

Traditional Ecological Knowledge and Sustainability In Cities.

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Abstract

This thesis is an exploration and analysis of the most efficient and appropriate ways policy makers, planners, and individuals can tap into the knowledge held by indigenous peoples around the world in order to improve urban environments to make them more sustainable and resilient to the effects of the climate crisis. Now more than ever, it is crucial to contextualize all human behaviors and practices with our history as a species. One of the best ways of doing this is lifting the voices of historically marginalized and silenced groups. By incorporating knowledge and wisdom that has been traditionally ignored into all individual and societal practices, the boundaries between the “natural” and “human” worlds can be redefined. By examining the potential that the wealth of knowledge held within indigenous cosmologies, traditions, and practices has in regard to improving urban sustainability, a number of possibilities for integrating indigenous traditional ecological knowledge (TEK) into the modern sustainability movement are assessed.

Introduction

How do we reconcile our extractionist and materialistic culture with what the current moment is calling for: rapid and dramatic change away from fossil fueled racial capitalism. Redefining sustainability by making it more precise: “If “crisis” is defined as the inability of a system to reproduce itself, then sustainability is the opposite: the long-term ability of a system to reproduce.” (Campbell, p. 227) How can we care for humanity’s survival and care for all other living things at the same time? That is the challenge that climate change reminds us of,

reminding us of the Original Instructions (Kimmerer), the cues and lessons given to us by the natural world that are meant to guide our interactions. Important to acknowledge how oppression (genocide, displacement, marginalization) of indigenous people has contributed to climate change and other greater social problems. Do we even have a right to ask them for help?

Terminology

The term “Indigenous peoples” will be used throughout for a number of reasons. “Indigenous” will be used, rather than “Indian,” “native,” or “first peoples,” when referring to the collective of diverse people throughout the globe that self-identify as distinct groups characterized by a historical connection to territories and surrounding natural environments prior to colonial settler societies. These non-dominant groups of society have distinct social, economic, and political systems that culminate in a resolve to maintain and reproduce their ancestral environments and traditions as distinctive peoples and communities. “Peoples” will be used intentionally to promote the rights of these distinct non-dominant groups to autonomy, self-governance, and treatment with respect and dignity by nation-state governments in their collective capacity as dictated by international law (Tsosie, 2014). When making reference to a specific, distinct group of indigenous peoples, the self-identified preferred term of that group will be utilized in order to honor and recognize the uniqueness of the core-structures and world-views that are distinct for each group and location (Russell-Mundine, 2012).

Who Am I to be Talking About This?

“As a non-Indigenous researcher, I am wary of commenting on issues that are perhaps best discussed and decided on by Indigenous people.” (Russell-Mundine, 2012)

My aim as a non-Indigenous researcher is to intentionally contribute to the decolonizing and reframing of research into sustainability practices by thoughtfully enacting the practice of reflexivity in my work in a respectful manner. It is not enough to just be aware of my position within the dominant western framework that has led us to this catastrophic point, I must continuously and rigorously interrogate and work to dismantle the systems of the dominant Western culture. Through reflexivity practice I will “recognise and interrogate [my] role in ‘exercising power and the choices [I] make to privilege some knowledge and discard others’” (Russell-Mundine, Nakata, 2007, p. 187) by exploring my “assumptions, biases, and value

judgements” (Russell-Mundine, 2012, p. 3). Rather than casting Indigenous peoples as “objects to be studied” as the majority of researchers have done in the past and continue to do today, I hope through this work to dismantle the white supremacy that exists internalized in my own being and decolonise current sustainability thoughts and practices by centering Indigenous traditional ecological knowledge (TEK). If we are able to break from the status quo that views Western scientific thought as the only valid and useful form of information, we will not only find more solutions to our environmental, climate, and social problems, but also begin the process of undoing and healing the “marginalisation and disempowerment suffered by Indigenous peoples since colonisation” (Russell Mundine, 2012). The lesson to be learned through implementing this reflexivity practice is the dire need to center Indigenous people in sustainability studies and policy rather than relegating them to the periphery. It is essential that the sustainability community works proactively to decolonize our tactics and methodology when it comes to implementing sustainable practices. Indigenous peoples face outsized and varied risks when it comes to climate change and environmental degradation, as they are on the front lines of activism and experience the most brutal consequences before anyone else. However, these realities do not mean that Indigenous peoples are in need of ‘saving’ from ‘developed’ countries, governments, or people. In fact, the nature of Indigenous cultures, ancient and grounded in tradition centered around their land and environments, makes them more resilient and primed to lead thought and activist movements to combat climate change. For the majority of Indigenous peoples, ‘sustainability’ is not a new and shiny term used for virtue signaling and green-washing, it is the foundational concept of their way of life, rather it is “the result of conscious and intentional strategies designed to secure a balance between human beings and the natural world and to preserve that balance for the benefit of future generations” (Tsosie, 2014). We, as colonists or direct beneficiaries of colonialism, not only owe it to Indigenous peoples to center their voices and practices, we need to if we want to survive and leave a world at all similar to the one we live in now for the generations to come.

What We've Done Wrong

Currently, and since the 1890s, cities have been the nexus of environmental problems. Through urbanization, the demand for extraction of natural resources increases, and the traditional standards for the urban built environment result in pollution and ecosystem disruption. Urbanization creates distinct and unique environmental problems; biodiversity loss, heat islands, ozone holes, desertification, water pollution, and more, all culminating in climate change. By relying so heavily on fossil fuels to power our economic growth and development, we have altered our planet so thoroughly that the consequences of climate change may make human life and society unrecognizable over the next century.

How did we get to this point of impending calamity? How is it that we became so disconnected from the innate balance of ecosystems we once were ruled by? It would be easy to blame one political system or another, blame one specific invention, like the steam powered engine or synthetic fertilizers, but the core issue runs deeper than that. By recognizing that our disconnection is more of a spiritual one than a physical one, we can start to understand how we have arrived at this seemingly point of no return, and start to heal our relationship with consumption and desire for infinite growth. Capitalism, as an economic system, thrives on the idea that one is unfulfilled, and conversely, “recognizing abundance rather than scarcity undermines an economy that thrives by creating unmet desires” (Kimmerer, p. 111). At this point, “overconsumption threatens every dimension of our well-being.” (Kimmerer, p. 195), but the answer is not to live with nothing, or to not interact with nature or its natural resources at all. Instead we must ask ourselves what the consequences are when we treat everything like a commodity, “how do we consume in a way that does justice to the lives that we take?... the need to resolve the inescapable tension between honoring life around us and taking it in order to live is part of being human” (Kimmerer, p. 177). We have gotten to a point of chronic and severe imbalance, where we manufacture unmet desires as an excuse to take beyond the natural limits of what the world and its ecosystems provide. Nowhere is this imbalance more pronounced than in a city, especially our larger than ever globalized cities. They draw resources from around the world, transcending numerous scales to enable the extraction necessary to collect everything the city and its inhabitants require for a life made meaningful through consumption. Our current socio-environmental condition is “the result of the specific subtypes of urban systems humankind has developed,” to handle the processes required to transform resources from nature into

commodities that fuel our economic growth, it is true that, “urbanization is inevitably going to alter the biosphere—But it need not be as damaging as it is now” (Sassen, 2012). For centuries now, our relationship with the environment has been one of conflict, capitalism and extractionism competing for the ability to take resources without regulation pitted against the environmentalists who argue for conservation, preservation, and planning and implementation defined by sustainability (Campbell, p. 215). A lack of reciprocity practices has resulted in human activities disrupting the biosphere’s natural cycles, “in nearly all economic sectors, from urban to rural. The cities, however, are where it takes on its most complex interactions and cumulative effects. This situation makes cities a source of most of the environmental damage and some of the most intractable conditions feeding the damage” (Sassen, 2012). Western societies’ propensity for racism and history of colonialism and imperialism laid the groundwork for this unsustainable relationship we now have with nature. The ways in which “coloniality works against life and the heterogeneity that life depends upon – including war, genocide, epistemicide, the continued attacks waged against nature, and the commodification and patenting of life (as in water or seeds)...” are embedded in all of the systems that make up human society around the world, “coloniality, in turn, is a specific connectedness between racism, capitalism and patriarchy generated through the processes of domination that became globalised in the wake of colonialism and remain intact today” (Tom, M.N., 2019).

Human vs. Nature

For centuries now, Western culture and society has been chronically disconnected from nature and the ecosystems humans participate in. This lack of regard for balance and our role amongst other species has led to the popularization of a social construction of nature that places humans in a parasitic relationship where we can take whatever we need or want from the world around us without giving anything in return. Before industrialization, this kind of behavior may have been limited to certain geographic areas and the potential for widespread or severe damage was limited. Now, human-environment interactions rarely occur in a closed system. The scales at which predominantly people from Western cultures, but now increasingly from post-colonial societies as well, have expanded so greatly that in most instances we cannot understand how our behavior connects to the so-called ‘natural world’ when in reality everything humans do is part of nature. Western society constructed nature as ‘wilderness,’ a frighteningly unknowable and

nebulous thing. The legacy of this mindset can be seen in all Western cultures around the world, and in the societies that had said culture imposed on them through colonization or imperialism. By positioning humans as above all natural systems in an endless battle against the wilderness to see which could establish dominance and control over the other, we have, “allowed ourselves to be cut off from that love of, and from, the land.” (Kimmerer, p. 126). Humans and the environment are one system, there can be no division between human and animal, because we are animals, nor division between human actions and natural processes, because we are part of nature. The issue is not what humans do, or even how we do these things, it is a question of balance and understanding, of misunderstanding, “the work of being human is finding balance.” (Kimmerer, p. 146). We have the power to emerge from this toxic mindset, “we are all the product of our worldviews -- even scientists who claim pure objectivity. Their predictions... were consistent with their Western science worldview, which sets human beings outside of ‘nature’ and judges their interactions with other species as largely negative... human beings are part of the system, a vital part” (Kimmerer, p. 163). At its core, what makes a culture or group of people Indigenous is that Indigenous worldviews never fell prey to the pride that compels someone to see humans as above the natural order. Indigenous cultures never lost the capacity to converse with the world around them, be it through their cosmologies or connection to ancestral lands. It is critical that we understand, we being humans around the world of all cultures, races, ethnicities, and socioeconomic status, that while we perhaps cannot completely eliminate the toxic Western worldview from our persons, we can start to heal it. We must begin living and interacting with the world from the point of view that humans and the environment are one. If we do not, we will remain entrenched in the toxic systems of exploitation and destruction brought about by hubris and ignorance.

Gender and Patriarchy

Another element of injustice that is essential to recognize when it comes to environmental destruction and marginalization of Indigenous peoples is the way the patriarchy influences our view of nature and TEK. Gender as a social construct plays a significant role in how we see the world and participate in it as individuals. Since the hunter-gatherer era of humanity, division of labor has been determined by sex, and then later by gender. As a result of this, women have had more contact with ecological systems related to plants and the human reproductive cycle, since

they traditionally fulfilled the function of gatherer in early societies. It is for this reason that throughout cosmology and mythology systems the world over, the Earth, nature, and other natural processes such as the coming of spring or harvest are represented by women, or feminized figures and characters. In cultures where women have been systematically oppressed and marginalized by men via patriarchal practices, especially in Western culture and society, this feminization of nature has been twisted into an excuse to fuel the domination of nature and ecosystems for mankind's benefit. Fragile masculinity is threatened by nature in the same way it is threatened by femininity. If nature and femininity are viewed as amorphous and unknowable to men, toxic masculinity's reaction is to oppress and deny agency in order to maintain the status quo of man above all else. The solution to this pernicious relationship between masculinity and nature, men and women, is ecofeminism, a movement defined by its goal to eradicate, "androcentric institutions, values, and ideology" to heal the, "relations between the human and nonhuman worlds" (Brulle, p. 9). Women, especially Indigenous women, hold within them vast knowledge of ecosystems and the natural world, and we must embrace this capacity for patience and wisdom through femininity as inherently good, rather than threatening, to emerge from the hierarchical model of patriarchy. We cannot do environmental justice without taking into account all of the other inequalities entwined throughout human society, "to classify contemporary battles over environmental racism, pollution-producing jobs, growth control, etc., as simply clashes between economic growth and environmental protection misses the third issue, of social Justice" (Campbell, p. 216). Embracing and decriminalizing femininity not only increases our capacity for integrating TEK into sustainable practices, it allows us to begin to heal all forms of injustice, "if we all spoke for that elusive justice, it might be within our reach." (Kimmerer, p. 106).

Covid-19

The inequalities Indigenous peoples face have only been exacerbated by the covid-19 pandemic; contributing to violations of Indigenous peoples' rights to land and territories via the encroachment of their traditional territories during lock down, increasing local conflicts due to security forces misusing lockdown rules to oppress and crackdown on Indigenous rights defenders, and these human rights violations have made Indigenous people more vulnerable to the pandemic. (IFAD, 2020). Human activities that entail the destruction of nature like

deforestation and commercial wildlife trade heighten the risk of zoonotic diseases that can potentially cause pandemics, like what has happened with covid-19 (Nuwer, 2020). Traditional knowledge, practices, and land management can lessen climate change and biodiversity loss along with reducing the risk of future pandemics, all while protecting Indigenous peoples' ways of life, livelihoods, and preventing rapid landscape transformations (Nuwer, 2020). On the other hand, the pandemic has put a spotlight on Indigenous peoples' capacity for resilience and adaptation through the use of traditional knowledge and practices to find solutions for the challenges presented by covid-19. Traditional practices of solidarity, emphasized throughout the pandemic, demonstrate the reciprocity and mutualism with which Indigenous peoples safeguard and strengthen their livelihoods and traditional ways of life, like increasing food security at a community-wide scale and implementing culturally specific health guidelines. (IFAD, 2020).

What We Have to Learn

When it comes to tackling the goal of reframing sustainability thoughts and practices to be more inclusive of Indigenous traditional knowledge systems, it is critical that this work involves actual Indigenous people from the place the work is being done. “Indigenous traditional knowledge systems’ are complex and diverse,” (Tsosie, 2014) and they cannot be reduced down to the simple, easily digestible solutions that racial capitalism prefers while maintaining their integrity, and it would be unethical to try and do so. It is essential to recognize that while these knowledge systems are “holistic in nature” and share a universal undercurrent characterized by an “ethics of place,” they, “can only be appropriately governed and maintained by each Indigenous group” (Tsosie, 2014). The crux of the challenge presented by the need to further incorporate Indigenous traditional knowledge systems into what the West, or ‘developed’ society, considers mainstream is that an “interchange must proceed from a platform of respect and mutual engagement,” and Indigenous knowledge “should not be ‘mined’ for only those bits of information that are perceived to benefit the entire world. This would be exploitative and represent yet another attempt to ‘appropriate’ from Indigenous peoples for the benefit of others, this time focusing on ‘intangible’ cultural resources, rather than Indigenous lands, cultural patrimony or natural resources” (Tsosie, 2014). Society at large is in dire need of this kind of intercultural sharing, since it is painfully obvious for marginalized and disenfranchised people around the globe that our current systems are not working, we must take up every opportunity we

can to reinvent our vision for a desirable future and discover the vast potential of a redesigned relationship between people and planet through radical imagination.

Myths and Storytelling

The knowledge held within Indigenous cosmologies and myths, that Western science and culture have long dismissed as at best, silly and childish, and at worst, senseless and savage, is a fountain of ecological knowledge useful to humanity at large now more than ever. Eidinow (2016) describes myths, “as both phenomenon and process” that are essential when it comes to creating, “a framework for not only capturing ecological wisdom within its specialist domains, but also materializing and transmitting it as actionable knowledge beyond the boundaries of those domains” (p. 48). Myths help train us to be able to quickly identify what is right in any particular context, “any community seeking to develop ecological wisdom must encompass Indigenous information, as well as the knowledge and expertise of scholars and practitioners” (Eidinow, p. 51). Ways of thinking are built into myths, Indigenous myths instill responsibility, the value of teaching and this, “‘storywork’: experiential narratives that constitute epistemic, theoretical, pedagogical and empirical lenses through which relationships with and between people and the natural world can be understood” (Tom, M.N., 2019) has always been the central piece absent from Western ways of being that results in unsustainable practices and disconnection from nature.

It is important to keep in mind that these myths that we now hope to treat as unique sources of information to fuel our development when it comes to our interactions with the environment have been irreparably damaged by Western involvement through centuries of colonialism and genocide. Western involvement causes disconnection from the information stored in myths, it makes situations less favorable for the local people, excluding them from ecosystem functions relying on “the construction of local people as both ignorant and immigrant” (Eidinow, p.1). “The arrogance of English is that the only way to be animate, to be worthy of respect and moral concern, is to be a human” (Kimmerer, p. 57). It goes beyond irony that around the world, through colonialism, “Indigenous children were prevented from learning their ancestral language and often suffered physical and psychological abuse” (Tom, M.N., 2019) and now the beneficiaries of that colonialism must turn to the very cultures they tried to destroy for salvation. We, as Westerners and the beneficiaries of Western economic expansion, are lucky

that the most important lessons Western culture has to learn from Indigenous cosmologies and thought practices are the practical applications of forgiveness, accountability, and reciprocity. Since, “the knowledge and knowledge systems of Indigenous communities are crucial resources for supporting global cultural and biological diversity, as well as for maintaining resilience in confronting complex socio-ecological challenges” (Eidinow, p. 50) we must find a way to bridge the gap between Western and Indigenous, and this can only be done through restoring and healing the systemic damage done to Indigenous communities around the world, rather than through further commoditization and appropriation.

Reciprocity and the Law of Return

In a brilliant book verging on poetry, *Braiding Sweetgrass*, author Robin Wall Kimmerer, ecologist and member of the Citizen Potawatomi Nation, weaves an astonishing portrait of the good that can come from Western and Indigenous knowledges coming together. Grounded in the analogy of the Indigenous practice of braiding sweetgrass, a plant sacred to many nations in what is now the Americas, Kimmerer provides a path forward for reconciliation and reparations between Indigenous peoples and the Western societies and governments that have oppressed them for centuries, and between people and the planet. Through reciprocity and abiding by the law of return, we can restore our connection to each other, to other species, and to the environment and Earth as a whole. The law of return is defined by the principle that for whatever you take, be it from the Earth, another person, and so on, you should give something in return, “a harvest is made honorable by what you give in return for what you take... when it sustains the giver as well as the taker” (Kimmerer, pg. 194). This ‘law’ is not enforced in the way we would recognize from the perspective of Western legal systems built on punishment and blame. However, we can see the consequences that have come from the dominant societies of the world disregarding this principle; the collapse of ecosystems around the world, massive loss of biodiversity, global warming and climate change, the list goes on. The beauty of this ‘law’ is that it does not demand that what you give in return be a payment of equal or greater value, like capitalism does. To practice the law of return you must connect with what you take from on a spiritual level, give whatever gift feels appropriate freely. Reciprocity is the practice and principle that comes from recognizing the importance of the law of return and implementing it in one’s daily life and interactions. The act of braiding sweetgrass is demonstrative of the good that

can come from relying on others and building productive relationships, no one can braid sweetgrass on their own, you must “have someone else hold the end so that you pull gently against each other... reciprocity between you... the holder as vital as the braider” (Kimmerer, p. ix). This ritual, grounded in respect and mutual understanding, helps illuminate the kinds of relationships we should be fostering between people and between people and the environment. This lesson is found over and over again in Indigenous cosmologies, especially creation stories, “it was through her actions of reciprocity, the give and take with the land, that the original immigrant became Indigenous... becoming Indigenous to a place means... to take care of the land as if our lives, both material and spiritual, depended on it” (Kimmerer, p. 9). Throughout the stories about ecology, motherhood, economics, and more, that make up the book, Kimmerer teaches how, “reciprocity is an investment in abundance...” (pg. 200) and that “balance is not a passive resting place -- it takes work, balancing the giving and the taking... Our lives became entwined in ways both material and spiritual” (Kimmerer, p. 94, 95). This conception of what it means to form and maintain healthy, productive, and mutually beneficial relationships may at first be easy to dismiss as whimsical and unrealistic, but if you give yourself the opportunity to think critically about what this would mean if most of the world came to live by these values, it is not hard to see the marvelous potential held in this worldview. Currently, at large humans have very little regard for balance, evident through our destruction of nature and exploitation of people around the world. Through living by the law of return and reciprocity practices, we can establish our role as a human species not at the top of a pyramid, our destiny to dominate all other creatures to help ourselves, but return to the, “recognition that our lives depend on one another, human needs being only one row in the basket that must hold us all” (Kimmerer, p. 153). Our hubris and greed have led us to the edge of a cliff, impending and unpredictable climate and ecological disaster. Reciprocity practice helps us imagine a way out of this mess that doesn't require new science fiction-like technologies, the sacrificing of social justice, or burning everything down and starting over again. By connecting materially and spiritually to the world around us, the earth and the environments and ecosystems that comprise it, we can aspire to achieve symbiosis rather than parasitism. Indigenous TEK can get us back in touch with the messages the environment sends us all the time to remind us of the natural balance, the proper ebb and flow, that should characterize human-environment relations, “reciprocity helps resolve the moral tension of taking a life by giving in return something of value that sustains the ones

who sustain us” (Kimmerer, pg. 190). There is a difference between disregarding the means to reach an end, and recognizing that some things may have negative consequences in order to reach a greater goal. The nuance here is incredibly complicated, there is a lot of room for error and miscalculation, and the distinction can only be truly made by practicing thoughtfulness and critical thinking. It would be a mistake to view reciprocity, or Indigenous TEK as a whole, as an easy or quick fix to the impending anthropogenic disasters. Merging these principles and ethics with Western, and other non-dominant, mindsets will be a long process requiring a lot of emotional and intellectual inputs, “paying attention is a form of reciprocity with the living world, receiving the gifts with open eyes and open heart” (Kimmerer, pg. 222). We must always be including a multitude of perspectives into all forms of planning and decision making to truly understand the implications of all of the consequences the work creates, positive and negative. “Political action, civic engagement -- these are powerful acts of reciprocity with the land” (Kimmerer, pg. 174), and we can never hope to achieve a world characterized by harmony, balance, and love without taking action to dismantle the systems currently in place.

Gift economy

One of the easy ways to start incorporating and practicing reciprocity into daily life is choosing to opt out of capitalism as often as possible, “but even in a market economy, can we behave ‘as if’ the living world were a gift?...Refusal to participate is a moral choice” (Kimmerer, p. 31). Through gift giving, and similar anti-capitalist economic activities such as buying second hand, giving things away, and pay-what-you-can or sliding scale models, we can distance ourselves from the toxic ideas capitalism instigates to fuel its perpetuation. Via the formation of what Kimmerer refers to as a gift economy, we begin to unlearn the Western capitalist idea that money, objects, or even status will fulfill us, and rather we can begin to recognize that “the essence of the gift is that it creates a set of relationships. The currency of a gift economy is, at its root, reciprocity” (Kimmerer, p. 28). Reminding ourselves that everything we participate in is a social construct, the result of our worldview and the dominant worldview we live in or under, allows us to take agency of our choices and ground subversive behavior in concepts that further the common goal of making the world a better place for all people. Through a gift economy, gratitude becomes the dominant form of payment, and therefore becomes the grounding rod for the culture or group of people in question. Living with gratitude as a cultural priority is

unfortunately an unfamiliar concept for many in the Western world view. For many Indigenous peoples and nations, this is the standard, a socio-environmental contract known by many as the Bill of Responsibilities, which guides and instills people to live and practice all of the principles that make up reciprocity practices or a gift economy, “respect one another, support one another, bring your gift to the world and receive the fits of others, and there will be enough for all” (Kimmerer, p. 132). By valuing the integrity of this relationship equally regardless of who it is between, person to person, person to nature, “gifts from the earth or from each other establish a particular relationship, an obligation of sorts to give, to receive, and to reciprocate” (Kimmerer, p. 25). It is through gratitude that we are able to learn to “distinguish between that which is given by the earth and that which is not” (Kimmerer, pg. 185) and how to respect the rightful boundaries of the environment, and any relationship. Those who embody these principles through their worldview and cultural practices live in a way that prioritizes reciprocity and balance in a way that Western worldviews have neglected for centuries now. We cannot solve any of the intersecting crises humanity and the planet are facing divided, we need strong and healthy relationships and networks, we cannot hope to heal our relationship with nature without healing our human relationships first.

Connection to nature and biomimicry

Since we have spent the past few centuries critically disrupting the balance of natural systems and relationships, we have a responsibility to work to remediate the damage we have caused. By beginning to intentionally, “rethink the idea and to see the appreciation of nature as an historically evolved sensibility” we can start to recognize the fact that the, “choice between an anthropocentric and an ecocentric worldview is a false one. We are all unavoidably anthropocentric; the question is which anthropomorphic values and priorities we will apply to the natural and the social world around us” (Campbell, p. 221-222). It is not in question that the existence of humans on Earth is less than a blip on the radar for the timeline of the planet, “humans have the least experience with how to live and thus the most to learn -- we must look to our teachers among the other species for guidance” (Kimmerer, p. 9). If we were all to magically disappear tomorrow, the environment would likely start to restore on its own and other species would fill our niche. However, the restoration that would occur in our absence, or similarly if we do not intentionally seek to reverse the damage we have caused, may not necessarily be to our

liking. Learning from other species, especially ones that have been ignored and undervalued, has immense potential when it comes to the betterment of our planet, both for the health of the natural environment and ecosystems and human society. Humans have always learned from their environment, the issue in many cases, especially throughout Western culture and society, is that we have forgotten to listen for and heed the lessons so graciously shared with us by other species and other Earth systems. The majority, if not all, of the damage we have caused to the planet was done by twisting the lessons we have learned from them: turning the art of agriculture into an impersonal and industrialized machine, or inserting species into ecosystems where they don't belong leading to invasives. If we hope to restore the balance and regenerate the damage we have done, we must do so with the utmost caution or else risk winding up in the same place we started or just making things worse. Indigenous peoples have always been, "attentive students and borrowed solutions from the plants" (Kimmerer, p. 229) without exploiting natural systems in the way that has generated the unintended consequences we are dealing with today, "but if people do not feel 'indigenous,' can they enter into the deep reciprocity that renews the world?" (Kimmerer, p. 213). If we want to ensure that future generations will have the chance at attaining a higher quality of life than the situation we currently face, people, communities, and governments around the world must remember how to learn from nature again.

Indigenous Involvement in Urban Sustainability

Cities are the perfect place to start reimagining the kind of world we want to live in and strive for. The trend towards urbanization around the world is only increasing, cities are where most people live and where most people are going to live for the predictable future. Cities are also some of the most vulnerable places to the consequences of climate change and other environmental issues. The globalized nature of cities means they are inextricably connected to ecologies around the world, currently this interaction is entirely negative and damaging, but if we can reverse the nature of these relationships, cities can have an outsized impact on environmental sustainability. If we can radically shift the way cities interplay with other environmental systems, we can transform their impact to be positive and regenerative rather than the origin of extractionist environmental harm. As a result of the fact that cities usually have to face the world's crises and challenges before governments and countries make political action to address them, we can more realistically start implementing the rapid and far reaching change within the

timescale required to prevent a climate catastrophe than on a national or global scale. “City life depends on massive infrastructures (electricity for elevators and abundant public transport) and institutional support (e.g., hospitals, water purifying plants) apartment buildings, hospitals, vast sewage systems, vast underground transport systems, entire electric grids dependent on computerized management that are vulnerable to breakdown... We already know that a rise in water levels will flood some of the densest areas in the world. When these realities hit cities, they will hit hard and preparedness will be critical.” (Sassen, 2009) By restructuring cities and the planning process, we can transform the historical impact of cities as places that produce environmental damage to instead, “produce positive outcomes that allow cities to contribute to environmental sustainability” (Sassen, 2010). In order to actually take action on this goal and address the issues at the core of environmental damage, we need to, “understand the ecology of cities as we do nature’s ecologies, so cities can be transformed and provide a needed, positive response to the global environmental crisis” (Sassen, 2010), and this is where Indigenous TEK comes into play. It is essential that we heed the instructions contained within place-based Indigenous knowledge and scale it up to further understand our current condition and how to emerge from the toxic cycles society is currently fueled by. Indigenous cultures are not static, they are not long dead, ancient civilizations, they are not vulnerable to modernity, so it is wrong to relegate them only to what colonizer culture would deem ‘pristine wilderness,’ land that has been developed still falls within the ancestral lands of Indigenous groups and therefore, indigenous peoples should have a say in decision and policy making.

Status of Indigenous Urban Dwellers

Deconstructing the Western caricature of Indigenous people allows us to begin, “challenging our collective representation of what being Indigenous means,” (Ijjaz-Vasquez, 2017) which is especially important when thinking about the application of indigenous knowledge and thought systems in an urban setting. Around the world a significant portion of Indigenous people are already living in cities, about half in Latin America. The impacts of environmental degradation, climate change, and systemic violence are pushing Indigenous peoples out of their ancestral lands and pulling them to cities for hope of a better life. However, since “their traditional knowledge and skills have less value in the urban job market, so they tend to be relegated to low-paying tasks in the informal sector,” leading to the fact that “one in three

Indigenous Persons living in cities inhabit insecure, unsanitary, and polluted slums, twice as often as non-Indigenous People” (Ijjaz-Vasquez, 2017). “Indigenous populations are disproportionately poor; suffer higher rates of unemployment and incarceration; and endure poor quality housing and health outcomes” (Puketapu-Dentice, p. 2). The urban environment as it exists today does not fulfill or even begin to address the needs of Indigenous dwellers. City governments and planners are not asking the right questions or providing the necessary solutions to address the low quality of life, “culture and language loss,” and “weakened community safety nets” (Ijjaz-Vasquez, 2017) that Indigenous peoples are contending with in the city.

Indigenous Land Rights

The general exclusion of indigenous peoples from urban areas is not an accident or preference, it is the direct result of genocides and forced migrations perpetrated against them by governments and other societies around the world. Colonization has caused, “the alienation of Indigenous culture through legal mechanisms that instigated the confiscation of Indigenous lands, causing disconnection from traditional homelands (Hill 2009), including lands now within urban areas” (Puketapu-Dentice, p. 2). Most, if not all, of the major cities around the world are sited on stolen land, areas where Indigenous peoples once lived and thrived, places where they had deep connections to the world around them. Manhattan was once the sacred home of the Lenape people, while the sprawling urban landscape that comprises Los Angeles was populated by the Chumas, Tongva, and Kizh peoples for centuries before the concoction of Manifest Destiny. This appropriation of Indigenous land by Western governments occurred throughout the Americas, Australia, and much of Africa due to the fact that, “the Indigenous understandings of land inherently contradict the predominant Western conceptions of single land ownership where the owner has exclusive legal right to use, dispose of and exclude all others” (Puketapu-Dentice, p. 10). These crimes and injustices carried out around the world against indigneous peoples for centuries are despicable, “the transformation of pre-industrial, Indigenous settlements into mass urban society is irreversible. Our modern path to sustainability lies forward, not behind us... Certainly the fixation on growth, industry, and competition has degraded the environment. Yet one cannot undo urban-industrial society. Rather, one must continue to innovate...” (Campbell, p. 224). There is no lack of innovative solutions for healing the relationship between human

activities and the environment while making cities more sustainable and reconciling the acts of genocide and countless human rights violations carried out against Indigenous people.

A first step towards this long process of healing and accountability is recognizing the rights of Indigenous peoples to the land they once populated. Recognition of Indigenous land rights “usually entails explicitly recognizing rights in title and customary use, as well as a broader political and cultural right to self-government” (Barry & Porter, p. 170). The tension between colonial society’s desire to commodify land and the very different philosophy that characterizes Indigenous human-environment relations poses a number of challenges, but “the recognition of difference does not mean the end of political unity, provided we develop appropriate conventions to guide the constitution of a new relationship” (Barry & Porter, p. 175). The field of planning has great potential to realize Indigenous self-determination in order to meet the needs of Indigenous groups, however this can only be done through the dismantling of the modern planning system. “Two particularly important modes of recognition are appearing: first, a territorial recognition linking culture with place; and second, recognition of Indigenous political structures and government” (Barry & Porter, p. 172). Even though colonial society hopes only to accommodate Indigenous demands and ignore the inherent needs of Indigenous groups, “cross-cultural learning about the legacies of colonialism; and the improvement of community relations” is entirely possible, and essential, in this context. There must be an active, concerted effort to work against the colonialist tendency towards “manipulation, domination and control” (Barry & Porter, p. 183). Acknowledging wrongdoing isn’t enough, in order for an apology to be effective and genuine there must be a tangible change in behavior to repair the harm that was caused and ensure it will not happen again. The same principles apply to reparations for Indigenous peoples, “the acknowledgement of original possession and ongoing custodianship amounts to little more than lip service when it translates to Indigenous access to – and use of – the land. This is especially so in the well-established cities and regional centers where land, which has long ago been stolen from Indigenous people, is now covered with the infrastructure – houses, roads, parks, civic buildings – of what many Aboriginal and Torres Strait Islanders rightly regard as the ‘settler state’” (Daley, 2016). At the very least, Indigenous people should be given access and play a role in the planning processes of their ancestral lands, especially when it comes to, “renegotiating the use of traditional but now urbanised lands and how governments and planning authorities respond” (Daley, 2016). Indigenous people should

not be relegated to the fringes of society just because their ancestral homelands have been so severely exploited and altered they may no longer be recognizable.

The Western model of urban planning must go beyond seeking just coexistence between Indigenous peoples and urbanism, rather a large effort must be undertaken to fully reimagine the way we do cities to allow for the holistic integration of Indigenous traditional ecological knowledge and cosmologies. This is necessary not only to ensure the wellbeing of Indigenous urban dwellers, but to help cities push forward and establish a more harmonious role within the functions of the environment and human-nature relations.

Applications

The crux of what I hope to propose through this thesis and exploration, is that we need not reinvent the wheel when seeking to save ourselves and the planet from the mess we have made. Indigenous peoples have been practicing the solutions we need from the very beginnings of their societies and cultures. Collectively, we need look no further than our history, and Indigenous peoples are the ones who have kept in touch with what works best. There is a pressing need to rediscover the traditional knowledge of ecological systems that has been buried under colonization and western industrialization practices. Currently, since the West has spent centuries impoverishing the land and marginalized people across the globe, Westerners are unable to envision, “what beneficial relations between their species and others might look like.” (Kimmerer, p. 6). We need to learn from each other if we want to ensure our own survival as a united human society, and to go further we must begin to prioritize the survival of all other species as equal to our own. Sustainability will be most useful and effective if “it acts as a lightning rod to focus conflicting economic, environmental, and social interests. The more it stirs up conflict and sharpens the debate, the more effective the idea of sustainability will be in the long run” (Campbell, 215). Indigenous peoples are experts in sustainability, familiar with the notions of energy conservation, irregularities in patterns and anomalies of form and force. Through long observation they have become specialists in understanding the interconnectedness and holism of our place in the universe” (Tom, M.N., 2019). This is so due to the fact that, “indigenous peoples commonly see the wider world as an interconnected web, like a whānau / family – we are all connected to one another. The connections maintain the relationships and give meaning and purpose to what communities do and how they interact with the world around

them. The process of reclaiming indigeneity of the city involves creating space, both physically and figuratively, for these interconnected bonding practices” (Puketapu-Dentice, p. 14). Around the world, there are numerous examples of substantial projects and initiatives underway to better incorporate Indigenous thought, knowledge, and practices into places and spaces that have been dominated by Western thought and methodology for centuries now, and I am sure countless more examples of this same process occurring on smaller or even individual scales.

At the moment, there is little room for collaboration between Western planning and Indigenous cultural values. This need not be the case, if TEK is implemented as the result of thorough and equal collaborative efforts, something more than respectful co-existence can be attained, and cities can become spatially just environments for all. Spatial injustice occurs at practically every level of urban planning, through the current “marginalisation of Indigenous voices, names, histories, landmarks, practices and symbolism” (Puketapu-Dentice, p. 1). By shifting urban planning methodology and solution sourcing and grounding this process in Indigenous TEK, an opportunity arises to emerge from “conventional planning approach [which] follows a technocratic, linear path focused on the outcome or desired output” and create connection between Indigenous people and their ancestral homelands, from which they are physically disconnected from in urban settings by “incorporat[ing] principles of stewardship, cultural identity, collective rights, and the political right to land and governance,” (Puketapu-Dentice, p. 5) in to all planning strategy and subsequent efforts. Currently, objects like buildings, cars, and goods are at the center of planning and urban design, but we can restructure our cities to center human relationships, “between people, and between people and the environment, while at the same time emphasizing that the way people interact with each other and the environment is dynamic; changing planning and urban design outcomes.” (Puketapu-Dentice, p. 7). There is no going back when it comes to urbanization and human settlement patterns across the globe, barring apocalypse, so it is imperative that we reimagine cities to rekindle their connection with nature and ecosystems, the first step of this being healing our own connection to natural systems.

The general consensus in the environmental community is that the industrialization of agriculture was a huge mistake. To think that we could improve upon the natural processes that had emerged after eons of fine tuning through evolution and other ecological processes was an erroneous miscalculation caused by the hubris of Western thought. The problems that stem from the poisonous practices of industrial monocropping and concentrated raising of livestock are

vast; erosion, degradation of soil microorganisms, chemical pollution, and loss of biodiversity, to name only a few. However, we are lucky that, while surreptitious to some, “the traditional ecological knowledge of Indigenous harvesters is rich in prescriptions for sustainability.” (Kimmerer, p. 179). “Indigenous knowledge systems and their manifestations, including traditional ecological knowledge, farmer knowledge, and other forms of ecological knowledge have served local populations for generations by facilitating thoughtful and deliberate human-environmental interactions leading to what is broadly referred to as environmental sustainability” (Tom, M.N., 2019). We must learn how to implement the “generations of data collection and validation... theory generated from millenia of observations of plant response to harvest, subject to peer review by generations of practitioners...” (Kimmerer, p. 159) housed within Indigenous traditional knowledge before it is too late. By now we have disproved the hypothesis of Western scientific thought that industrializing our agricultural processes would be beneficial, and now must return to the knowledge held within, “Native science and philosophy, in lifeways and practices, but most of all in stories, the ones that are told to help restore balance, to locate ourselves once again in the circle” (Kimmerer, p. 179). How can we marry this important wisdom, systems based environmental knowledge grounded in interconnectivity, with modern science and technological advancements? As a result of the climate crisis, the West is starting to learn the hard way that Western “science as a way of knowing is too narrow for the task” (Kimmerer, p. 45), and even though, “science polishes the gift of seeing” (Kimmerer, p. 48), alone it is not enough. Moving forward, we must unite what the West defines as science with traditional knowledge, since even though they, “may ask different questions and speak different languages, but they may converge when both truly listen” (p. 165) and by doing so we will be able to understand the world and our rightful place in it with more clarity and peace than ever before. By doing this we can tap into intricate and hyper-local information that farmers, scientists, and activists alike can use to heal the soil and associated ecosystems, “looking to nature for models of design, by the architects of biomimicry. By honoring the knowledge in the land, and caring for its keepers, we start to become Indigenous to place” (Kimmerer, p. 210).

Sea level rise is one of the most problematic consequences of climate change for cities, since so many of the world’s cities are located along coastlines and other bodies of water, flooding and storm surge are serious threats to life and property. “As floods become more sudden and hard to predict, the inclusion of Indigenous knowledge in science-based warning systems

should be prioritized... More than 3 million urban dwellers could be at risk of flooding from extreme rainfall by 2050 as climate change brings more unpredictable weather hazards” (Harrisberg, 2019) along with other problems such as food and water shortages, extreme heat, and power blackouts. By interviewing people throughout rural and urban areas across Ghana, researchers found that while not all of the rural indicators could be transferred for application in urban settings, some very useful ones, “are relevant for both environments, such as clouds, heat, insects and trees” (Harrisberg, 2019). If Indigenous people are given the space and opportunity to participate in urban planning efforts, especially when it comes to resiliency, more often than not creative solutions will arise seemingly from nowhere. What we need is to reinstate the age-old mechanisms that maintain the balance of natural systems, and this should be accomplished by returning to what we know, or once knew, rather than trying to invent our way out through the rash implementation of new technologies.

Indigenous knowledge can be used to add an extra, and necessary, layer of analysis as measures must be taken around the world in response to climate change, as mitigation and adaptation are more critical than ever. The potential for collaboration is truly infinite if one extends the imagination past currently established norms and workflows, “an obvious start would be for community development planners and environmental planners to collaborate more... expand current public–private partnership efforts to improve environmental health in the inner city. This urban-based effort would help planners bypass the danger of environmental elitism that besets many suburban, white-oriented environmental organizations” (Campbell, 235). Implementing Indigenous TEK in urbanism allows us to craft solutions and paths forward that solve problems by healing the harm at the core of our historical and toxic interactions with the natural world. Consider the anti-fossil fuel movement, as we can see by the lack of the far reaching and decisive change needed to truly address climate change, working to impact the supply side of the fossil fuel economy doesn’t work, market solutions based on the institutions we know to be systematically flawed means we end up treating symptoms. Ultimately, “market forces can undermine technologically achieved environmental improvements... gains in conservation are often cancelled out by rising demand for the final products,” (Campbell, p. 234) especially since the fair distribution of technological advancements cannot be guaranteed in a so-called ‘free market’ system. Conversely, the ‘Keep it in the Ground’ movement led by Indigenous activists is centered around dismantling the demand side of the fossil fuel economy,

restructuring the distribution of power and basing our society on democratic principles rather than desire for economic growth. By working to “understand the biosphere’s capacities to provide “nature’s services,” or “ecosystem services,” which factory-made chemicals provide today” it is possible to entirely revision our built environment (Sassen, 2012). Currently, “we have forgotten the knowledge... We must relearn by using particular forms of scientific knowledge that help us understand what the biosphere can do” (Sassen, 2012).

The transfer of Indigenous TEK can happen in a number of ways and settings, as long as it is organized and led by the Indigenous people themselves with their full and prior knowledge and consent. A particularly poignant example of this is, “a community-based self-education initiative at Akwesasne in what is now upstate New York,” which, “pairs learner-apprentices ‘with master knowledge-holders to learn traditional, land-based cultural practices’ such as hunting, trapping, use of medicinal plants, fishing, water use, horticulture and basket making” (Tom, M.N., 2019). This initiative advances the capacity of all participants to work against the damaging practices of industrial operations that pollute the area through reclamation of “Kanienkehaka lands and land-based cultural practices” while promoting the, “transmission of [the Mohawk] language and important technical focal vocabulary embedded in traditional resource harvesting practices” (Tom, M.N. 2019). The positive outcomes of this exemplary work help everyone involved, “restoring health and vitality of the people” (Tom, M.N., 2019). The essence and core impacts of this initiative can be transferred to an urban environment through the recognition of the fact that, “urban design is not simply about physical buildings and their placement, but the interconnections that buildings have with people, place, spaces and the wider environment from an Indigenous point of view” (Puketapu-Dentice, p. 7).

Cities are the best battleground to begin making demands of, contesting, and acting against powerful corporate actors since only, “about seventy-five cities worldwide contain just about all the headquarters of globally operating firms” and the strategy of “engaging the headquarters actually is easier than engaging the thousands of mines and factories in often remote and militarized sites or the millions of worldwide service outlets of such global firms. Direct engagement with the headquarters of global firms benefits from the recognition, among consumers, politicians, and the media, of an environmental crisis” (Sassen, 2012). We must recognize the importance and urgency of “fighting the power and profit logics that have organized environmentally destructive economies and societies” (Sassen, 2012). If we are unable

to emerge from these toxic models of leveraging injustices to fuel unchecked economic growth to satiate the greed generated by privilege, we will never change our course and continue on the path towards the destruction of humankind and all other species on our planet.

What We Have Ahead of Us

It is one thing to analyze what has gone wrong and propose solutions, this is not an original act. Additionally, as a person within Western culture and society, it is easy and safe for me to criticize a system I am complicit in and directly benefit from. What is hard is actually making the changes, internally and externally, in the world around us, in order to help all people emerge from toxic systems and reconnect with nature and the environment. This is a long process not only because it is a deep existential challenge to breakdown and reconstruct your conception of the world and your place in it, but because of the scale at which this must be done in order to generate the profound impact we really need right now.

Political Will

In order to execute changes across peoples and spaces, you need politics. This alone has caused many to give up, abandon hope, because there are few things harder than trying to get a group of people to do something, especially when they disagree. Additionally, politics are notorious for their corruption, for individuals ignoring the duties they are charged with in exchange for money or power. There is always a risk that even if an important change is won, it will never actually have an impact due to lack of execution or enforcement. When it comes to Indigenous issues and the incorporation of TEK into government and societal functions, due to the historic subjugation and marginalization of indigenous peoples, there is a fear that, “tribal consultation protocols become a “procedural” requirement, overlooking the substantive value of involving tribal governments in policy design. In fact, the place of Indigenous peoples within the politics and practice of sustainability has a substantive dimension that is deeply rooted within Indigenous cultures” (Tsosie, 2014). However, within these potential areas for issues, lie the solutions. We can utilize Indigenous traditional ecological knowledge to spark and guide conflict resolution surrounding sustainability throughout society... “Negotiated conflict resolution can also lead to a better understanding of one’s opponent’s interests and values, and even of one’s own interests” (Campbell, 229). Additionally, a city is the ideal place to start implementing these

practices, you can have an outsized impact on a population and harmful human activities in a condensed geographical space, “The city is a key scale for implementing a broad range of environmentally sound policies and a site for struggles over the environmental quality of life for different socioeconomic classes. National governments are far more removed from the immediate catastrophic potentials of poisoned air and floods and have been slow to act.” (Sassen, 2012). It is far more politically feasible to pass a measure limiting carbon emissions at the scale of a city than at the State or Federal level, and if these kinds of efforts are carried out simultaneously in different cities, the impact would be parallel to what a state or federal policy would have accomplished, in terms of population and climate impact, with less effort put in. You can create a greater positive impact by focusing on cities, tackling the origin of demand for and execution of environmental harm simultaneously, “the process of governing cities becomes part of the process for developing a more environmentally sustainable and ecologically efficient society” (Sassen, 2010). Going a step further, it is also in cities where the lived impacts of problematic policies and systemic injustice come into play, “non-scientific elements are a crucial part of the picture: questions of power, poverty and inequality, ideology and cultural preferences, are all part of the question and the answer” (Sassen, 2010). Again, it is in the city setting where we can address the root causes and symptoms of issues at once rather than having to choose one over the other, since, “urban sustainability requires engaging the legal systems and profit logics that underlie and enable many of the environmentally damaging aspects of our societies. The question of urban sustainability cannot be reduced to modest interventions that leave these major systems untouched” (Sassen, 2010). Just because the situation calls for a complete overhaul of our current state, if not a total reconstruction or starting from scratch, does not mean we should or even have the right to deem the challenge impossible because change is scary and hard. We, especially those complicit in Western Culture, have a responsibility to work towards healing the toxic worldview that resulted in our systemically unjust world as fast as possible. Lives, livelihoods, and the ability for human society to continue are on the line.

Money

One of the unfortunate limiting factors inherent to a capitalist society is needing money to get something done. The easiest cop out, built into the market economy as we know it, is the

phrase, 'we don't have the money.' This means that under capitalism, the only courses of action permitted to move forward without being seen as completely absurd are profitable ones, so anything that doesn't in some way generate quantifiable, monetary value, is seen as a pointless waste. There are many proposed solutions to this crisis, including a radical change in economic structure, like socialism or communism, or the implementation of strict regulations that force corporations to take the public good into account. An issue not often discussed by leftist activists when it comes to the problems and barriers our current economy poses is what Campbell (2016) calls the "development conflict." This concept grounds our need for radical reform in the fact that no one is on equal footing due to historic and current social injustices, and asks, "How could those at the bottom of society find greater economic opportunity if environmental protection mandates diminished economic growth?" (Campbell, p. 219). We know that capitalism fuels toxic extractionist practices that degrade the environment, and up till now our unchecked economic growth has had disastrous consequences on the climate and ecosystems around the globe, and that this growth was built on exploitation of marginalized populations, so it is also not right that, "developed nations would be asking the poorer nations to forgo rapid development to save the world from the greenhouse effect and other global emergencies" (Campbell, p. 2019), when the blame is disproportionately held by the rich nations of the Global North. We must be able to recognize that "environmental racism lies at the heart of the development conflict" (Campbell, p. 219), and that racism was created by the elite of the Global North to justify the exploitation of the Global South and marginalization of people in the pursuit of infinite economic growth under capitalism. It is no coincidence that "an enormous share of the attention devoted to urban sustainability in the literature has been on how people as consumers and household-level actors damage the environment... without addressing the fundamental issue of how an economic system prizes modes of production that are not environmentally sound" (Sassen, 2009). This shifting of blame onto individuals, and onto countries that have been systematically taken advantage of to fuel corporate greed, is manufactured by those who benefit from the unbalanced system that runs on the systematic subjugation of women, people of color, and the poor. We live, "in an era marked by widening economic and education disparities," where, "increasing environmental, social and political precarity" leaves, "Indigenous and other non-dominant peoples are rendered most vulnerable" (Tom, M.N., 2019). However, this recognition does not create a choice between protecting the environment and increasing social equity, we must do

both, since, “on a global scale, efforts to protect the environment might lead to slowed economic growth in many countries, exacerbating the inequalities between rich and poor nations” (Campbell, p. 219). The key to the resolution of the development concept lies within principles contained in Indigenous TEK. By revitalizing Indigenous cosmology and reciprocity practice, we can on a large scale return to a connection with nature that is not solely defined as admiration from afar. Through interacting and influencing nature in ways that Western preservationists may see as destructive, “the merits of cutting versus preserving trees cannot be decided according to which persons or groups have the ‘truest’ relationship to nature... differences lie in their conflicting conceptions of nature, their conflicting uses of nature, and how they incorporate nature into their systems of values” (Campbell, p. 221). Whether it be through reforming our current global economic infrastructure by assigning a monetary value to ecosystem services and other environmental factors, or initiating a complete overhaul and transition to a different economic model, we must collectively recognize that money isn’t everything, and that it has done a bad job over the past few centuries at actually measuring progress and the improvement of humankind as a whole.

Current Infrastructure

Cities, more than any other part of the Earth modified by human activity, demonstrate the challenges that characterize upgrading and maintaining infrastructure. The built environment accounts for a huge portion of our carbon emissions, discounting the activities that occur in or via buildings as well. Currently, “the energy and material that flows through our human economy returns in altered form as pollution and waste to the ecosphere...” but it doesn’t have to be this way. We have all of the knowledge and tools we need, “the crux of the matter is that this set of flows is *made* and can be *unmade*” (Sassen, 2010). If we want to avoid the extreme warming, and the subsequent climate catastrophes predicted for that scenario, we must rapidly overhaul all of our systems, especially the built environment. However, a justified concern for the kind of unprecedented change we need, including electrification and renewable energy rollout, is that the infrastructure proposed would require significant amounts of natural resources and labor. If this transition to a more sustainable built environment is not managed well, it may end up causing significant environmental and social harm through poor natural resource management or workforce exploitation. The key to this imagined barrier is understanding the connection

between environmental and social justice, which full integration of Indigenous TEK can help facilitate. If, like Jason and the Argonauts, we need to replace the rotting planks of the ship we sail in while we sail in it, we must do so strategically to avoid as many sacrifices and negative consequences as possible. If we try to replace too many planks at once, the ship becomes more vulnerable and is likely to fall apart, but if we are too slow, the rot may spread and prevent our ability to make repairs. By working smarter, in harmony with nature, we can, “use and build upon those features of cities that can reorient the material and organizational ecologies of cities towards positive interactions with nature’s ecologies” (Sassen, 2010). Learning from nature and from our past, before we lost touch with sustainable ecological knowledge, we can effectively capitalize on the characteristics of cities that may help which, “include economies of scale, density and the associated potential for more efficient resource use, and, important but often neglected, dense networks of communication that can facilitate environmentally sound practices in cities” (Sassen, 2010). It is because, not in spite of the fact that cities will require so much effort and energy to create and implement the changes needed to bring them into harmony with the natural systems they currently disrupt that they are the perfect place to create the most positive impact when it comes to sustainability practices.

Conclusion

After all, the lesson to be learned from decolonizing one’s thoughts and perspectives is that it is not possible to exist sustainably on the planet within a society that is fueled by extracionism and materialism. We must collectively find a way to evolve past this point and find ways to incorporate reciprocity into every aspect of our lives, “simply redistributing carbon emissions is not enough, nor are mitigation and adaptation directives enough” (Sassen, 2012). Since cities have the potential to be the most efficient way for us to live, it is important to avoid adopting ideologies focused on aesthetic anti-urbanist sentiment for the sake of romanticizing nature. Similarly, Indigenous TEK is not a promise of utopia in the same way Western culture isn’t a guarantee of dystopia, “we should think of American society not as a corrupt, wholly unsustainable one that has to be made pure and wholly sustainable, but rather as a hybrid of both sorts of practices. Our purpose, then, should be to move further towards sustainable practices in an evolutionary progression” (Campbell, p. 227). Through the integration of Indigenous TEK, we can take on the challenges that we currently face while working to heal past wounds, since

both are caused by the perpetuation of the same toxic systems, regardless of how they have changed over time. Acknowledging that we have much to learn is just the first step, the hard part is what comes next, but, “transformation is not accomplished by tentatively waiting at the edge” (Kimmerer, p. 89). It is time for us to truly listen, and to trust, since, “Indigenous peoples, and specifically youth, protect, preserve and promote their environments through practices of nurturing integral to their cultures that are also adapting to current social and environmental challenges” (Tom, M.N., 2019). Perhaps the most powerful tool in humanity’s belt is our capacity for imagination, and once we embrace the need to change, then the challenges of climate change and systemic injustice will come to pale in comparison to our collective capacity for growth and innovation.

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