

Restoration and (ecological) design not only share intentionality as its driving force, community engagement as its fuel and mutual values and responsibilities as its navigation, it also shares the idea that conversation is the key to reciprocity and agency. Historical and cultural conditions of an ecosystem and place need to be considered authentically in order to act in service of Earth's greater good. "Restoration is about *restorying* place" (Higgs, 2003, p.285) and for this, stories—as of the past, present and future—need to be told and successfully received to work towards a more harmonious and resilient future on Earth.

Bridging the two disciplines, ecological restoration and design, allows the imagination of one within the other while maintaining their respective proficiencies. This cross-disciplinary approach offers the opportunity, which Eric Higgs describes as follows: "Ecological restoration as a design discipline demands attention to tradition and novelty at the same time, searching creatively across the spectrum of the arts and sciences for the best way to respect ecological and cultural integrity."(Higgs, 2003, p.279)

By respecting *cultural* and ecological integrity through the act of restoring something long-term, it is crucial to learn about the memory and history of a place to identify which conditions we want and should restore it to. While it seems as though the ultimate goal of restoration might be to redeem the mistakes of our past, it can be unsettling when one ponders the question of when exactly those mistakes began. Did they start with industrialization, colonialism, or humanity at large? If this were a way to travel back in time, where would we want to go in the landscape's chronology?

Tendencies to 'fix nature' or 'save the earth' can be precarious as it continues to portray humanity as superior once again. This misinterpretation squanders the actual intent to *assist* the planet's recovery rather than execute it on man's own terms. It is these tendencies that turn the mission of ecological restoration into something recalling coloniality—something that involves command, control and curation, revives the question of land ownership, and manifests a worldview in which men and nature are not interdependent, but separate from each other. These concerns were explicitly brought up in an ethnographic study of Anishinaabe perspectives on invasive species (Reo et al., 2018). With a worldview that sees animals and plants as belonging to nations and having their own purposes, their teachings believe that it is the human responsibility to find the reason for a species' migration, its purpose in a new place and the care it requires to thrive. As native and new species are seen as equal and one or the other eventually can become invaders, such a perspective diminishes the idea of elimination. Designers-as-restorationists risk acting from an assumption that invasive species are inherently bad if they do not consider the perspective of local land stewards. In light of ubiquitous and precarious human interventions into our environment through forestry or mining, planning the eradication of a species, even outside its 'native' boundary, raises the ethical question of interfering further in ecosystems.

Though this time, it would claim to be cautious and with good ambition. Ecological restoration follows certain nationwide guidelines[3] to rehabilitate damaged ecosystems, such as those struggling with soil erosion due to a

[3]Ecological restoration in BC works according to three guiding principles: to be effective, efficient and engaging in order to achieve successful, inclusive and habitual results. Every region sets standards.

lack of vegetation, those that lie fallow because of missing nutrients or too much or little sun exposure, or those that invasive species have invaded. The latter is the case this research aims to probe its service for. As place-specific requirements shift, these guidelines need to follow the vernacular of a given place. Therefore, "if we actively want to engage with people in local situations in which they do take ownership or create a different sense of belonging, then we have to understand that the outcome may be different than the one we had in mind."(Strauss, 2017, p.52) An ongoing mediation between a community and the particular ecology of a place feeds the nourishment of a "community self-reliance" (Fletcher et al., 2019, p.49) that embraces the uniqueness, cultural integrity, ecological responsibilities and emotional heritage inherent in localism.

The ecological consequences of globalization, such as resource scarcity, extractivism (Parks, 2021) exploitation, and climate change, raises the question of how much we value our planet. As a response, implementing the idea of "restorying" a place offers a new understanding and appreciation of locality. This methodology identifies the possibilities and offers of our immediate bioregion to meet the significant need for carbon-neutral or negative materials and sustainable living through the cultivation of new engagements with materiality.

We propose a restoration-driven material practice that acts as a means to actively immerse participants in the ethical discussion of human interference in ecosystems and offer proximity as an opportune context from which to start.

Our research with the invasive plant species *Scotch broom* is a prototype of a material practice in design that contributes to ecological restoration. This collaboration aims to invite other practitioners to explore further opportunities beyond this specific cross-disciplinary venture. While consciously operating in between practical and theoretical applications, this research-creation seeks to serve as a model for alternative material practice. "In the art of inquiry, the conduct of thought goes along with, and continually answers to, the fluxes and flows of the materials with which we work" (Ingold, 2013, p.6)

Strauss' *slow encounter* coupled with Ingold's *act of inquiry* support an intentionally decelerated process within a design paradigm. It is from this methodology, paired with our commitment to locality and community, that this research emerged. In order to imagine a material-based practice that is environmentally, socially, economically, and culturally considerate, this work took its time. Implementing slower, open-ended ways of working that leave room for dead-ends and redirection is what allowed the progression of the collaboration to ebb and flow to where it is today. In this patient approach, we began by learning the histories of the landscape, along with identification and research of the material in its raw, organic form, followed by understanding the implications of its expanding presence to identify and prototype potential opportunities for it after its removal. In practice, the emphasis was not confined to any specific outcome, but rather that the process be saturated with a comprehensive contextual awareness in order to establish a new system for material ethics and responsibility within design practice.

The removal of Scotch broom acts not only in the service of our natural environments, but additionally as a physical expression of decolonization. The action of removal, a tool of ecological restoration, coupled with the utilization of this untapped material resource, offers a unique and provocative inquiry. Scotch broom is an opportunistic invasive plant species found throughout the coastal areas of the Pacific Northwest of North America. It is prolific both in its physical presence, particularly when in bright yellow spring bloom, but also as an area of concern amongst ecologists. Broom is an early colonizer, a designation appropriate both for its ecological function and cultural history of introduction and propagation due to its capacity to infiltrate recently cleared and disturbed sites. Mature plants as young as five years old can produce eighteen thousand to 31,500 hundred seeds annually (Lee, 2010, p.50). Once established, broom colonies are adept at displacing native plant species, altering soil chemistry, as well as causing fire hazards in an increasingly unpredictable climate (Caldwell, 2006, p.1). Scotch broom is on record to have been brought to British Columbia, where this research resides, in the mid-19th century. Though its precise carrier and intention is still debated, it was, and still is to many, well known as a beloved ornamental plant by Scottish colonists as it was a reminder of their home landscapes of Great Britain (Lee, 2010, p.47). For others, it is an example of so-called "ecological imperialism"[4].

As this paper is written, Scotch broom is considered one of the most invasive plant species in British Columbia and is pervasively removed and destroyed en masse to prevent the uprooted plants from reseeding. The plants are so established in this climate that few consider eradication a possibility, not unlike the case with Himalayan Blackberry[5], and instead

[4]Alfred Crosby coined the term ecological imperialism as means to describe the way European settlers have successfully colonized other regions by purposely and incidentally introducing animals, plants and diseases which led to dreadful shifts in ecology and to population collapses in the endemic peoples.

[5]"Himalayan blackberry was first introduced to BC as a berry crop. This plant can grow almost anywhere. It spreads by seed (from birds and people spreading berries) and by rooting from stems that touch the ground. As a result, it is one of the most widespread invasive plants in Metro Vancouver."

focus on management of the spread. As broom diminishes biodiversity in our local ecosystems and is easily identifiable all over British Columbia, it draws the attention of a range of concerned parties. From casual naturalists to organizations committed to ecological and habitat restoration, it is an easy target—and an even easier enemy to rally behind. Nevertheless, we must carefully consider broom's potential gifts and engage our mutual responsibility as Anishnaabe land stewards understand it (Reo et al., 2018). As the negative impact of Scotch broom on this landscape is widely accepted amongst local ecological restorationists, investing time into researching its properties and application is valuable and necessary work.

We approached Scotch broom with the intention of prototyping its usefulness as a resource, which meant trialling it out with the tools and methods at our disposal. With little to no literature confirming contemporary use of broom as a material resource, we started the research by looking into the plant's history and reaching out to local community members[6]. This is how we came to find research introducing us to its traditional use and processing in Southern Italy. Before the industrialization of textiles made the processing of cellulose-based folk fibres nearly obsolete, coarse fabric was woven from the fibres of *Ginestra* (broom). Inspired and reinforced by this bygone practice, pl.lab's investigations on material properties of Scotch broom have primarily been focused on leveraging its high fibre content and expanding its applications. Our first experience of harvesting and processing broom was replicating this traditional process. The raw material was sorted, bundled, boiled in soda ash, soaked, crushed, resorted, carded, spun, finally resulting in a short yet confirming bit of rope.

[6]Sharon Kallis of the EarthHand Gleaners Society

[7]Harvested from underneath the south end of the Burrard Bridge in Vancouver, BC.

Engaging with the plant in this first exploration familiarized us with its potential practical applications. Our next step was to apply another traditional craft, cedar-paper making, to Scotch broom by stripping, processing and pounding the bark and primary fibre stalk. The lab's most recent endeavour is developing a concrete-like material composed of broom fibre and calcium carbonate (CCaO3)[8]. This mineral is primarily known as lime, commercially derived from limestone, while it is also accessible in seashells. With the principle to research our bioregion's (various) untapped material resources, this composite material was successfully trialled with locally foraged oyster shells.

[8]Opportunities to responsibly source oyster shells for CCaO3 have been illuminated through conversations with Marnie Bowman, a material designer from Fanny Bay on Vancouver Island, BC. Her access to shells as a byproduct of the region's extensive oyster farming operations has brought to light the massive amount of shells cast aside, accumulating more each season.

Each investigation has brought to light properties of Scotch broom that reinforce our initial hypothesis of its potential to become a resource of considerable usefulness should it be integrated into our resource economy. Furthermore, it has exemplified a rare opportunity to establish a local material resource that it would be advantageous to run out of.

Moving into the future, where the only constant will continue to be change, adaptable material practices must be in place. Creative solutions to unimaginable quandaries will mould our futures as sustainable practices continue in popularity among progressive design and art institutions, studios, and enterprises. Bio-material designers are making headlines with increasingly inspiring and innovative projects. Still, the answers to scalability of these conceptual presentations are not yet exhaustive enough to stand up to the market as alternative solutions to conventional materials.

Through the logistical challenges of working in an area of research with little precedent research to build off of, we have practiced what we sought to do. In practice, developing a material or processing method for an invasive plant species as a means of exhausting it from our ecosystem is flawed as a business model. If we were to run out of broom by 'creating a material that we want to exploit, refine and deplete', our poignant, evocative tagline, then what would we do?

We move on. We must. This proposed circumstance is not unlike what we are experiencing now as a global community. The rapid depletion of finite resources will force us into these quandaries as we continue to use them faster than we can replenish. With this in mind, we stress the value of working slowly, and from the ground up—always keeping the implications of our designs, especially regarding material choice, as the first step.

This all comes back to the notion that this work is not about developing a marketable material, something that we can easily source, process, produce, and profit from, but instead opening up the potentials of this widely available material to the public. Transcending from the commercialized practice of design to focus on product development, as this venture lives through process. While reflecting on the ethical conflict to allow interfering into ecological systems again, we stand by the goal to run out of Scotch broom. As climate change proceeds, this plant species will thrive more than before and, without further management, remain increasingly abundant, absolutely free, and of service to the community to remove. As the lab continues this research along with other ongoing collaborative projects, it will continue to start where this one did—slowly—and with fellow community members right there at the table alongside it.

This way of working was central to Jean Chisholm and Laura Kozak's work regarding *Place-Based Responsibility* at Emily Carr University of Art & Design. It was this foundation that supported the research within the place-based material lab, short *pl.lab*, and provided invaluable cultural framing and context. The cohort that adapted to this ideology, the Place-Based Grad Collective, sought to prioritize place and land as primary stakeholders in research through design practice. It presumed an opportunity and responsibility that we have as influencers of culture, habits, and the future. The work within pl.lab was continued and supported by the 2021 Satellite Residency through the Shumka Centre for Entrepreneurship furthering the lab's network and visibility to the public.

In practice, this work would have been impossible without interdisciplinarity as a founding principle. These investigations included outreach to the Invasive Species Council of British Columbia (ISCBC), meeting with the BioProducts Institute at the University of British Columbia (BPI), and material designer Marni Bowman, to name a few. This work can only influence the regional resource and material culture if it incorporates as many sectors as it affects and is widely available for the community to locate and access. As the research and development of this investigation continues, we get closer to developing reliable methods and instructions suitable for open-source distribution.

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Christa Clay
Christa Clay is a maker, designer, and researcher based out of Vancouver, BC, where she is currently pursuing a Masters in Design at Emily Carr University. Her practice is place-based, incorporating local material research as well as ethics and protocols around material harvest and process. The center of her research focuses on how material agency can strengthen our capacity to support circular economic models in urban communities. During her studies, Christa has worked as a farmer and gardener when she is not honing her woodworking and ceramics practice. She is originally from Austin, Texas, but has lived in B.C since 2018.

pl.lab
The place-based material lab, short pl.lab, is a research and design lab with a mission to understand material ethics and responsibility from the land and places on which we work, live, and play. The collaborative approach of this project allows us to work with students, faculty, and external co-creators with the collective goal to create a meshwork of data through resources, experiences, contacts and protocols. Through this work we hope to build a foundation from which to share and offer knowledge and open up conversation on place-based and responsible material practices.
www.pllab.ca/

Thank you.