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Transformations Towards Just Urban Sustainabilities: A community psychology approach to analyzing and fostering urban changes

Bianca C. Dreyer
Wilfrid Laurier University, bdreyer@wlu.ca

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by

Bianca C. Dreyer

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Abstract

Cities are uniquely positioned to drive social change towards more just and sustainable futures. However, while discourses of 'transformations towards sustainability' have gained prominence, their focus on integrating equity and justice and tackling the root causes of current unsustainabilities is lacking. This document outlines a research endeavor aimed at analyzing and fostering urban sustainable transformations from a community psychology perspective. This research is based on the assertion that without radical change based in equity and justice considerations, transformative efforts fail. First, a theory of just urban sustainable transformations (JUST) is suggested that draws on urban transformations and just sustainabilities scholarship. Then, a case study is reviewed that aims to create the conditions necessary for JUST through adequate affordable housing provision. Processes and structures of change are analyzed and discussed. The findings are then applied in the context of higher education, by suggesting a higher education teaching & learning framework for just urban sustainable transformations - the JUST course. It builds upon critical global citizenship and transformative education. The document concludes with a brief discussion and the role of cities in taking action.

To those I love, lost, and learned from.

Endurance.

Many paths,

Winding. Tangled roots.

Lived histories & imagined futures.

Common values, guiding

Radical changes.

Endurance.

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When I started this journey, I was sure that one day I would write these words. I imagined what they would contain. At the end, these are the last words that are added as my certainty gave way to doubt more than once. My deepest gratitude goes to all of those who sat with me in these feelings, who encouraged me and supported me to follow my own path. The relationships that need mentioning have shifted along the way just like the topics and content of this work and many there are many more people I am grateful for that won't find mention here.

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Statement of originality

This is to certify that to the best of my knowledge, the content of this dissertation is my own work. This dissertation has not been submitted for any degree or other purposes.

I certify that the intellectual content of this dissertation is the product of my own work and hat all the assistance received in preparing this dissertation and sources have been acknowledged.

Bianca C. Dreyer

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LIST OF ABBREVIATIONS

ACE	Alternatives for Community and Environment (in Boston)
APA	American Psychological Association
CC	Critical Concrete
CO	Carbon Monoxide
Covid-19	Coronavirus Disease
EJP	Environmental Justice Paradigm and Movement
EYE	Educating Yourself in Empowerment for Sustainability
GHG	Greenhouse Gas
HLPEP	High-Level Panel of Eminent Persons
ICLEI	International Council for Local Environmental Initiatives
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
ITSE	Initiative for Transformative Sustainability Education
JSP	Just Sustainabilities Paradigm
JUST	Just Urban Sustainable Transformations
LEED	Leadership in Energy & Environmental Design
SDG	Sustainable Development Goals
UN	United Nations
UN-DESA	Department of Economic and Social Affairs of the United Nations
UNEP	United Nations Environment Programme
US	United States of America

WGBU	Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen
WWF	World Wildlife Fund

General Introduction

"A thriving community is a place that you recognize from its energetic engagement with the essential human project of re-inventing and re-constructing the possibilities for social existence. You would know a community that is thriving if you visited it, for it would leave you refreshed, invigorated, and empowered." – Ryan (2011)

If cities are built for people, then how well cities can meet the needs of all their residents now and into the future is an important indicator of their success. Yet, cities face unprecedented crises that could "well undermine the prospects for a global civilization" (Rees, 2009, p. 300). Thus, there has been an increasing demand for urban transformations towards sustainable and just places for growing urban populations (UN, 2012; UN, 2015; WBGU, 2016; Skodra, 2018). Globally, over 50% of people now live in urban areas, and despite the effects of the Covid-19 pandemic, this number is expected to increase to 75% in the next three decades (Florida et al., 2021; Rink, Banzhaf, Kabisch, & Krellenberg, 2015; UN-DESA, 2012). Repercussions of (un)sustainable growth are already apparent. Cities contend with ecological problems related to pollution, resource over-use, congestion, and spatial competition, and suffer from social and economic problems such as pandemics, poverty and economic vulnerability, segregation, wars and other social conflicts (Legner & Lilja, 2010; McCormick et al., 2013). In turn cities exacerbate one of the most pressing global crises, climate change. Urban areas account for about 80% of global CO2 emissions and 75% of the global final energy usage, and due to the long lifespan of urban built infrastructures will affect green-house gas (GHG) emissions for more than 100 years (WBGU, 2011a; WBGU, 2011b). Given the dynamics of urban growth and social-

ecological impacts, cities may not only be a cause of, but also offer solutions to moving beyond our current cultures of (un)sustainability (Kagan et al., 2018). To do so, 'business as usual' or even 'business-with-a-new-rhetoric' will work. "New thinking, including the re-integration of theory and practice, is imperative" (James et al., 2015, p. 11). Urban transformations refer to *multi-dimensional and radical* 'changes in form' (i.e. structural), which can effectively direct urban development towards sustainability (Maasen & Galvin, 2019). While visions of sustainable urban transformations were put forward in the last century, there are numerous issues with current approaches (Couch et al. 2013; Skodra 2018). Most prominently, there is a mismatch between theory/rhetoric and practice, as economic growth continues to be prioritized to the detriment of ecological and social outcomes (UN-DESA, 2012; Skodra, 2018). Yet, if sustainability is to become a process with the power to transform, "…justice and equity issues need to be incorporated into its very core" (Agyeman, 2005, p. 6). Just and sustainable transformations occur when systemic and structural forces that produce unjust urban spaces are questioned and reshaped. This is the basis of this work and shapes its underlying values, ethics, and ideology.

In cities across the world, it is low-income, indigenous, and people of color who are disproportionately exposed to the poorest living conditions (Bullard, 2018; Gould & Lewis, 2012; Heynen, Perkins, & Roy, 2006). These discrepancies exist by design – especially racial segregation and other oppressions – and limit neighborhood options for these communities while enabling greater choice for wealthier, whiter residents (i.e., white privilege, Pulido, 2000). Historic disinvestments in urban infrastructures and unequal enforcement or lack of environmental regulations reflect white supremacy in urban settings (Pulido, 2015). Environmental justice activism in the US was the first coordinated movement to challenge

disparities and advocate for just and sustainable cities for all (Mohai, Pellow, & Roberts, 2009). Paradoxically, the same communities now face new threats of displacements due to rising housing costs that often follow clean-up and greening efforts (Rice et al., 2020). This trend occurs particularly in redevelopments of larger urban areas through high-tech sustainability retrofitting, or in new developments implementing high-tech building designs with large-scale commercial developers (Angelo, 2019). Scholars see this type of 'green' gentrification as continuation of white supremacy embedded in urban spaces (Anguelovski et al., 2016; Pulido, 2015).

Arguably, housing is one of the most universal human needs. Yet, adequate affordable housing provision generally does not keep pace with the rapid growth of urban populations, leading to persistent gaps between supply and demand (Salama, 2007). Further, buildings are an important target area for climate change mitigation and sustainability, given that they account for 40% of global energy use and 33% of GHG emissions (UNEP, 2012), and "30% of the cost of housing is wrapped up in energy" (Agyeman, 2005, quoting Terrell from ACE, p. 175). Mainstream approaches to sustainable architecture while acknowledging "the built environment's share of modern society's profligate over-consumption, remain wedded to the techno-industrial paradigm… [making] …us more efficiently unsustainable" (Rees, 2009, p. 306). A narrow focus on technological solutions and carbon reductions (e.g., smart cities, high performance buildings, the new urbanism, smart growth) lacks attention to social justice and equity. A common response to the lack of affordable housing is a call to build more housing, disregarding the dynamics (e.g., poor housing conditions, lack of service integration, accessibility) that keep buildings vacant while people remain in need of housing (Shareable, 2018). There are pervasive perceptions that affordability and sustainability are mutually

exclusive (Salama & Adams, 2004) or require some 'tradeoff' (Crabtree & Hes, 2009; Susilawanti et al. 2013). Boehland (2006) contends that "looking at the history of green buildings so far, there appears to be a tendency for it to become a rich person's game. But in principle, focusing on the affordability of green buildings can give us our best chance of creating truly sustainable living spaces for all" (p. 60). Thus, adequate affordable housing presents an underutilized opportunity to pursue transformations towards sustainabilities that are just and equitable. There are promising examples of sustainable affordable housing initiatives, yet theoretical considerations and practical examples in (academic) literature remain rare (Adabre & Chan, 2019; McCormick et al., 2013). My contribution to the growing community of urban transformation practitioners and researchers is an integration of the just sustainabilities concept (Agyeman, 2005) with urban transformations in the context of housing from a community psychology perspective, to complement and push the horizon of the theoretical repertoire and empirical knowledge base for just urban sustainable transformations (JUST).

To this aim, this dissertation comprises three sections each written as a stand-alone manuscript. The first paper provides the theoretical framework by providing considerations for JUST. It draws from and delineates the concepts of just sustainabilities and urban transformations to provide a working definition for JUST. This paper is geared primarily towards an academic audience, cautioning against the supposed neutrality of scientific knowledge production and advocating for a values-based science of sustainability transformations. The second paper examines the transformative potential of co-produced adequate affordable housing in the context of one embedded qualitative case study. Community-based projects are the true test for the theoretical compatibility of the discussed concepts (Agyeman & Evans, 2004) and can thus offer concrete ideas about what JUST may look like on the ground. Shaping cities is

largely considered the task of ‘urban professionals’ - architects, planners, designers, developers, engineers, contractors, etc. – under the authority of national, regional, and local governments, rather than urban residents. As a community psychologist, I worked in close partnership with a community organization, Critical Concrete (CC), focused on ‘social and sustainable architecture’, whose aim it is to integrate residents - their needs, wants, and visions - in the construction of cities. I examine their approach to affordable housing provision, which stresses the interdependence of social and ecological factors in sustainable transformations. This paper is intended for urban practitioners and initiatives involved in co-production, affordable housing provision or other efforts to foster urban transformations and/or urban sustainabilities. It follows conventions of urban studies in writing style to improve its accessibility to non-academic audiences, such as a merged results and discussion section. The third paper provides the rationale and set-up of a course of just urban sustainable transformations, that was designed as a primary knowledge mobilization output and became part of the community partner’s one-year post graduation certificate program in ‘sustainable sustainable architecture’. Note that the repetition of the word ‘sustainable’ is intentional to connote the multiple layers of this concept. The paper aims to provide new considerations for educators of (future) urban practitioners, specifically in the field of architecture, by foregrounding equity and justice in education.

Positionality and the role of the researcher

Arriving at the research questions and methodologies of the papers in this dissertation has informed and been informed by my own personal transformations both within and outside of my scholarly pursuits in community psychology. Guba and Lincoln (1994) argue that methodological questions are secondary to our ontology and epistemology, as methods are means through which knowledge can be sought amidst our assumptions (about the nature of

existence and reality) and beliefs (about what knowledge is and what can be known). A community psychology approach is defined by a way of looking at people, communities, contexts, and social issues that may lead to surprising discoveries about oneself (Bond et al., 2017). Therefore, it is important to examine the Self in research. I started my dissertation journey working on what was then called the Center for Sustainability Excellence. This project envisioned a state-of-the-art sustainable building that would become Canada's first net-positive energy, and net-zero emissions multi-unit commercial office building. I was excited to take part in early conversations, conceptualizing what the building and its design/ construction processes could look like. Being utterly unfamiliar with relevant literatures in sustainable buildings, urban design, and environmental science, I expanded my scholarly horizons and began to think about the overlap between community psychology and urban professions (from urban studies to architecture). I saw an especially close connection between ideas of regenerative and integrated design and community psychology due to their strong process-orientation, whole systems approach, and emphasis on creating buildings that positively contribute to communities, cherishing the catchphrase of 'buildings that give back' (see e.g., Coleman & Robinson, 2018). Yet, the realities of neoliberal market pressures amidst a high-tech commercial real estate development meant that the research team had little power to influence the actual design (processes). Social sustainability and equity were an afterthought at best for many of the stakeholders holding decision-making power. I experienced increasing cognitive dissonance – on the one hand recognizing the innovative nature of this development and its potential for net-positive building developments, an important long-term mitigator for global climate change, and on the other hand struggling with feelings of lacking my discipline's commitment to social justice in my own work, with immediate implications on perpetuating existing social inequities.

In personal communications it became apparent that this lack of equity considerations was not due to the moral failings of the individuals involved in the project, rather resulted from political, social, technological, and economical systems and structures upholding certain building norms and processes. It was the same systems and structures that influenced my own daily life inside and outside the academy; the reasons why I contend with claiming my queer identity hiding behind my 'passing-privilege', put up with sexism while strongly endorsing feminist values, and gladly reaped the benefits the acquisition of English as a second language afforded me as a White, European immigrant in Canada. My dissonance began to resolve when I encountered the just sustainabilities paradigm, that articulates that sustainability *must be connected* to striving for social equity to be transformative. It enabled me to re-connect my values to my work. I expanded my outlook from buildings to cities, as I have experienced the aftermath of great urban transformations growing up in post-war Berlin only months after its reunification, still reeling in its war histories. My desire to work from within the discipline of community psychology but on topics of urban issues led me to my partnership with Critical Concrete, an educational and social initiative focused on affordable housing provision in Porto, Portugal. This dissertation is a reflection on how the core concerns of community psychology, namely dealing with social inequality and injustice and being able to offer strategies to reduce them, can be brought to bear in fostering urban transformations.

Ontologically I align myself with post-positivist theorists and believe 'realities' and 'knowledges' are always located in a particular social, cultural, historical, political, economic, and gendered context (Guba & Lincoln, 2005; Lincoln, 1995) and are co-constructed by researchers, communities, and/or individuals (Guba & Lincoln, 2005). My inquiry is guided ontologically by my rejection of positivism and epistemologically by the pursuit of situated

knowledges (Harding, 2004), which are embedded within theories of equity and justice. 'Objectivity' and related concepts of an empiricist psychology perpetuate a certain "implicit inhumanity of reducing human subjectivity to a worldless individual while simultaneously normalizing conformity to everyday living conditions" (Holzkamp, as cited in Schraube et al., 2013, p. 4). In contrast to the "empiricist" tradition of psychology, which aims to align itself with the natural sciences, Holzkamp argues that reality is not perceived "as such", but is experienced through the available concepts which, in turn, affect our view of the world and, thus, our relations to it. In this sense, not only is scientific research not a 'true reflection' of reality, there to be discovered, but virtually creates reality through the way it conceptualizes it. Working from a values-based perspective requires the societal relevance of psychological research and its claims to knowledge and truth to be conceived of as a unity.

Equally important to ontological and epistemological considerations that influence my scholarly practice is the value I place on action-orientation and 'useability' of applied research. I firmly situate myself in traditions of action-research introduced by Kurt Lewin in the 1940s (Lewin, 1946), community-based participatory research (Minkler & Wallerstein, 2003), and participatory action research (Fals-Borda & Rahman, 1991; Reason & Bradbury, 2008). The research is built upon initial support from Critical Concrete's founder, and a partnership fostered through many conversations with the program staff and a month-long stay at the Critical Concrete House. When it was clear that the Covid-19 pandemic restricted both travel and community-based work, we collaboratively brainstormed how the research could support the transformation goals and the survival of the organization throughout the pandemic and beyond. I believe that we, researchers, must be willing to re-learn much of our trade and re-skill to work with, alongside, and for people. It means being willing to play multiple roles, as academics,

facilitators, negotiators, consultants, knowledge brokers, and advocates. It requires an approach that is deliberative and collaborative - one that is *just*. We might come to see ourselves not only as passive researchers, but active promoters of fundamental change. Participation or participatory, community-based research is part of a broader social change strategy in community psychology (Stoecker, 1999). The scientific element here is not the supposed neutrality or objectivity, but the skills, time, and commitment we contribute to social change projects. In this way, there are calls for a move towards a post-normal science, in which knowledge hierarchies are questioned and differently measured knowledges can be integrated to address complex problems (Whatmore, 2006). Such a move promotes the up-ending of traditional scientific practice that is expert-led and creates a divide between apparently valuable, measurable, and verifiable knowledge on the one hand and knowledge that is regarded as secondary, intangible, and un-testable on the other. Instead, in the urban context, community psychologists can become enablers of national, regional, and local policies and programs for community participation. Stoecker (1999) addressed this shift when they cheekily ask, 'are academics irrelevant?'. The benefits of participatory research according to Stoecker, is the mixing of researcher knowledge "drawing and abstracting from multiple contexts [with community knowledge], rich in experience and detailed understanding of a specific setting" (Stoecker, 1999, p. 842). Here, the concept of cultural humility provides useful in suggesting ways of engaging with community (Tervalon & Murray-Garcia, 1998), where academics engage in processes of live long learning. Lay and social science learnings inform and therefore shape each other through processes of research; and in doing so, incrementally create situated knowledges. Thus, it is critical that researchers and policy makers engage with and experience the role and value of knowledge co-production through a sustained relationship with the public

(Hartz-Karp & Stocker, 2013). Yet, community members might lack the skills or knowledge on how to engage with government, likewise government is sometimes lacking structures and strategies that allow community to be heard and included. Thus, aside from facilitating community engagement processes, to empower community members to become agents of change, the researcher's role can also be that of a consultant. Improved interactions between research and practice can lead to better results in both just sustainable urban practice and research (McCormick et al, 2013). Thus, lastly, the researcher's role is also in being present during social change efforts, studying these attempts, providing credibility, legitimacy, and ultimately voice. My goal in conducting this work is to contribute to the burgeoning awareness of a need for (re-)integrating social justice and environmental sustainability concerns and humbly work with Critical Concrete in furthering their change efforts.

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Transformations towards sustainability in complex urban systems: Considerations and implications for change

Abstract

Discourses of 'transformations towards sustainability' have gained prominence in global sustainability research and practice in recent years, yet most continue to prioritize economic aims to the detriment of social and ecological outcomes. Without foregrounding equity and justice considerations, transformative efforts fail. This paper argues that urban spaces are an ideal scale at which to examine a new framework to inform transformative endeavors towards sustainabilities – just urban sustainable transformations (JUST). Relevant literatures in transformation and sustainability justice scholarship are reviewed to characterize JUST and offer practical guidance on considerations that might be used to facilitate such transformations. The paper first considers the development of the sustainability concept and its relationship to equity and transformations. These conceptualizations are consolidated into key considerations and implications for strategies for change towards JUST. The paper concludes with a brief discussion and agenda for future research and action.

Keywords: Urban transformation; Sustainability justice; Sustainable development

1. Introduction

If humanity is to live sustainably on planet Earth, multiple transformations are required. Discourses of 'transformations towards sustainability' have gained prominence in global sustainability research and practice in recent years. For example, the research platform Future Earth identifies transformations as it's core mission (Future Earth, 2022), and they are frequently employed in discussions on the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2019; Diaz et al., 2015) and the United Nations' 2030 Global Goals for Sustainable Development (UN, 2015; HLPEP, 2013; Hajer et al., 2015). Increased interest in transformations reflects a shift within global sustainability discourse from 'describing problems' to 'identifying solutions' and for better understanding possible pathways of sustainable change (Rockström et al., 2009; Raworth, 2013; Bai et al., 2016). But what do transformations towards sustainability look like and how can they be brought about?

These questions initially point to a key role for state and markets, as transformations take place in the context of current modes of development and in relation to existing power structures. Yet, a confluence of recent crises has renewed concerns about the ecological, social and economic sustainability of global economies, and the ability of political institutions and markets to contain crises and foster radical and positive changes. The devastating impacts of the Covid-19 global pandemic, in particular, provide impetus to foster transformative pathways for sustainable communities (UN, 2020). Focus is often placed on the need for massive public and private investment in transformative technologies (Stern & Rydge, 2012). What is missing, however, is attention to equity and justice that are inevitably implied by radical change of this nature. Justice and equity are integral to understanding, analyzing, and fostering transformations towards sustainability. Agyeman (2005) argues, "if sustainability is to become a process with the

power to transform, as opposed to its current environmental, stewardship, or reform focus, justice and equity issues need to be incorporated into its very core" (p. 6). This is because 1) concerns about equity are implicated in any deliberate efforts to shape 'transformations towards sustainability'; in terms of addressing current and preventing new inequities. Any sustainability initiative has the potential to be done in exclusionary or inclusive ways and to increase or decrease social justice (Bennett et al., 2019), and 2) equity and sustainability are inextricably linked, and need to be recognized as such (Agyeman, 2008). These are the starting points for this paper and my exploration of frameworks to inform transformative endeavors; initiatives that utilize the transformative power of just sustainabilities. Just sustainabilities was first coined in the writing and theorizing of Julian Agyeman, who defined the term as "the need to ensure a better quality of life[1] for all, now and into the future, in a just and equitable manner, whilst living within the limits of supporting ecosystems" (Agyeman et al., 2003, p. 5).

Meeting these goals amidst the Anthropocene calls for truly global responses (Steffen et al., 2011; 2007). While 'think global, act local' feels like a cliché, it points to the importance of contextualized, localized action; especially responding to equity issues (Castan Broto & Westman, 2017; Bulkeley et al. 2013, Bulkeley et al. 2014). Decisions about sustainable change are often made without adequate consideration of the rights, responsibilities, needs or standpoints of local people, or processes that would enable their participation (Blythe et al, 2017; Kittinger et

[1] Agyeman and Evans (2003) describe quality of life as meeting one's social needs. Among others, this includes having places, spaces and buildings that work well, wear well, and look well, protecting human health and amenity, ensuring access to good food, water, housing, and fuel, and maximizing everyone's access to the skills and knowledge needed to play a full part in society.

al., 2017). The more ‘global’ decision-making becomes, the more power and privilege are required to affect it (Sheikh et al, 2017). This exclusion of the majority undermines equity, and the success of sustainability initiatives (Christie, 2004; Bennett & Dearden, 2014). Urban space offers an ideal scale at which to look at these issues. Although the term ‘urban’ is highly contested, it is herein referring to “relating to cities and towns” (Tallon, 2013, p.4), considering not only the physical aspects like population density, townscape, etc. but also the social, economic, and political aspects that differentiate urban from rural areas. Cities have always been catalysts of social, political, and economic change (Webb et al., 2018). The impacts of cities on global and local ecosystems (Grimm et al. 2008; Elmqvist et al. 2013), social and economic outcomes (Glaeser, 2012; Bai et al., 2014), and human health and wellbeing (Vlahov & Galea, 2002), increasingly determine the achievement of global sustainability goals (Raworth, 2013; Steffen et al., 2015). Throughout history, the fate of the world has been, and will be, decided in cities, as Fernand Braudel (1992) has argued. Yet, cities themselves have and continue to change as accelerated processes of urbanization become a truly global (or planetary) phenomenon. As cities continue to grow, they become even more important sites of investigation. Globally, over 50% of people now live in urban areas, and it is estimated that urban residences will increase by more than 70% in the next three decades (UN-DESA, 2013; Rink et al., 2015). Even if this trend changes in the medium-term due to the Covid-19 pandemic, cities will inevitably play a pivotal role in shaping transformations (Florida et al., 2021). The notion of urban transformation therefore is increasingly used to articulate aspirations for radical and enduring change in human society towards more sustainable and equitable global futures (Future Earth, 2022).

Cities are complex, dynamic systems and efforts towards transformations need to be supported by relevant knowledge and theorizing. Urban space adds a layer of complexity to the

issues of transformations towards sustainability, yet as will be argued herein, can serve as a useful framework to explore them. In fact, the first conceptualization of just sustainabilties (Agyeman et al., 2002), focused on its practical application within an urban setting.

The challenges of restructuring human life across so many domains are unprecedented, prompting calls to strengthen the social science of transformations (Blythe et al., 2018; Leggewie & Messner, 2012; Brown et al., 2013). Despite receiving growing attention in recent years, ways of understanding equity and justice remain underdeveloped in urban transformations. Indeed, Portney (2002), notes that "if equity issues are important conceptual components of sustainability, then sustainable cities initiatives […] do not seem to take it very seriously" (p. 175). In a study of sustainability projects in the largest US cities, Warner (2002) found that few cities even acknowledge justice as an aspect of sustainability. Thus, there is a need to place the urban at the center of research and practice on just transformations towards sustainability. The focus on equity demands 'transformation' rather than 'transition', as the key term (Scoones et al., 2020; Stirling, 2015). While questions of power have been addressed more explicitly within transitions literature recently, their conceptualization and relationship with questions of knowledge and equity, require further elaboration (Geels, 2014; Anderson et al., 2019a). By prefacing transformations with the words 'just', 'urban', and 'sustainable', my intention is to point to and explore the interconnectedness of these dimensions, which effectively direct urban development toward just sustainabilities.

I define *just urban sustainable transformations* - JUST - as 'multidimensional and radical changes in urban systems that lead to new patterns of interactions and outcomes across social, technological and ecological systems of the city that ensure a better quality of life for all, now and into the future, in a just and equitable manner, whilst living within the limits of supporting

ecosystems, and doing so through many pathways, involving diverse actors, goals and strategies (drawing on McCormick et al., 2013; de Haan & Rotmans, 2011; Hackmann & St. Clair, 2012; O'Brien, 2012; Feola, 2014; Agyeman, 2005; Brennan et al., 2004). This definition foregrounds the processes of change involved in moving towards more sustainable and equitable futures, which serve normative (e.g., what is the 'right'/just thing to do) and analytical (e.g., what 'happens', how and why) functions. Efforts to bring about transformations towards sustainability are multiple and contested, as pathways interconnect and compete (Leach et al., 2010). Different actors will be affected in different ways and may stand to gain or lose as a result of change (Meadowcroft, 2011; van den Bergh et al., 2011). Questions of power are important to how pathways are shaped, which pathways win out and why; the question of who is to benefit and who carries the burden of transformations. These are deeply political questions, as narratives of transformations are based on underlying value sets (Scoones et al., 2015; O'Brien, 2012).

To address the equity gap in urban transformations towards sustainability this conceptual paper reviews relevant literatures to characterize JUST and offers practical guidance on considerations that might be used to facilitate such transformations. Intellectually, this requires a fusion of insights from many disciplines and their core concepts. The paper first considers the development of the sustainability concept and the relationship between equity and transformations towards sustainability. These conceptualizations are then analyzed to identify key considerations and implications for strategies for change towards JUST. I conclude with a brief discussion and agenda for future research and action. My assertion is that there cannot be any urban transformations towards sustainability if questions of equity are not central. While this paper outlines considerations for JUST, I would like to note that this is not a purely 'academic' exercise but has been developed in partnership with a community organization facilitating urban

transformations through adequate affordable housing provision. This framework is being applied to a case study (paper two in this dissertation), an organization focused on deepening and furthering their own transformative processes. The sustainability concept offers the possibility to reframe "perennial debates about urban growth […] in ways that foreground not just the environmentally problematic character of status quo modes of urban development but also [social equity]" (Schrock et al., 2015, p. 283). Much depends on the framing of sustainabilities, which we will explore next.

2. Framing sustainabilities

2.1 Sustainability and Sustainable Development

At the broadest level, many agree that the world is on an unsustainable path and that business-as-usual is not an option. Of course, there are strongly dissenting voices, from climate change deniers and others fundamentally opposed to sustainable change, such as institutions and businesses whose profits and power rely on the status quo (De Pryck & Gemenne, 2017). Yet, even among those who share a concern for sustainability, there are contested visions that define the framing of and approaches to change. These visions reflect disagreements about the cause of current problems and how to act on them. Diverse and at times conflicting views of what sustainability really means and how to reconcile growth and sustainability bear the legacy of debates about sustainable development (Agyeman et al., 2003; Schlosberg, 2007).

In the major part of the first UN Development decade (1950s to 60s), development was considered synonymous with economic growth. Yet proponents recognized that growth alone is inadequate for development and called for a more comprehensive approach. The second Development decade (60s and 70s) argued for a combined focus on growth and distribution of income and wealth, however little changed (Koehler, 2015). The ideas of 'sustainability' and

‘sustainable development’ gained prominence among academics, policy makers and NGOs in the 1980s. Particularly after the publication of the Brundtland report “Our Common Future” in 1987, these concepts became integral in policy making and international development discourses (Fredericks, 2012) and inspired many conferences, summits, conventions, and policy statements. Brundtland’s original formulation was “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987, p. 67). Proponents of sustainable development considered development in terms of cost and benefits. This concept was aimed at building international consensus for action, emphasizing the necessity of integrating the imperatives of environmental protection, economic development, and social equity - the so-called tri-factor of sustainability; also described as the three pillars of sustainable development: ecological, economic, and social sustainability (Koehler, 2015). Some praise the discourse as a holistic approach to policy-making with a focus on intersections and interconnections between different policy areas (e.g. housing, economy, environment, diversity), distinguished from more pervasive contemporary, reductionist and silo-based policy-making (Davoudi, 2001). In fact, Furuseth, et al. (1999) note that the sustainable development movement put environmental and social issues on equal footing with economic concerns, by building on dual constructs of intergenerational responsibilities and holistic or comprehensive decision making. In characterizing the three goals as mutually reinforcing, the report sought to define a basis for cooperation among frequently opposed parties, including governments of the global North and South, industry, and a broad spectrum of environmental and local development activists (Ratner, 2004). While a contested concept (e.g., Bourke & Meppem 2000; Gunder, 2006; Connelly, 2007), sustainable development implies a process in which reasonable material needs are met within ecosystem limits (Agyeman, 2013). Contestations exist

around definitions of '*sustainable* development', as some question what should be sustained and for whom towards what end, "as sustainability on a crowded resource-constrained planet requires … unconstrained reassessment of …high-income consumer societies… prevailing cultural beliefs, values and assumptions" – a paradigm-shift (Rees, 2009, p. 308). Norgaard (1988) lamented, "environmentalists want environmental systems sustained. Consumers want consumption sustained. Workers want jobs sustained . . . With the term meaning something different to everyone, the quest for sustainable development is off to a cacophonous start" (p. 607). Most people agree with the overall goals (to preserve natural value and freedom of choice for present and future generations) of sustainable development yet fail to agree on acceptable means to achieve these goals, reflected in many international summits without meaningful action plans (Wulfhorst & Haugestad, 2006).

There is a mismatch between rhetoric and reality; while in theory, sustainable development is not only concerned with economic growth but also health, social inclusion, quality of life, quality of environment etc. (Barton et al., 2010; UN, 2015), the practice and application struggles with its divergence from its provocative origins. Criticisms have been levelled at the lack of attention paid to social justice (both within and between nations) and the failure to conceive of nature beyond its value as a resource (Agyeman, 2005). While initially featuring a strong commentary on resource scarcity, poverty, and inequality, which emphasized the inadequacies of market frameworks in accounting for environmental degradation, sustainable development adopted jargon that "stripped [it] of its critical content, and reconfigured [it] for compatibility with the larger priorities of the post-Cold War era" (Carruthers, 2001, p.102). The notion of the triple bottom line, while in theory a useful measure to ascertain 'sustainable development', has in practice been "mostly ignored in decision-making based on economic and

financial analysis" (Agyeman, 2005, p. 2), as urban competitiveness and economic growth are prioritized (UN-DESA, 2012). The language of sustainability has been institutionalized in the development industry, "by intergovernmental organizations, national agencies, and nongovernmental organizations that make a business of debating and implementing plans for society's future" (Ratner, 2004, p. 50). Further critiques focus on the approach being top-down, disproportionately favoring the powerful (Malloy & Ashcraft, 2020), and overly focused on future generations, with insufficient attention to immediate justice issues or shifting structural socio-economic systems (Agyeman et al., 2002). According to Smith (2003), the dominant discourse of sustainable development in Europe is one of *ecological modernization*, which is described as a discourse of 'eco-efficiency'. Its primary concern is the efficient use of natural resources within a capitalist framework (Hajer et al., 2015). Therefore 'green' discourses are foregrounded that emphasize ecological sustainability within the economic limits of capitalism. This discourse (although here referred to as 'green economy') is mirrored in North America, for example in the highly applauded 'Us and Canada Green City Index'. The ranking methodology was developed by the Economist Intelligence Unit (EIU) in cooperation with report sponsor Siemens and is based on eight environmental factors (CO2, energy, land use, buildings, transport, water, waste, air) and one political factor (governance). Siemens president and CEO Eric Spiegel, in an interview asserted that, "cities are creating comprehensive sustainability plans, utilizing current technology and proving every day that we don't have to wait to create a more sustainable future" (Ratner, 2004, p. 53). However, this approach is far from comprehensive; it focuses on one albeit important aspect of sustainability and sustainable communities, which is 'green' economies.

Barton et al. (2010) emphasize that at the core of the Brundtland definition of sustainable development is not environment but rather people and equity between present and future generations. Theoretically, to achieve sustainable development it would be necessary to "'grow' the economy, distribute this growth fairly, and in the process does not degrade the ecosystem" (Campbell, 1996, p.297). However, in practice it is reduced to a dualism and an apparent, I would argue, constructed conflict between economic growth and environmental protection, and ignorance of social justice due to neoliberal[2] economic agendas. We construct versions of 'green' movements and argue sustainability is *only* about protecting the 'natural' environment. While the theoretical focus on sustainable development is important; in practice narrowed sustainability visions diminish its utility in furthering change. However, 'sustainable development', while the most visible and mainstream concept, is not the only way of framing sustainable change.

2.2 Urban development

A seminal moment for *urban* sustainability and planning came in 1992 at the UN's Conference on Environment and Development (or the Rio Earth Summit) (Tallon, 2013; Skodra, 2018). Within the larger action plan for global sustainable development, Agenda 21 called for

[2] Neoliberalism is an ideology and set of economic policies pursuing development strategies based on conventional free market ideas (Rossi & Vanolo, 2017). Such policies seek to privatize formerly public services, deregulate trade, and increase efficiency while simultaneously reducing wages, deunionizing, and reducing public services (Picower, 2011). Neoliberalism at the urban scale fosters housing deregulation, the entrepreneurialization of local government and the privatization and commodification of urban public space (Rossi & Vanolo, 2017). As such, neoliberalism can be understood as a hegemonic form of governing that regulates and dictates the expansion of capitalism into the social and public spheres (Lemke, 2001)

sustainability to not merely be the exercise of nations and global bodies, but also of local entities and municipalities (Chapter 28) and urged the use of indicators (Chapter 40) to inform decision-making processes (UNCED, 1992). Since this first Summit, numerous cities worldwide have engaged in varied efforts at sustainability policy development and planning. There are now several urban governance reoriented policies and politics towards sustainability (cf. The Basque Declaration; Agenda 21; Aalborg Charter; European Conference on Sustainable Cities & Towns; Lisbon action plan; ICLEI). Yet, progress on the major 1992 targets remains disappointing, and many national sustainability action plans failed to challenge economic and institutional interests and practices that support status-quo (un)sustainability, for the same reasons sustainable development efforts fall short (see above) (Berkhout et al., 2003; Scoones, 2007; Jordan & Adger, 2009). Urban sustainability and sustainable development can serve as empty rhetoric, masking a variety of decidedly environmentally unfriendly actions through 'greenwashing' (de Freitas Netto et al., 2020). In response to historical disappointments, one could re-commit to the idea of sustainable development with renewed vigor. Indeed, this is the outcome of Rio+20, whose document 'The Future We Want' (UN, 2012) commits countries to defining and implementing a set of Sustainable Development Goals (SDGs). According to the 11th Goal of the SDGs, communities should aim "at making cities and human settlements inclusive, safe, resilient, and sustainable". These cities, according to the New Urban Agenda, "are participatory, promote civic engagement, engender a sense of belonging and ownership among all their inhabitants, prioritize safe, inclusive, accessible, green and quality public spaces that are friendly for families, enhance social and intergenerational interactions, cultural expressions and political participation, as appropriate, and foster social cohesion, inclusion and safety in peaceful and pluralistic societies, where the needs of all inhabitants are met, recognizing the specific needs of

those in vulnerable situations". The Leipzig Charter on Sustainable European Cities (2007) with special attention to 'deprived neighborhoods' emphasizes "the importance of integrated urban development, economic stabilization and education". The commitment described in the New Urban Agenda, defined by the conference Habitat III held in Quito in 2016, is to promote "institutional, political, legal and financial mechanisms in cities and human settlements to broaden *inclusive platforms*, in line with national policies, that allow *meaningful participation* in decision-making, planning and follow-up processes for all, as well as enhanced *civil engagement and co-provision and co-production*." (Sobral, 2018, emphases added). Cooperation on urban sustainable development mandates a respectful attitude towards human needs and wants, which implies listening to people's own perceptions of their needs. Without listening respectfully to people, "one risks development project implementation that is not welcomed by local population" (Wulfhorst & Haugestad, 2006, p.xiv). MacLaren (1996) notes that there is no generic formula for sustainability, notwithstanding organizing principles (e.g., intergenerational concerns, extraction rates), thus local conditions must dictate how policy is shaped. This thinking is critical as it mandates a plurality of pathways to be used to achieve desired outcomes. Yet, as the SDG process unfolds, many are questioning whether, again, this will prove to be an ineffective discourse that drives only more status-quo rhetoric of top-down superficial change (Hajer et al, 2015).

2.3 Urban transformations

Transformation—urban or otherwise—is commonly described using adjectives such as deep, far-reaching, radical, long-term, persistent (Koch et al., 2018; Wolfram et al., 2016; Ernst, et al., 2016; Avelino et al., 2014; Burch et al., 2018) and sometimes also as systemic and structural (McCormick et al., 2013, Westphal & Thwaites, 2016), irreversible (Avelino et al.,

2014), non-linear (Burch et al., 2014), non-incremental (Few et al., 2017), complex (multi-scale, multi-actor, multi-level) (Westphal & Thwaites, 2016; Hodson et al., 2017), and inherently contextual and political (Maassen & Galvin, 2019). The term is used heterogeneously, across disciples and mostly outside of the sustainable development literature (Maasen & Galvin, 2019), to describe a variety of urban outcomes. Approaches focusing on sustainable urban transformation are a subset of a larger body of research; albeit a growing one. Within this subset there is again diversity both in terms of the theorizing and application of the term. Despite divergences, a consensus exists that transformation goes beyond superficial and incremental change, is non-linear and challenges the status quo of existing development structures (McCormick et al., 2013). Therefore, it is important to differentiate between sustainable urban development, transition, and transformation. This is not simply a matter of semantics, although use of one term can often imply the others (Maasen & Galvin, 2019). Sustainable urban transformation places a stronger emphasis on structural transformation processes, both multi-dimensional and radical change, which can effectively direct urban development towards sustainability. Put simply, sustainable urban development is primarily about development IN urban areas while sustainable urban transformation is about development or change OF urban areas (McCormick et al, 2013). There is also a discussion in the academic literature on the qualitative distinction between 'transformation' versus 'transition' (Wolfram & Frantzeskaki, 2016; Hölscher, Wittmayer & Loorbach, 2018). While sometimes used interchangeably, there is an etymological distinction that links transition to a meaning of 'going across', while transformation relates to a 'change in form' (Wolfram et al., 2016; Maassen & Galvin, 2019; Hölscher et al., 2018). A heuristic distinction can also be made between the terms as different pathways for change (Stirling, 2015; Temper et al., 2018). 'Transitions' can be seen as processes

managed “under orderly control, through incumbent structures according to tightly disciplined knowledges, often emphasizing technological innovation, towards some particular known (presumptively shared) end” (Stirling, 2015, p. 54). ‘Transformations’, in contrast, involve “more diverse, emergent and unruly political alignments, more about social innovations, challenging incumbent structures, subject to incommensurable knowledges and pursuing contending (even unknown) ends” (Stirling, 2015, p. 54). Transformations are ‘radical’ rather than ‘incremental’. Incremental changes may rely on current modes of thinking and existing structures to modify systems (e.g., carbon tax or green building certification), radical change however, may require deep systemic and structural shifts that challenge assumptions, beliefs, and values, along with government structures, development paradigms, and power relations (e.g., commons, cooperative economies) (Blythe et al., 2018; Bennett et al., 2019). No discourse begins tabula rasa. Transformations do not occur in a vacuum; they rely on and build on learnings from histories. While history has witnessed numerous disruptive economic and social changes – from the Industrial Revolution to the end of slavery to the rise of feminism – transformations towards sustainability differ in their focus on “rendering the economy and existing model of development more just and sustainable” (Scoones et al., 2015, p.2). The urban transformation agenda seeks to reconfigure interlinked environmental, social, and economic relations (McCormick et al., 2013) and break away from unsustainable ways of organizing society (Wolfram et al., 2016; Geels et al., 2017). The economy (i.e., the market) must stop being the source of policy goals and become one of many tools to achieve them (Agyeman & Evans, 2003).

Calls in science, policy, and practice to foster urban transformations are increasing: The recent IPCC Sixth Assessment report (IPCC, 2022), the IPCC special report SR15 (IPCC, 2018)

and the Cities IPCC research and action agenda (Cities IPCC, 2019), as well as other city-driven or city-targeted initiatives (such as C40 cities, ICLEI, 100 Climate Neutral Cities, Carbon Neutral Cities Alliance, 100 Resilient Cities, Covenant of Mayors, WWF One Planet Cities, etc.) and local civil-society-led initiatives are demanding or fostering capacity and actions that target urban sustainability transformations. So far, academic publications largely report on and focus on high income cities (in particular, Western Europe) and megacities such as in an analysis of 478 cities from a global dataset (Mahtta et al., 2019; Mahendra & Seto, 2019; Ernst et al., 2016; Maassen & Galvin, 2019). Moragues-Faus and Marsden (2017) ask researchers to critically question the transformative potential of these initiatives and their risks of creating "political idylls of achieving the common good by an enlightened government of elites" (Rancière, 1999, p.93). Similar critiques were voiced by McLaren and Agyeman (2015) in 'Sharing cities', about the exclusion of disadvantaged communities from transformative sharing practices. The increased call for urban transformation has not yet created powerful initiatives that are decisively shifting urban development in an environmentally sustainable, socially just and equitable, and economically viable direction (Maassen & Galvin, 2019; Mahendra & Seto, 2019).

2.3.1 Transformation narratives

Urban transformation assumes "fundamental modifications and system changes" that enable urban change towards sustainability (WBGU, 2016, p.2), yet the literature remains vague regarding normative positions and how to bring about transformations, with few notable exceptions (e.g., Temper & Del Bene, 2016; Mehta et al., 2021). There is a dearth of empirical evidence that explores processes of transformation, that is, their drivers, challenges and outcomes for sustainability and social justice. Broadly there are four main narratives of urban transformations: technocentric transformations, marketized transformations, state-led

transformations, and citizen-led transformations (see for example Scoones et al., 2015). Each is reflecting different framings of problems and solutions (what is it that needs to be transformed and how we do that), and different visions of sustainability. In other words, each narrative suggests a pathway or set of pathways to urban transformations. Notably, across narratives, questions of equity and justice are *not explicitly* considered, although they could be implicitly assumed to be addressed (Scoones et al., 2015). In technocentric narratives, this occurs through stewardship of global public goods by benign elites, while the market is considered to deliver the best technologies and goods at the best price as consumers support transformations through their purchasing power in the marketized version. State-led transformations rely on the authority and legitimacy of the state to protect rights, oversee redistribution, and ensure that the interests of the majority are served. Citizen-led actions usually challenge the ability of states, markets, or technologies to respond to current crises. In this narrative, justice must derive from popular understandings about what is fair and socially acceptable (Scoones et al., 2015). Agyeman (2003) considers the lack of foregrounding issues of equity and social justice as one of two major challenges in achieving sustainable communities. In principle in almost all domains of sustainability, he argues, we know what needs to be done and how to do it, however we are not doing it. He states that "this is especially so for so-called *wicked problems* such as climate change where the challenge is not the science, but the *social science*: how do we shift the paradigm, the *political and civic* culture such that the will to act is prized by our politicians – and how do we inculcate *public understanding* such that the need for action is both supported and assured?" (Agyeman, 2003, p.1, emphases added). A key is to frame transformations not only in terms of responding to threats, but also as moments of opportunity (Scoones & Stirling, 2020). This means questioning dominant economic and development discourses that require the

reconfiguration of knowledge and value systems, and the reorganization of institutions and frameworks (Few et al., 2017). Scott Campbell (1996) suggests that in order to create sustainable, thriving and just cities, urban planners are caught in a 'planner's triangle' between the apparent opposing goals of protecting the environment, encouraging economic development and achieving social equity. However, these issues are inherently linked as I will discuss next.

2.4 Sustainability justice

Countries or regions with greater commitment to equity, evidenced, for example, by more equal income distributions and greater civil liberties, also tend to show greater commitment to environmental protection (measured for example in lower concentrations of air and water pollutants, access to clean water and sanitation) (Torras & Boyce, 1998). Boyce et al. (1999) surveying the fifty US States, found that those with greater inequalities in power distribution (measured by voter participation, tax fairness, Medicaid access and educational attainment levels) had less stringent environmental policies, greater levels of environmental stress and higher rates of infant mortality and premature deaths. At a more local level, Morello-Frosch (1997) showed that highly segregated counties in California, in terms of income, class and race, had higher levels of hazardous air pollutants. This is what the interconnection between environmental quality and human inequality looks like at national, regional and local levels (Agyeman, 2008). "Justice and injustice are infused into the multiscalar geographies in which we live, from the intimacies of the household to the uneven development of the global economy" (Soja 2010, p.20), thus there are different scales of injustice ranging from the individual to the global level. Wilkinson and Pickett (2009), in 'The Spirit Level', concluded based on 30 years of research that unequal societies are worse for everyone, whether poor or rich. Virtually every contemporary social and environmental problem from violence, obesity, drugs, illness

and mental health, life expectancy, community life and social relations, long working hours, teen birth rate, educational performance, prison populations, etc. – is more likely to occur in less equal societies (Wilkinson & Pickett, 2009). As Agyeman (2008) remarks "from global to local, human inequality is bad for environmental quality" (p. 752). Further, climate inequalities exist within and between countries and environmental problems tend to impact most severely on the most vulnerable groups in urban society. Marginalized and racialized groups are disproportionately affected by environmental hazards and climate change related events, while lacking reception of equal benefit in sustainability solutions (Anguelovski et al., 2016; Islam & Winkel, 2017; Russo & Pattison, 2014). The environmental consequences and costs of urbanization also impact unevenly on different social groups, in the same way that the de-industrialization process has been spatially and socially uneven (Tallon, 2013).

The Environmental Justice Movement and Paradigm (EJP) was a first response to environmental injustices and has been led by activists in the global North and South (e.g. Middleton and O'Keefe (2001; Adger 2002; Shiva 2002; McLaren 2003; Buhrs 2004). It is important to note that women, especially Black women and women of color dominated the movement early on, representing around 70 percent of activists in local and state organizations (Bell & Braun, 2010; Russo & Pattison, 2014; Verchick, 1996). Environmental justice organizations emerged from grassroots or bottom-up activism during the Civil Rights Movement (Agyeman, 2008). Scholarly writing on the EJP primarily captured how environmental hazards influence the health of historically disadvantaged communities, specifically minority and low-income groups (Bryant & Mohai 1992, Bullard 1990). While the application of the sustainable development paradigm and movement lacks equity as a core concept, the EJP foregrounds this concept (Agyeman & Evans, 2004). EJP was framed around concepts such as "autonomy, self-

determination, access to resources, fairness and justice, and civil and human rights" (Taylor, 2000, p. 534). The term 'environment' became discursively different in the EJP, taking on the broader meanings of 'where we live, where we work and where we play' (Alston 1991), and integrated class, race, gender, environmental and social justice concerns (Taylor, 2000). Because the movement was led by racialized, low-income groups, it created an accessible paradigm that similar disproportionately affected groups could identify with (Agyeman et al., 2002). Yet, considerations of environmental justice have not found much application in theories of sustainability, partly due to their mostly reactive rather than proactive, local rather than global, and grassroots rather than policy focus (Agyeman & Evans, 2003). Some opponents have even argued that theories of environmental justice and sustainability are politically incompatible (Dobson, 1999). Both sustainable development and EJP center on the environment, yet they vastly differ in the way they framed justice and equity considerations, and who leads them. This divide can be seen at an international level, where higher-income countries prioritize a 'green' sustainable development agenda, in contrast to lower-income countries who prioritize a 'brown' human rights agenda focused on health, education, and poverty alleviation (Agyeman, 2008). However, Wilkinson and others (2010) summarize why greater equity is necessary for sustainability: "(1) inequality drives competitive consumption, or the desire for materialistic satisfaction; (2) cohesion and levels of trust are higher in more equal societies; (3) developing sustainable communities needs high levels of adaptability, innovation and creativity" (from Agyeman, 2013, p. 6).

Different dimensions of justice, lead to different conclusions and outcomes (Dobai et al., 2020; Stumpf et al., 2016; Agyeman, 2013). Distributive justice is defined in relation to the allocation of divisible goods among people (Schlosberg, 2007). Yet, communities can have

multiple and sometimes conflicting needs, and thus a purely distributional notion of justice can homogenize identities and fail to recognize the uniquely different needs of equity-seeking groups (O'Brien, 2012). Many models, such as Raworth's doughnut (Raworth, 2017) and the early planetary boundary (Rockström et al., 2009) models, pursue an equitable distribution of resources (both costs and benefits) to ensure universal wellbeing without over-extending available resources and planetary boundaries (Rockström et al., 2021). Procedural or participatory justice refers to meaningful involvement and equity-oriented policies (Boone et al., 2009). Recognition calls for 'making visible histories of discrimination and disrespect' (Hobson 2003, p. 5) and challenging the norms, values, and meanings that help produce and legitimize inequality (Agyeman, 2013; Fraser, 2000, Fraser & Honneth, 2003). Others have also considered historical justice (Feser, n.d.), and capabilities (Sen, 2009; Nussbaum, 2000). Sen (2009) urges that communities must be involved in identifying their own set of capabilities, that is, their true opportunities to do and be what they have reason to value, because such control over the conditions of life is necessary for justice, and on a secondary level because capabilities may be culturally specific. Fraser (2003, 2009) advocates a multidimensional concept of justice, integrating the need for redistribution, alongside politics of recognition- of emotional, personal, and political recognition. She also emphasizes the need for procedural justice, incorporating simultaneously recognition and participation in decision-making (Schlosberg 2007, Schlosberg 2013). Failure to engage in considerations of multidimensionality of justice limits our ability to approach anything close to what constitutes the just and sustainable futures we are theoretically capable of. A broader concept of sustainability in the context of environmental justice reflects a 'greater level of social and economic equity' as a basis for a sustainable society (Agyeman,

Bullard & Evans, 2003). We need to understand that while there is growing *human inequality*, there will never be *environmental quality*.

2.5 Just urban sustainabilities

The notion of just sustainabilities emerged as a response to the debates about the extent to which environmental justice concerns can be considered in tandem with sustainability (sustainable development). In this sense, it can be seen as being both flexible and contingent, composed of overlapping discourses, which come from recognition of the validity of a variety of issues, problems, and framings (Agyeman, 2007). The just sustainabilities paradigm, at global, national, regional and local scales means "acknowledging the interdependency of social justice, economic wellbeing and environmental stewardship. The social dimension is critical since the unjust society is unlikely to be sustainable in environmental or economic terms in the long run" (Haughton, 1999, p. 64, cited in Agyeman, 2005). A poor environment is a symptom of existing inequalities and threatens the systems that support human life, from housing to health to participation in political decision making itself (Holland, 2012, 2014). A functioning environment on the other hand provides the necessary conditions to achieve social justice" (Agyeman et al., 2016). Julian Agyeman and Tom Evans identify the theoretical compatibility between the concepts of environmental justice (and associated EJP) and environmental sustainability as "a critical nexus for a board social movement to create livable, sustainable communities for all people in the future" (2003, p. 35). "Despite the historically different origins of these two concepts and their attendant movements, there exists an area of theoretical compatibility between them" (2003, p. 35). The authors argue that sustainable communities strive for the protection of the environment (e.g., minimizing waste, using energy efficiently, limit pollution), meeting social needs (e.g., value and protect diversity, protect human health,

emphasize prevention, empowerment) and promoting economic success (e.g., create vibrant local economies, value unpaid work). *"*Sustainability cannot be simply a 'green', or 'environmental' concern, important though 'environmental' aspects of sustainability are. A truly sustainable society is one where wider questions of social needs and welfare, and economic opportunity are integrally related to environmental limits imposed by supporting ecosystems" (Agyeman et al. 2002 p. 78). Agyeman (2005) referred to the 'equity deficit' in sustainable development and mainstream sustainability discourses, emphasizing that sustainability solutions have been narrowly focused on 'green' or 'environmental' aspects. In a review of 30 sustainability organizations, including all 'Big Ten Groups', Agyeman (2005) found that 30% did not mention equity or justice at all and only 13% expressed more than a passing concern for just sustainability. Indeed, while concepts such as the New Environmental Paradigm developed by Catton and Dunlap (1978) addresses intergenerational equity (between people of different generations), it lacks focus on intragenerational equity - "equity or justice now" (Agyeman, 2008, p. 752). Additionally, the sustainability movement has been predominately white, educated, middle or upper class (Russo & Pattison, 2016; Agyeman, 2008; Camacho, 1998), illustrating the lack of procedural justice. Just sustainabilities, as introduced by Agyeman et al., (2003), is positioned as a middle ground, bridging these two paradigms of sustainable development and environmental justice, addressing the 'equity deficit'. By integrating issues such as social needs, welfare and economic opportunity while also considering environmental threats, a more 'just' definition of sustainability is created. Since its inception, scholars have adopted the more widely used plural *just sustainabilities,* which acknowledges the relative, place and culturally bound nature of the concept that openly resists prescriptive one-fits-all templates for sustainability. Inherent in the definition is a focus on 1) improving quality of life and well-

being, 2) meeting the needs of both present and future generations (inter- and intra-generational equity), 3) justice and equity in terms of recognition, process, procedure, and outcomes, and 4) living within ecosystem limits (one-planet living). The central premise of the JSP with its focus on quality of life is calling for a "new economics" (Agyeman, 2005) that emphasizes that after a certain standard of living is guaranteed, more money does not equal more happiness. It hereby directly opposes growth-oriented market capitalism.

Despite debates around just sustainability evolving over two decades and implementations primarily in the global North (mostly in communities in the US partly due to its uptake by the environmental justice movement), it has not found widespread acceptance in the European context and the inability to reconcile justice and sustainability in urban practice persists (Culwick Fatti, 2022). An integration of just sustainabilities into the concept of urban transformation is proposed herein, to ensure the intentionality and foregrounding of social justice in urban change initiatives. Without understanding local, on-the-ground impacts of current urban development approaches, global environmental challenges cannot be dealt with in an equitable and sustainable way (Anguelovski & Roberts, 2011). This further reflects Nobel Laureate Elinor Ostrom's belief that a decentralized, local approach to climate change could be more effective in aggregate than current global approaches. Local approaches have the potential for ensuring broad participation or communication with a diverse array of stakeholders, addressing a fundamental procedural 'equity deficit'. Whole communities benefit when they, and organizations acknowledge every person's rights and responsibilities to contribute to and receive from community participation, in a relationship with reciprocal obligations. Recognition, distribution, and participation are key in actualizing just and sustainable cities (Agyeman et al., 2016). A multidimensional understanding of justice

emphasizes that injustices emerge from the distribution of resources and risks, but also, from problem framings that obstruct alternatives due to divergent ontological assumptions (Fraser, 2009). There are three apparent tensions articulated along dimensions of justice that highlight this (Caplet & Harrison, 2020). The 'sustainability-participation' tension involves conflicts between rapid and bold policy action in time-sensitive contexts and inclusive processes (Caplet & Harrison, 2020). Second, the 'sustainability-recognition' tension involves conflicts between sustainability performance and recognition of diverse value systems and rights (Caplet & Harrison, 2020). Third, the 'sustainability-redistribution' tension involves conflicts between achieving sustainability performance and equitable distribution of benefits and burdens (including historical reparations) (Caplet & Harrison, 2020). It is these tensions that are exploited in discourses that subordinate equity to profit-minded urban development (Checker, 2011). Just and sustainable transformations are about grounding sustainability in equity considerations and providing necessary capacities to urban communities that allow them the power and agency to change their life circumstances. "The future of the cities is shaped by urban transformations that should encompass social aspects […] utopian thinking can help us choose a path into the future that we believe is justified, because its concrete imaginary is informed by values that are precious to us" (Friedmann 2011; [2000], p. 146). Notions of just sustainabilities that reconcile these apparent tensions are already guiding the actions of activists' actions on the ground. Initiatives at the local level, from straw bale housing to sharing food practices are often connected to political struggles, yet at the city-wide level expert-led solutions predominate. However, if we move attention from what civil society actors and residents can do to how structural changes can support them, the notion of just sustainabilities can be advanced as a set of principles, rather than strict rules, for urban practice (Rydin, 2013; Castan Broto & Westman,

2017). In an analysis of 400 city-wide initiatives in more than 200 cities in all world regions, however, justice was only directly addressed in 18% of them (Castan Broto & Westman, 2017). Most of the examples consisted of the introduction of new urban planning and management practices to handle socio-environmental issues (Castan Broto & Westman 2017). Unsurprisingly, therefore, there are no standard solutions, and no singular roadmap or blueprint, for realizing just sustainable urban transformations.

3. Just urban sustainable transformations: Considerations and strategies for change

So, what then can we say about theories of change towards just urban sustainabilities? Each perspective on urban transformations towards sustainability differs in the strategies deployed and how these combine different narratives and responds to different imperatives of transformations. What this suggests is that there are many pathways of change. Rather than there being one big transformation, it is more likely that there will be multiple transformations that will intersect, overlap, and conflict in unpredictable ways. Efforts to foster transformations towards urban sustainability are ongoing, and competing for attention, support, and capital. There will be failures, setbacks, and unintended consequences, as with any project of radical change. A JUST framework does not resolve tensions, conflicts, or contestation. Rather, JUST, creates a nexus between and across concepts around a common priority: equity and justice. Drawing from the reviewed literature presented above, four broad and overlapping areas of considerations for JUST emerge, with implications for strategies for change: 1) considering JUST as taking place in socio-technological-ecological systems, 2) across temporal and spatial scales, 3) in terms of processes and in structures, and 4) according to the interplay of knowledge and power.

3.1 Cities as socio-technological-ecological systems

Urban spaces are complex systems with emergent phenomena characterized by the collective behavior of their residents who are themselves complex systems. Cities are ostensibly made up of (at least) two sub-systems: a physical sub-system, made up of hard-built infrastructures such as buildings and roads, and a human sub-system, made up of soft-built infrastructures such as institutions, organizations, and human interactions. These urban infrastructures are central in visions about (un)sustainable futures, whether as utopian dreams of smart and/or resilient cities, or as dystopian nightmares of escalating socioecological crises (Addie et al., 2020). Any reasonable theory of urban transformations would need to link these systems together. Histories chart the co-evolution of soft-built infrastructures like policies, institutions, and even whole political systems with hard-built infrastructures and material resources. Material objects contribute to the creation of networks and wield power (Wyborn et al., 2019), which means that architectural designs, blueprints, buildings, and materials can all be seen as agents with the potential to shape and be shaped by the resulting outcomes of transformations. All actions that create just and sustainable cities are taken by humans, thus the linking mechanisms between urban systems must involve attention to human practices (thoughts, feelings and behaviors). March claims that change is often the result of "conventional, routine activities" (March 1981, p. 575). This observation is explained by structuration theory, which posits that all activities produce and reproduce structures, and these structures constrain and enable future actions. Thus, change occurs in recurrent variations in practice over time (Orlikowski, 1996, p. 66) and through the selective retention of variations in performances of routines (Feldman & Pentland 2003). Yet, infrastructure futures are mostly envisioned and planned through linear, rational, and techno-economic approaches, ignoring complexity inherent to urban transformations—for example, existing institutional complexities, the contested political

nature of change, sustainability and justice, other ontological and normative assumptions, and spatial-temporal situatedness (Monstadt et al., 2022). JUST, by conceptualizing interactions across pathways, unfolding non-linearly, horizontally, and vertically, offers the explanatory power to account for the ways that soft-and hard built infrastructures—a relatively slow-moving collection of things—can "come to function as an ordering force in relation to the practices of humans arranged in conjunction with it" (Marston, Jones, & Woodward, 2005, p. 425). However, such multiscale complexity alone is not enough to describe and foster change in some salient features of urban systems. Technologies need to be highlighted as a unique element in the socio-ecological understanding of JUST. Technologies are dynamic and mediate and change the scale of human-nature relationships, can both create and remedy inequalities and serve as an organizing force for almost all sectors of urban life (Ahlborg et al., 2019). Policy makers include technological considerations in their agendas and make decisions regarding technologically related challenges. Mitchell (2011), for example, outlines how forms of democracy are entwined with coal and oil technologies. Politics is thus co-constructed with sociotechnical systems and particular resources. Transformations are affected by the material qualities of material resources, with water, for example, being described as the 'un-cooperative commodity' – due to its fluidity (Bakker, 2010). Likewise, technologies may ignite changes in systems and infrastructures built around them (Leggett, 2014). The growing literature on sociotechnical transitions has generated many important insights into how, when and why sociotechnical change is possible: how niche technologies emerge and displace incumbent regimes and how a series of landscape factors can frustrate or enable this change (Geels, 2005; Scarse & Smith, 2009; Geels & Schot, 2007; Loorbach, 2007; Grin et al., 2010). While technologies are often praised as the 'solution' for sustainable cities, research into urban transformations suggests that they are "far more a social,

organizational, economic, cultural and political challenge, than a technological one" (Scoones at al., 2020, p. 5).

Thus, JUST necessitate an understanding of urban spaces as 'socio-technological-ecological systems' (Ahlborg et al, 2019). There are challenges with this fusion, as "the focus of socio-technical transitions research is different from socio-ecological systems[3] research in a number of respects: objects, objectives, structure or function, and resilience and transformation" (Smith et al., 2005, p. 13). Tensions exist in particular around normative assumptions and priorities underlying the way problems are framed, whether the status-quo is desirable or not, and what should change. For example, on the topic of food systems, one can think of the effects of increasing droughts and changes in precipitation patterns on large-scale monocultures. If one's goal becomes the maintenance (and resilience) of large-scale monocultures, such as wheat, then efforts and a lot of resources will go into developing new kinds of crops that are resistant to drought. Whereas, if the focus becomes the desired function of food security, the focus could be on shifting away from large-scale monocultures to more diverse crop arrangements, or alternative agricultural systems, such as agroecology. Focusing on food justice would examine labor conditions of agricultural workers, land ownership, food access, and distribution in addition to ecological considerations such as soil degradation, and water shortage. Technologies, infrastructures and human systems are always implicated, yet a common grounding in values of equity and justice can serve to guide envisioned futures. Unravelling co-constructed interactions

[3] (see Olsson et al., 2006; Olsson et al., 2010; and Westley et al., 2013 for applications of socio-ecological systems research to transitions and transformations)

between technologies, other infrastructures and human systems can create alternative pathways, making it a central premise of JUST.

3.2 Spatial and temporal scales

JUST need to contend with questions of spatial and temporal scales. While local communities are affected by the here and now, transformations are usually framed around changing wider systems that are globally and historically enmeshed in unequal power relations (Mehta et al., 2021). Cities are not isolated entities but are embedded in regional and global networks (Grimm et al., 2008; Acuto, 2016), thus transformative change must occur within and beyond their administrative boundaries. "No individual country, region, city or development project can achieve sustainability on its own if any system of which it is a part, or to which it is critically connected, is unsustainable" (Rees, 2015, p. 306). No local transformation can be considered just or sustainable without considering the global context. Simon and colleagues (2016) contend that cities exist within larger political and administrative regions and that their transformation towards sustainability can only happen as part of broader changes towards global sustainable societies.

However, there is a danger in using universal aspirations for abstracting from the global to the local in fostering transformations. Change hardly happens in universally convergent and homogeneous ways, rather it is embedded in local contexts and shaped by situated forms of local knowledges and power. MacLaren (1996) notes that there is no generic formula for local sustainabilities, aside from the organizing principles adopted, and local conditions must dictate how policy is shaped. The implementation, use and outcomes of policies and infrastructural 'solutions' depend on highly situated contexts (Healey, 2013; Monstadt & Schramm, 2017). 'Universalist or diffusionist' notions that assume 'solutions' can be easily transferred from one

place to another have therefore been increasingly questioned (Monstadt & Schramm, 2017). This thinking is critical to JUST, which proposes a set of organizing principles rather than blueprints for change. Consequently, it is necessary to recognize that not only may an initiative be regarded as commonplace in one city and radical in another, but we need to build understanding about the translation and adaptation of approaches to transformations to the context of specific locales (Monstadt et al., 2022).

In reverse, there is also a danger of working solely hyperlocal, as it may neglect efforts towards systems change. Insufficiently addressing broader systemic issues such as the failure of the economic system may obscure questions of responsibility and shift it 'downwards' to individuals at the community level (Blythe et al., 2018; Taylor, 2014; Mehta et al., 2021). The narrative of bottom-up change glorifies the role of empowered citizens to democratize technology, production and the institutions that oversee them (Leach & Scoones, 2015). These citizens are knowledgeable actors, exercising their agency both individually and through networks across spatial and temporal scales. The cumulative effects of social movements create many pathways for change and certainly explain momentum for past transformations (Stirling, 2015). This narrative of transformations requires a focus on cultures, practices and mobilizations that create the pressure for change, acting both to disrupt status-quo pathways, but also construct alternatives (Smith & Ely, 2015). Yet, given the nature of the status-quo, current distributions of power, as well as the scale of change required, bottom-up change may not be sufficient. This is because control over the very things in need of change (e.g., technologies, economic system) lies with powerful actors (Wiek et al., 2014). Further, the potential for bottom-up change is easily exaggerated by those aiming to effect change and neglects demands on people's time and capacity to engage in constant mobilization, or the high personal and political risks of doing so in

many parts of the world. This calls into question whether transformations can, in fact, be managed and directed, and if so, who should lead this task.

Placing an analytical focus on cities as socio-technological-ecological systems, we can ask what kind of human-environment relationship we aim for and how technologies should mediate such. This brings us to question what values and ethics inform our priorities. Achieving just sustainable cities is not merely a question of delivering specific sustainability initiatives in specific sectors such as transport or housing; it is also about catalyzing broader socio-cultural changes and fostering the development of infrastructures directed towards reimagining society and the economy (Castan Broto, 2018). Using scenario planning[4] for sustainability and environmental justice in Stockholm, authors note that both a local and a broader perspective are necessary to determine whether a new development is just or not (Gunnarsson-Östling & Höjer, 2011). Local perspectives in this example responded to potential environmental threats faced by residents yet failed to account for global perspectives around energy usage. Similarly, Levkoe et al (2016) in their analysis of five Canadian case studies on community-campus engagement (CCE) for just and sustainable food systems, note the importance of developing relationships based on mutual benefit and reciprocity. Developing meaningful communication and relationships was enabled through physical proximity, as communication occurred "on an informal basis (e.g., during social gatherings held outside official CCE activities)" (Levkoe et al.,

[4] Scenario planning is a participatory, whole system process of future-sensemaking that involves the imagination of multiple adaptations based on a range of probable scenarios. Scenario planning stimulates strategic thinking and helps to overcome thinking limitations by creating multiple futures (Amer et al., 2013; Mazmanian et al., 2013).

2016, p. 52). Although the focus of the projects was municipal procurement, the broader goal was the establishment of new networks of scholars, activists and civil servants across cities working on transforming food systems, which was enabled through these developed relationships. Flexible structures, processes and tools aimed to "maximize inclusiveness through cultivating contextual fluidity" (Levkoe et al., 2016, p. 53), meant placing both relationships AND broader visions at the heart of the work. JUST discourse brings top-down and bottom-up approaches together (Ziervogel, 2019), emphasizing the role of global action to uproot the status-quo systems that contribute to both environmental crises and inequality, whilst acknowledging the role of local actors in effecting change (Culwick Fatti, 2022). Pelling (2012) suggests that the source of alternatives is less important than the need to influence other domains where societal "shifts and movements are not minor historical events and most likely require energies both at the grassroots as well as momentum from above" (p.7). The basis for radical changes is flourishing local alternatives connected to wider systemic transformations meanwhile paying utmost attention to historical, social and political specificities that contribute to building further transformative changes build (Scoones et al., 2017).

Thus, there is a need to also examine the temporal scales of transformations. 'Old' and 'new' ways of organizing society overlap over extended timeframes during which aspects of status-quo systems persist (Monstadt, 2011; Moss, 2020). This means that transformative and status-quo systems components coexist. Emerging transformations may not simply replace status-quo norms, values, technologies, infrastructures and associated institutions with new ones; instead, they foster alternative pathways. Transformations have thus been described as 'conjunctions of continuity and change' (Monstadt et al., 2022) or as 'patches of transformation' (Mehta et al, 2021). They offer alternatives amidst largely unsustainable processes to reimagine

urban development and inspire radical changes that can be scaled up and out. Transformations also create spaces in which alternatives can emerge by reconfiguring relations of power and knowledge to challenge dominant trajectories of development. In a JUST framework varying 'degrees' and 'types' of urban transformations are possible and considered. Hence, JUST entails a dual focus on high-level, longer-term transformations combined with an honest recognition of the realities of near-term local changes at the same time. In other words, JUST are approaches of local change with a transformative agenda, where a normative focus based on equity and justice integration orients current local efforts (such as policy change) within a broader narrative of long-term global transformative change. This framework challenges the duality between theory and implementation (theory and practice) or knowing and doing and underlines that change occurs through an ongoing dialectic between knowledge and practice.

3.3 Processes and structures

How then do we measure progress towards JUST? There is a profound mismatch between how transformations are currently and historically practiced – complex, overlapping and contested – and how they are talked about in theory and imagined in policy – often as a plan, specified in terms of goals and targets (Stirling, 2015). As argued, transformations result from the coexistence, competition, and interaction between several pathways, supported by diverse actors with (uneven) power. Just as it is impossible to conceive of the end-point of unfolding transformations towards sustainability, previous transformations did not start out with clear blueprints and plans that were then rolled out (Newell, 2015). Thus, JUST are best understood as ongoing processes, rather than measurable end-states.

Despite best intentions to foster JUST, constant adaptation to changing conditions resists any interventions intended to predict and manage change (Folke et al., 2002). Maassen and

Galvin (2019) in their discussion of 'what urban transformation looks like in practice', "describe urban transformation as encompassing a plurality of contextual and relative changes, which may progress and accelerate positively, or regress over time (p. 16)". Something that is intended as a transformative process can fade over time due to external and internal drivers, while unplanned transformations can occur as a result of 'failed initiatives' or tragic circumstances (Leah et al., 2018). The rapid urban transformations taking place during the Covid-19 pandemic remain a vivid reminder. Thus, any effort to capture JUST needs to map out changes in terms of their short and long-term impacts on socio-technological-ecological systems (Mehta et al., 2021). Transformative initiatives, or projects with the aim of JUST may be better evaluated by the short-term changes that emerge, rather than the long-term changes that are anticipated. Patton (2019) argues that to develop a theory of change for transformative projects, they are best thought of as subsystems in broader systems transformation which are built on and integrated for greater momentum and cumulative impacts. Rather than having 'a rule book' that limits evaluation, Patton (2019) argues for a set of guiding principles that local actors can use in evaluating the progress on transformations. Likewise, what 'outcomes' would indicate transformations have occurred? Can we ever really conclude that we have achieved 'equity across social, technological and ecological systems of a city'? Is the goal of overcoming urban patterns of exclusion such as structural racism, government-sponsored displacements, and gentrification a utopian ideal that restricts transformation efforts? Experiences of deliberate and quick transformations in human societies are rare (Patt, 2010). In fact, most studies have found little evidence of radical changes resulting from urban transformation initiatives, leading some to diagnose an "implementation gap" between theoretical concepts and claims about the nature of sustainable urban transformation (Mahendra & Seto, 2019; Maassen & Galvin, 2019). Here,

Weick's (1984) suggestion remains relevant, that responding to complex problems could benefit from an approach focusing on 'small wins', which refers to 'concrete, complete outcomes of moderate importance' that can create momentum for larger-scale change. I suggest the use of the concept of 'emerging transformations' to capture both processes that are drivers of transformations and structural changes that support their continued emergence (Ritchey, 2014). Interestingly, Weick (1984) states that "careful plotting of a series of small wins to achieve a major change is impossible because conditions do not remain constant" (pp. 43–44). JUST are based on common values that focus on 'greater' equity. The addition of this word is crucial in our conceptualization of changes. In this just sustainabilities paradigm, equity and justice integration are the radical changes transformations are calling for. There is a delicate balancing act in deciding at what point of integrating equity and justice considerations can changes be considered substantial enough to constitute transformations. I argue that while transformations may occur in the mundane practices, the everyday, and may do so incrementally at first, they always constitute radical changes in sustainability paradigms by foregrounding justice and equity considerations. JUST identify and facilitate 'small changes', that can be present but (largely) unnoticed, and link them through alternative narratives, as small to moderate changes could have the potential to cumulate into radical transformations over time (Patton, 2019).

3.4 Knowledge and power

These discussions highlight, that approaches to JUST must recognize the need to encompass diverse actors and interests, alongside consideration of what visions of transformation are privileged, and whether this is just and equitable. In this regard, all transformations must address questions of power: who defines the need, visions and terms of change, and which relations of power shape different pathways?

As researchers become involved in transformative initiatives, these realities demand attention to power and knowledge, as they shape the selection of (social) science theories used to understand and foster transformations (Scoones et al., 2020). Power, influenced by particular social, political, economic contexts, is central to any understanding of what is likely to happen, and what is not (Schmitz, 2015). Power can explain which pathways get supported and legitimized, and which are ignored and fail to generate momentum. Recent contributions of adopting the 'multi-level perspective' to the sociotechnical transition literature (e.g., Geels, 2014) contribute to a deeper understanding of the processes of knowledge production and empowerment, as niche experiments challenge existing regimes (Smith & Raven, 2012). Power is commonly conceived of as 'domination', or 'power over' (Bachrach & Baratz, 1962). Yet, it is not always exercised coercively, but often through subtle mechanisms. In this sense, domination can manifest in the form of visible, hidden (Foucault, 1971), and invisible/internalized forms of power (Lukes, 1974; Gaventa, 1980). Visible power is manifested through decision-making bodies such urban institutions, economic frameworks or other structures. Hidden powers operate to maintain privilege by creating barriers to participation, excluding issues from the public agenda or controlling decisions 'behind the scenes'. In other words, this power of domination is exercised by people and networks (Long & Van Der Ploeg 1989), to prioritize their interests and normative assumptions over others. Thirdly, invisible power works through discourses, narratives, worldviews, values, knowledges, and behaviors that are accepted as normative without public questioning (Foucault, 1971). Yet, all forms of power are materialized in urban infrastructures, institutions, the market and civil society, giving rise to structural inequities and unequal power relations. Notably, Anderson (2019) outlines, practices that discriminate against women and sustain male privilege in wider patriarchal societies are also manifest in governance

structures, constraining equitable participation. Women and other historically marginalized groups find that rules, norms, cultures, and traditions in governance processes are biased, as they have been historically structured around the physical needs, capabilities, and interests of men and other historically privileged identities (e.g., Whiteness) who designed them (Miller & Razavi, 1998; Goetz, 1997). The challenge for JUST in achieving 'greater equity' lies in strategies to impact on the processes and structures that manifest power: a) in institutions, legal and economic frameworks, b) on people and their networks, and c) in discourses, narratives and ways of seeing the world (Young, 1990).

Knowledge and power are intimately linked. Emphasis on power bears epistemological questions, in terms of what forms of knowledge inform understandings of transformations and sustainability, and whose perspectives gain credibility. Whose knowledges are enabled and valued within socio-technological-ecological systems and who are acknowledged as valid holders and producers of knowledge, shape the potential for transformations (Anderson et al., 2019). For instance, unpacking the role of institutions (rules and norms) in shaping the relationships between knowledge production and decision making can illustrate how institutions change over time and are different from place to place. Relatedly, analyzing how urban institutions form networks of shared discourses about urban challenges can foster critical reflection on the narratives used to constitute reality (Wyborn et al., 2019). Transformations require transformative knowledges (Hackmann & St Clair, 2012). In this sense, any science that works towards JUST must contend with contestation. It does not provide neutral value-free guidance as to what is to be done and by whom (Millstone, this book), even though it may be represented as doing just that. There is a politics around knowledge production in debates about transformations, around what we think we know (consensus and uncertainties) and on who

knows it (whose knowledge counts). We must ask which scientists or other stakeholders, which forms of expertise, from the academic to the informal, which disciplines, and which regions of the world have most voice in the construction of knowledge that underpin calls for JUST (Beck et al., 2014). Such knowledge suggests who can use which resources in order to live within the limits of the ecosystem and what processes and structures should change. The impacts of these decisions affect everyone; yet they do not impact everyone equally (Schlosberg et al., 2017). Building more just and sustainable pathways involves transformations in behavior at personal and collective levels, underpinned by convictions that change is necessary and desirable. Yet as longstanding experiences and scientific evidence shows, strategies for change cannot just be imposed from above by 'experts'; to gain legitimacy, it must make sense to people in diverse settings (Jamison, 2001; Jasanoff & Martello, 2004). While criticizing and problematizing the ways in which knowledge gets produced may play into the hands of skeptics, there are dangers with an uncritical embrace of dominant knowledge production. Most notable, Freire, in his Pedagogy of the Oppressed (1972), argued that traditional processes of the banking model of teaching in which a teacher transfers knowledge to students is both ineffective and a form of oppression. According to Freire, learning must be a process of challenging one's own assumptions and acting upon one's own ideas critically by engaging with rather than simply consuming the ideas of others. He noted that especially poor people lack a voice in their own learning and development. Building on this foundation, Chambers (1983) conceptualized poverty not as a lack of income, assets, services or even knowledge, but as powerlessness. Chambers notes often the inappropriate knowledge brought into development contexts by outside 'experts', advocating methodologies in which local knowledge, participation and decision making is central to the planning and management of projects. Paulo Freire-inspired processes of adult

learning, often at a territorial level, have been central to the spread of transformative agricultural practices (Anderson et al., 2019; McCune et al., 2017; Rosset at al., 2011). Perhaps the most well-known example is the farmer to farmer (campesino-a-campesino, CaC) methodology that originated in the 1980s in Central America. This approach is highly effective, not only in disseminating knowledge, but in enabling farmers to build skills, organizational capacity, and agency in self-catalyzing processes of community mobilization (Holt-Gimenez, 2006). These processes can have an intentionally multi-scalar character (e.g., spread from one locality to another and from the local to the international level). Participatory action research, building on Freire's conceptualizations, (Fals-Borda, 1987, 1991) stresses the need for professionals to shift from being on 'on-top' to 'on-tap', emphasizing their role as facilitator rather than expert. It is empowering to individuals and groups when they 'are able to imagine their world differently' and take action to change their circumstances (Eyben, Kabeer & Cornwall 2008). Participation has become widely accepted, at least in theory, as the minimum requirement for successful and sustained development outcomes (Chambers, 2005). Participatory and transdisciplinary research approaches are considered successful when they "shift power away from professional experts, integrate different knowledges and ways of knowing, and involve strong participation of participants in research processes and in the governance of research" (Anderson et al, 2019, p. 9).

JUST implicate multiple levels of decision-making, and the challenges of coordinating these to pull in the same directions (Galaz et al., 2012). Each raises the key questions of who steers, and which actors and institutions govern transformations, and through which institutional mechanisms. Should transformations be overseen by nation states or global institutions, and in what relation? Given the track-record of national environmental policies and global governance

of the environment, what can realistically be expected? Assumptions about capacity, commitment and willingness are built into many transformative initiatives, but will the key players be prepared to intervene, and if so, what type of transformations will be backed (Allen, 2012; Fouquet and Pearson, 2012)? Issues of power, knowledge and control over the processes and the tools of change are key.

4. Conclusion

So, what does this all mean for JUST? Collectively, there is an appreciation that current systems around markets, technologies, urban infrastructures, and existing allocations of power are not delivering urban transformations that are either just or sustainable (Patterson eta al., 2017; Fisher et al., 2022). Different conceptualizations of transformations, how and when they occur and through whom, are determined by the desirability and possibility of incremental change within capitalism and the need for more radical transformations of capitalist structures and relations (Kovel, 2002). This raises questions about the strategies towards JUST: how much change is 'good enough' to be considered transformative? The contribution of movement fusion of just sustainabilities and urban transformations into a JUST framework that this paper offers helps to clarify key considerations in fostering change.

First, the concept of JUST cautions against the idea that there will be one great, planned urban transformation. Given the diversity of strategies being pursued by state and market actors and civil society around the world and the ways they intersect, contradict or supplement, we can expect a diversity of pathways. The human element and how it binds various urban systems is an important consideration when working towards JUST. As Pelling et al. (2015) argue, "provoking system change through engagement with political leaders and technocrats has different implications than working toward transformation of individuals, vulnerable peoples,

marginalized households, or subaltern communities" (p. 124). JUST implicates everyone's role in transformations. While powerful institutions and corporations might reproduce inequality directly through forced evictions or low-paid labor, others, often in positions of privilege due to their identity locations, indirectly contribute to the persistence of inequalities. These individuals do not directly cause harm, yet they carry a responsibility—not because of what they have done, but, as Hannah Arendt (1963) argued, for what they have not done or could have done (Di Nunzio, 2019). This underlines the importance of embracing theoretically rooted, empirically informed, and collaboratively generated knowledge to address JUST (Scoones et al., 2020; Leach et al., 2021). Pluralizing transformations and working transdisciplinary ensures transparency and safeguards against appropriation by singular perspectives on what constitutes a sustainable future and how to achieve it (Blythe et al., 2018). JUST are necessarily plural and will continue to unfold in different ways. (Fisher, Brondizio, & Boyd, 2022). Initiatives that further JUST now might not do so under future conditions; thus, strategies need to be dynamic and responsive to context changes over time (Lu et al., 2021).

Second, recognizing, celebrating and encouraging diversity of pathways is not saying 'all pathways are equally valid'. Power relations do need to change and transformations that are narrowly based, whether on technology or markets or bottom-up politics, are unlikely to gain momentum, despite creating notions of being 'manageable' and 'predictable'. JUST underscore the imperative of ensuring transformations are 'just': that they pay attention to whose livelihoods depend on status-quo practices, who pays the price of proposals towards JUST, and who stands to benefit. Power analyses can help to understand how modes of governing, deliberating and participating can be adapted to help address these fundamental questions of JUST. Likewise, skepticism about knowledge production does not equal a critique of the value of science. There is

a need for more inclusive knowledge (co-)production in order to increase the legitimacy and credibility of knowledge for transformation. When equity and justice are foregrounded, approaches to urban transformation radically change in both process and outcome (Park et al., 2012). For Pelling (2011), transformation is particularly "concerned with the wider and less easily visible root causes of vulnerability" (p.68). These may be so omnipresent that they become part of our normative assumptions. People, especially marginalized people in society, seek to empower themselves through their individual agency, with associated impacts on both poverty reduction and increased equity (Moser, 2016). Fundamental to facilitating such agency and empowerment is the access to and accumulation of a wide range of assets. Housing is widely recognized as the most critical individual asset (Moser, 2016) and thus an important starting point for JUST. Multiple dimensions of injustice currently permeate the housing sector such as lack of homeownership among Black- and people of color individuals in the USA, and gendered inequalities in access to land and housing such as discriminatory inheritance laws (Moser, 2016). Access to and control over housing assets are further tied to processes that ensure an adequate supply of affordable and well-located houses. Housing infrastructures are also significant emitters of GHGs (UNEP, 2012), both during and after construction, thus investments in affordable housing cannot compromise on reducing the ecological impact of housing. In sum, fostering JUST at one scale can have cascading effects at other scales (Lawhon & Patel, 2013) and thus requires multi-scalar perspectives and assessments across various dimensions (Ziervogel, 2019). JUST highlights the need to address knowledge biases, engage with plural perspectives, co-produce knowledge and push back against universalized solutions (Pasgaard & Dawson, 2019; Campbell, 2013; Hughes & Hoffmann; Mummery & Mummery, 2019). Acknowledging differences across space and time and incorporating non-dominant perspectives

(de Satge & Watson, 2018), creates possibilities for alternative pathways, not limited by dominant knowledge and market-led interventions (Jasanoff, 2018; Robin & Castan Broto, 2021; Culwick Fatti, 2022).

Third, cities are not isolated entities but interconnected in complex ways through the global economy (and society) and they can be catalysts for change at wider scales (Theaker & Cole, 2001; McCormick et al, 2013). Local governments have formed various networks to reduce greenhouse gas emissions, use water, energy and resources more efficiently, and improve resilience and sustainability collectively and collaboratively (Kautto, 2012). The UN Settlements Program (called UN-Habitat) and ICLEI (Local Governments for Sustainability) are two such global alliances (Bhagavatula et al., 2013; Shaalan, 2013). These types of networks of learning are crucial to advance global JUST. New urban technologies and infrastructures may also be replicable or useful in urban areas in different regions, as evidenced by the historic spread of wastewater treatment (Wheeler & Beatley, 2010). Larger cities have a specific role to play, due to their often larger consumption patterns, and cultural influence. Importantly, current urban challenges are not necessarily outcomes of urbanization, rather they can result from poor governance and planning (Rode & Burdett, 2011). The design of cities plays a significant role in relation to the (positive and negative) impacts of urban development as well as how urban residents interact and live together (Block et al, 2012).

While in theory, many conceptualizations of transformations have touched on equity and justice, it lacked adequate practical conceptualization. I consider this paper to be an extension of the past literature on transformations and (just) sustainabilities, to characterize and provide practical guidance to support the pursuit of JUST. Yet, it is less of a blueprint and more of a flexible input into discussions on how to foster JUST in diverse contexts. In conclusion, when

looking for approaches towards fostering JUST there is no standard answer. Cities create optimism about transformations towards sustainability. This is not because cities have a magic potion or 'the' technological solution that can be replicated across the globe; rather, cities hold the key to hope because they offer a world of endless possibilities, and at least some just pathways are to be expected. Cities bring together diverse resources and groups of people that have the capacity to reimagine the urban environment in which they live. Cities are places in which political action is realized in concrete projects that can be presented, promoted, and appropriated in different contexts. The challenge for all of us is to engage locally in defining and realizing those pathways that are both sustainable and just. A JUST framework, as outlined in this paper, is central to this very practical and urgent aim. JUST is a discourse of hope. Its objective is to deliver principles that can be appropriated by different actors to inspire visions of future sustainable and just cities and make them, or at least part of them, happen.

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Co-producing just urban sustainable housing: A case-study

Abstract

The failure of sustainable development approaches to live up to their promise to address increasing social, environmental, and economic inequities, has led to calls for alternatives to growth-oriented development approaches, such as just transformations towards sustainabilities. Yet, urban practitioners looking for applied approaches towards just, urban, and sustainable transformations find a dearth of examples in current literature. This paper examines emerging transformations through an embedded single case-study in the context of one initiative, Critical Concrete. The study explores how Critical Concrete's (CC) approach to co-production of affordable housing in an annual Summer School contributes to emerging just urban sustainable transformations and assesses what processes and structures influence these across stakeholder groups and settings. The study includes semi-structured interviews with 12 stakeholders: 5 mentors, 4 CC staff (director and 3 project coordinators) and 3 CC Summer School student alumni. While the study aimed to interview community members from each of the reconstruction sites, COVID-19 related travel restrictions led to the exclusion of this aspect of the research. The results are presented in three sections and describe the change processes used by CC to realize just urban sustainable transformations (JUST), the changes CC is making to structures that are driving transformative change and scalar convergences and divergences of approaches, with a focus on how just sustainabilities principles serve as an integrating framework. The paper concludes with considerations for JUST.

Keywords: Just urban transformations; Urban change; Affordable housing; Just sustainabilities.

1. Introduction

I believe in the potential of urban spaces to offer the same quality of life to all their residents, now and into the future. Yet, we're not realizing this potential. Cities struggle to respond to unprecedented growth-related crises, thereby undermining their resident's quality of life (Rees, 2009; Wackernagel & Rees, 1996). Sustainable development approaches are failing to live up to their promises to address increasing social, environmental, and economic inequities, as sustainability gets equated with maintaining growth through technology and efficiency (Andersen, Ander & Skrede, 2020; Dobson, 2015). Fainstein (2010, p. 2) notes that within cities' strategic programs, "the desirability of growth is usually assumed while the consequences for social equity are rarely mentioned". This negligence of equity led to calls for alternatives to growth-oriented development approaches, such as urban transformations towards just, sustainable places for growing urban populations (UN, 2012, 2015; WBGU, 2016; Skodra, 2018; Marcuse et al., 2011). Yet, urban practitioners looking for applied approaches towards just, urban, and sustainable transformations find a dearth of examples in current literature. These examples are practiced[5], but not written about in the academic literature. In fact, the concept of urban transformation is largely lacking connection to sustainability justice in scholarly writing, pointing to the need to utilize community-university partnerships to investigate and report on these approaches. In this paper, I position urban transformations within the just sustainabilities paradigm (Agyeman, 2003) to make that connection. I then examine emerging transformations in the context of one initiative, Critical Concrete, that is working towards a more just Porto through

[5] See for example Critical Concrete's social media content

co-produced adequate affordable housing and co-education of (future) urban practitioners, such as architects, urban planners, and designers.

To situate this case study, one must first clarify key terminology. The term *transformation* leaves much debate as to what is being transformed, by and for whom, and through which means (Scoones & Stirling, 2020). Recognizing urban spaces as complex systems (see Dreyer et al., 2022, paper one in this dissertation), I build on Patterson et al.'s (2017) definition of sustainable transformations as changes "in structural, functional, relational, and cognitive aspects of [complex] systems that lead to new patterns of interactions and outcomes" (p. 2). This definition places an explicit focus on systems changes involved in moving towards more sustainable futures. It however lacks an explicit stance towards *just* transformations, as the nature of the changes is left unspecified. Every transformation has a specific direction, however, whether or not that is explicit or implicit. The just sustainabilities paradigm (JSP; Agyeman, 2003, 2005), by foregrounding justice and equity in sustainability discourses, offers an extension to status quo understandings of transformations that explicitly addresses ecologically problematic aspects of urban development and social equity (Schrock et al., 2015). Just sustainable urban transformations (JUST) thus can be understood as multi-dimensional and radical changes of urban systems that lead to new patterns of interactions and outcomes that "ensure a better quality of life for all, now and into the future, in a just and equitable manner, whilst living within the limits of supporting ecosystems" (Agyeman & Evans, 2003, p. 5), extending the much-cited definition of just sustainabilities. Changes in patterns of interactions and outcomes of

transformations are hereby linked explicitly to both environmental and social sustainability considerations[6].

There is little consensus over how JUST can be realized (Perry & Atherton, 2017; Smith, Stirling, & Berkhout, 2005) pointing to key gaps in current literature. This paper spans disciplinary boundaries to examine one organization's attempt at fostering JUST through adequate affordable housing provision and sits at the intersection of community psychology, urban studies, and complex systems thinking. The aim is not to study urban transformations themselves, but to examine an initiative that fosters the potential and conditions for transformations and works from a JUST orientation. Critical Concrete (CC) is an initiative for social and sustainable architecture in Porto's Ramalde neighborhood that created a model of supporting the refurbishment of affordable housing units outside of state or market demands through an annual architecture Summer School. Bringing together social advocacy for adequate affordable housing, research and innovation in low-tech sustainable construction methods, and networks of engaged students and stakeholders, the initiative aims to work at the nexus of sustainability and justice, thus resonating with conceptualizations of JUST (Agyeman, 2003; 2005).

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[6] In this paper I use the terms 'environmental' and 'social' sustainabilities as a shortcut to distinguish between sustainabilities concerned with ecosystem limits (environmental) and concerned with equity and human needs including culture (social). I recognize that both the terminology and distinction can be seen as arbitrary (as argued in Shellenberger & Nordhaus, 2004), yet consider it useful in distinguishing just sustainabilities from status quo sustainable urban development approaches. Economic sustainabilities in the just sustainabilities paradigm are considered a necessary component of social equity but not foregrounded.

The study objective is to explore to what extent Critical Concrete's approach to co-production of affordable housing contributes to emerging just urban sustainable transformations and to assess what processes and structures influence these across stakeholder groups and settings. To meet this objective, the study aims to answer the following research questions:

1. What are the processes and structures tackled in CC's Summer School that foster JUST through adequate affordable housing provision?
    a. What approaches are processes that facilitate emerging transformations?
    b. What aspects of the socio-technological-ecological system CC engages in facilitate emerging structural transformations?
2. What role do the principles of just sustainabilities play in the development of emerging transformations for just and sustainable communities through CC's efforts of adequate affordable housing provision?

I begin this paper by introducing just sustainabilities, placing it within an urban transformation context, and connecting it to the topic of affordable housing provision. I then show how Critical Concrete's annual Summer Schools are informed by principles of JUST. Through an embedded case study of the Summer Schools, I then discuss the processes and structures indicating emerging transformations towards CC's goal for just and sustainable communities. In-depth case-studies are particularly well suited to close the knowledge gap of just urban sustainable change initiatives, which I outline in the following.

1.2. Just Sustainabilities

Agyeman (2003) points to two major challenges in achieving sustainable development and sustainable communities: the increasing scientization of sustainability and the lack of foregrounding issues of equity and social justice, termed the 'equity deficit'. In principle in

almost all domains of sustainability, Agyeman (2003) argues, we know what needs to be done and how to do it, however we are not doing it. “This is especially so for so-called wicked problems such as climate change where the challenge is not the science, but the social science: how do we shift the paradigm, the political and civic culture such that the *will to act is prioritized* by our politicians – and how do we inculcate public understanding such that *the need for action is both supported and assured*?” (Agyeman, 2003, p.1, emphases added). Climate inequities exist within and between countries and environmental problems tend to impact the most vulnerable groups in (urban) society most severely. This is reflected both in the unequal distribution of environmental burdens, due to environmental hazards and climate change related events, and benefits of sustainability solutions (Anguelovski et al., 2016; Islam & Winkel, 2017; Russo & Pattison, 2014). These inequities led to the emergence of the Environmental Justice Movement and Paradigm (EJP) from grassroots or bottom-up activism during the Civil Rights Movement in the USA (Agyeman, 2008). EJP was based in concepts such as “autonomy, self-determination, access to resources, fairness and justice, and civil and human rights” (Taylor, 2000, p. 534) and was led by racialized, low-income groups; thus creating a paradigm that similar disproportionately affected groups could identify with (Agyeman et al., 2002). Since its inception there have been applications of the concept to other regional contexts: Western (Köckler et al, 2017; Raddatz & Mennis, 2013), Central and Eastern Europe (Steger, 2007; Elvers et al., 2008; Harper et al., 2009), Africa and Asia-Pacific regions (Ako, 2013), Latin America (Sundberg, 2008) and global contexts (Martinez-Alier et al., 2016). A noteworthy difference between European (especially in the UK and Germany) and US conceptualizations, has been the predominant focus on social class, rather than race.

Just sustainabilities, as introduced by Agyeman et al., (2003), is positioned as a middle ground, bridging the paradigms of environmental justice and sustainable development. Agyeman and Evans (2003) argue that sustainable communities strive for the protection of the environment (e.g., minimizing waste, using energy efficiently, limit pollution), meeting social needs (e.g., value and protect diversity, protect human health, emphasize prevention, empowerment) and promoting economic success (e.g., create vibrant local economies, value unpaid work). Since its inception, scholars have adopted the more widely used plural *just sustainabilities*, to acknowledge the relative, place and culturally bound nature of the concept that openly resists prescriptive one-fits-all templates for sustainability. The common elements are a focus on 1) improving quality of life and well-being, 2) meeting the needs of both present and future generations (inter- and intra-generational equity), 3) justice and equity in terms of recognition, process, procedure, and outcome, and 4) living within ecosystem limits (one-planet living). Just sustainabilities while implemented in some communities in the US (partly due to its uptake by the environmental justice movement) has not found widespread acceptance in the European context. This paper utilizes the US-born just sustainabilities concept to explore a (Western) European community-based project focused on facilitating just transformations through adequate affordable housing provision. Next, I will discuss the concept of urban transformations and connect it to principles of just sustainabilities.

1.3. Urban Transformations

What just sustainable urban transformations today mean, aim for, and constitute is difficult to generalize. One thing is clear: the just sustainable urban transformation does not exist. Transformations are extremely diverse. While transformation as a concept has only recently entered global urban discourse, it has a longer (although sporadic) background across several

bodies of literature. Transformation—urban or otherwise—has been described using adjectives such as deep, far-reaching, radical, long-term, persistent (Wolfram et al., 2016; Ernst, et al., 2016; Avelino et al., 2014) and sometimes also as systemic and structural (McCormick et al., 2013; Westphal & Thwaites, 2016; Islam & Iversen, 2018), irreversible (Avelino et al., 2014), non-linear (Burch et al., 2018), non-incremental (Few et al., 2017), complex (multi-scale, multi-actor, multi-level) (Koch et al., 2017; Westphal & Thwaites, 2016; Hodson et al., 2017), and inherently contextual and political (Maassen & Galvin, 2019). Taken together, this prior scholarship provides some important insights for conceptualizing and analyzing JUST: transformations are dynamic and involve change in multiple systems (e.g., social, institutional, cultural, political, economic, technological, ecological) and they likely emerge through co-evolving interactions between these systems, and thus cannot be viewed in a disciplinary-bounded or deterministic way. This raises major questions about what transformations towards just and sustainable communities might involve and how to facilitate and analyze them.

First, transformations are not inherently linked to adjectives such as equitable and just. The complex relationship between (neo)liberalization and urban transformations has received remarkable attention since the 1980s (Hackworth, 2007; Moulaert et al., 2003; Logan & Molotch, 1987). Notably, Lefebvre (2003) has warned of the pursuit of 'radical urban change' projects, which serve to obscure the regimes of authoritarian politics and exploitation that underpin transformations of the built environment. Proponents of top-down change through interventions (e.g., geoengineering), new technologies (e.g., smart cities), and expert-led and corporate-led solutions often overlook equity dimensions in fostering change (Bernstein, 2002) and thus risk perpetuating or exacerbating inequities. A departure from transformations driven by already empowered actors mark bottom-up transformation processes led by civil society self-

organization, such as do-it-yourself culture, commoning[7] or co-production (Turnhout et al, 2020). However, this dichotomy of top-down *versus* bottom-up is limiting when discussing JUST. Self-organization is no longer seen just as resistant means of organizing urban life and enabling self-expression, but also as the logical consequence of neoliberal governance that leads citizens to take responsibility for themselves (Beck, 2021). On the one hand, this documents late modern freedoms to shape living conditions (more) easily according to one's own needs and ideas, without large scale social movements, protests, and resistance. Kries, director of the exhibition »Together! – The new architecture of the community« calls this the 'silent revolution'. On the other hand, there is a danger that these projects continue to hide structural inequities and contradictions in living conditions by giving access and means of change to a select few individuals. Without explicit demands for top-down changes, there will be no public debates on structural causes of unjust cities and the need for action. Recognizing the importance of urban structures (soft and hard) in upholding the status quo of urban housing systems means considering the interaction of top-down and bottom-up changes in emerging transformations (Westley et al., 2011).

Second, transformations are often understood solely as the outcomes of change processes (Mehta et al., 2021). In urban contexts, sustainability transformations are thus equated with

[7] Commons suggest non-commodified means to fulfil social needs, e.g. to obtain social wealth and to organize social production. 'Commoning' processes are dynamic, generative processes sustained by "communities" i.e. by social networks of mutual aid, solidarity, and practices of human exchange that are not reduced to the market form (De Angelis, 2003).

sustainable development[8] which is criticized precisely for its outcome-focused, top-down approach (Klein Woolthuis et al., 2013). This is especially true in sustainable housing development, which is largely controlled by partnerships between municipalities and large private property companies (Andersen et al., 2020; Ernst et al, 2016). This prioritizes easy-to-assess top-down outcome-focused changes, such as additions of environmental clauses in building codes or 'green' certifications, in efforts to drive transformations (Ernst et al., 2016; Castán Broto, 2018). Since bottom-up transformative change efforts in complex systems can rarely be (linearly) linked to outcomes directly, or outcomes occur with temporal delay, many of such transformation efforts are considered to have failed to reach their intended goals even when transformations were emerging (Jagannathan et al., 2020). In conceptualizing JUST, one must consider the extent to which it is possible to deliberately foster transformations. Transformations cannot be reduced to a simple linear process of achieving desired futures by facilitating incremental change or by reverse-engineering (i.e. scenario or back-casting guided) (Castán Broto et al., 2019). Transformative change emerges in relation to wider processes of institutional- and social-learning (Mieg & Töpfer, 2013; Nevens et al., 2013; Castán Broto et al. 2014; Castán Broto & Dewberry, 2016) that consider sustainability objectives as 'moving targets' that can never be truly reached (Harré, 2018). Deliberate, as opposed to outcome-focused transformations, seek to alter development pathways to reduce current inequalities by creating

[8] Discussions around the overlap between these concepts is ongoing. I follow others in making this important distinction, recognizing the emphasis on structural transformation processes – broad, multi-dimensional and radical change – of sustainable transformations that can then effectively direct urban development towards sustainability (McCormick et al., 2012).

alternatives (Pelling et al., 2015). Altering these pathways demands consideration of the *structural changes* required to reconfigure interlinked environmental, social, technological and economic relations (McCormick et al., 2013a, 2013b) and the *processes that bring about fundamental changes* to break away from unsustainable technologies, practices and ways of organizing society (Wolfram, 2016; Geels et al., 2017). This highlights a conundrum of urban transformation research; while we can identify two dimensions in fostering JUST – through processes and structures – it is tangible (top-down) outcomes that are prioritized in assessments. Khawarzad (2012) proposes a re-orientation to values-based strategies instead, in which urban transformations are part of conversations about (social) values after which one decides which approaches and tools are best to achieve outcomes congruent with them. Considering urban transformations from within just sustainabilities offers a deliberative approach using this strategy.

Urban transformation efforts working from within the just sustainabilties paradigm aim for "both an increase in equity and justice and an increase in environmental quality" (Agyeman, 2005, p. 43). When outlining approaches to JUST, *processes and procedures* are just as important as the *outcomes* – just and sustainable communities (Agyeman, 2005). In other words, just sustainabilities aims to create inclusive, representative, and deliberative civic processes that create a more diverse base of support for urban sustainability approaches. While creative approaches to equitable processes in sustainability work do not guarantee that we will achieve just sustainabilities, they begin to focus our attention on strategies that are working (or not working) in bridging the gap between equity and environment. In JUST, the transformative impact of processes and structures that cultivate or exemplify new norms, practices and other social innovations aligned with just sustainabilities are recognized and prioritized (Christensen et

al., 2006; Westley et al., 2011). The notion of emerging transformations can serve as an indicator or predictor of the ability of civil society, state-and market actors to steer urban development in radically different directions from unsustainable, unjust pathways. It also relates to the engagement of such actors with existing processes and structures that can deliver such radical change (Castán Broto et al., 2015).

1.4. Co-produced Adequate Affordable Housing

The increased call for just and sustainable urban transformations has not yet created powerful initiatives that are decisively shifting urban change in an environmentally sustainable, socially just and equitable, and economically viable direction (Maasen & Galvin, 2019; Mahendra, & Seto, 2019). Adequate affordable housing provision is one of the most pressing urban crises, thus addressing it is paramount in working towards just and sustainable cities. One of the biggest challenges for cities is meeting growing demands for adequate affordable housing, while minimizing the ecological footprint of built areas (Frey & Bagaeen, 2010)[9]. The WHO stresses the importance of availability of and accessibility to affordable quality housing in reducing social inequalities and health inequities (CSDH, 2008). If housing is not affordable, it exacerbates family residential instability reflected in poor health due to living in overcrowded conditions, inadequate nutrition, and limited access to medical services, since housing expenses make up the greatest share of disposable income (Anderson et al. 2003; Skodra, 2018). The availability of affordable housing further avoids segregation and decreases poverty of low-

[9] This is not negating other crucial urban justice concerns such as poverty, water access, pollution, health and safety, to name only a few.

income households (Wheeler, 2004; Anderson et al., 2003). An important theme in this regard is the "battle" against gentrification (Block & Paredis, 2013; McCormick, 2013); a continuous struggle between the lack of available resources for supporting the fabric of neighborhoods, improving housing, and preventing gentrification through investments and improvements of an area which subsequently attracts other population groups, changing its socio-economic structure. "Good proportion of non-market housing delivery as well as meaningful involvement of local community", is significant for preventing gentrification processes and "provides important stability of housing supply for vulnerable groups" (Skodra, 2018, p. 184).

While there is a perceived dichotomy between sustainable buildings and affordable housing, the goals of each are well aligned and the opportunities to achieve both numerous. Yet, most affordable housing developments do not purposefully aim to reduce the ecological footprint of the development, while many 'green' developments are not geared towards low-income individuals. Williams et al. (2016) surveyed residents in in thirteen sustainable residential schemes in the UK, finding an over-representation of higher social classes in their sample: "24% higher managerial and professional, compared with a national average of 13%; and 38% lower managerial and professional, compared with 23% nationally (p. 198)". Historically, affordable housing projects even failed to address social justice mandates, such as in as in the Pruitt-Igoe housing project in St. Louis or France's banlieues (Buckley et al., 2016), facilitating large displacements of the urban poor (Rethel, Elias & Tilley, 2019) into clustered, poorly resourced areas (Kuyucu & Ünsal, 2010; Blomley, 2004; Nappi-Choulet, 2006; Smith, 2002; Weber, 2002). It is quite probable that these trends would be exacerbated by sustainable building developments, mirroring other displacements in the name of sustainable urban development, termed green gentrification, such as after clean-ups of polluted areas (Hamilton & Curan, 2013),

the creation of new urban green spaces (Rigolon & Németh, 2020; Rice et al., 2020) or new public transit developments (Mcdougall, Webber & Petrie, (n.d.)). One of the most visible and ubiquitous mechanisms through which this trend is propelled is through large-scale developments (i.e. complete city blocks) (Moulaert et al., 2003). Large-scale developments are more likely to be master-planned, corporate-led, single-use developments and less likely to involve local government or residents in decision-making processes (Potter & Labbe, 2021). Thus, small-scale projects focused on integrating ecological and equity concerns can provide a called-for alternative. The Living Futures Institute, which focuses on sustainable building design, for example, features three case studies that detail the efforts of affordable housing pilot projects that are using the Living Building Challenge Framework to build homes that have no energy bills, are free from toxic materials, and are truly sustainable for future generations (Living Futures, 2022). Yet, we lack empirical examples studying their transformative potential.

Academic research has heralded co-production as a transformative endeavor that is "a necessary part of, but not sufficient for, the realisation of more just cities" (Perry & Atherton, 2017, p. 39). Jagannathan et al. (2019) refer to co-production as "as a process that brings together diverse groups to iteratively create new knowledge and practices" (p.3). This definition extends traditional conceptualization of co-production with service-users, recognizes the larger context in which co-produced knowledge is used, and points towards its normative objective to support societal change. Aspirations for co-production range from generating enhanced and shared understandings, to building adaptive capacity, and facilitating transformative social and policy changes (Bremer & Meisch, 2017; Wyborn et al., 2019; Harvey, Cochrane & Van Epp, 2019) Recent literature suggests two general scopes of ambition, and outcomes, for co-production (Jagannathan et al., 2019). The first outcomes center "around benefits that emerge from the

production and dissemination of decision-relevant knowledge and services" (Jagannathan et al., 2019, p.4), which can be considered processes of transformations. The second scope more directly tackles societal power structures and political systems (structural transformations) and "anticipates that co-production can open up decision-making spaces; reshape the science-public-policy interface; democratize science; broaden the scope and meaning of evidence in decision-making; and ultimately redistribute power and expertise among different groups within society" (Jagannathan et al., 2019, p.4). But when are co-production efforts transformative and just? Bottom-up co-production projects, especially in the areas of housing and refurbishment architecture (see for example the vast literature on participatory design and urban planning approaches, Horelli, 2017; Luck, 2018), have received little to no attention in the just sustainabilities or (just) urban transformations literatures. A recent Shareable article highlighting eight co-production 'Do-It-Together architecture projects creating the future of sustainable buildings', included only one example of residential housing (Luo, August 9 2021). Thus, there is a need to learn from good examples of co-produced urban transformations towards adequate affordable housing that inform a knowledge base that responds to the complexity of urban challenges and encourages just *and* sustainable urban agendas (Maassen & Galvin, 2019). The integration of the concepts of just sustainabilities and urban transformations can aid in the move from theory to action and inform processes and structures of changing adequate affordable housing provision. Emerging transformations can then be investigated both in the strategies towards change (i.e., Are projects involving diverse actors who feel empowered? Are the rights and responsibilities of all actors considered? Are the goals of the project aiming to address existing inequities in distribution, participation, capabilities and recognition?), and in their emerging outcomes (i.e., Are changes in structural, functional, relational or cognitive aspects of

the city emerging? Are changes addressing existing inequities in social, technological and ecological systems of the city?).

Small-scale, low-tech co-production projects for more adequate affordable housing, as argued so far, offer an avenue for JUST. However, the ways in which they can contribute to the transformation urban spaces, societies and individuals involved are still unknown and are determined by existing institutional structures, technological contexts, power constellations, and other environmental conditions. In other words, localized expressions of mainstream urban development dynamics shape the outcome of these processes in complex and highly contingent ways. Localizing JUST in one case-study example allows for this contextualization.

1.5. Critical Concrete: Realizing Just Cities?

Reaching just sustainable futures is important; the strategies we use to get there are of equal importance. The focus of the study is Critical Concrete, an ‘emerging social and educational’ co-production initiative for adequate affordable housing. When I began my conversations with the CC co-founder and current director, the organization was not aware of the theoretical concept of just sustainabilities and did not intentionally structure its programs according to its principles. Yet, based on a review of program documents and personal communications, CC is a good practical example of an initiative working from within the just sustainabilities paradigm. The case study was purposefully selected due to its transformative potential, making it an 'exemplary’ case study (Zeldin et al., 2018). Thus, what is being described is only one attempt at creating JUST pathways and it is enriched and limited by my own standpoint and by the experiences of the CC students, staff and mentors (see Brundiers et al., 2021 for a similar approach).

The following quotes are excerpts from CC's website (accessed between March 2020-August 2021). CC's stated mission is the promotion of "new mechanisms to rehabilitate social housing and improve public and cultural spaces shared by low-income communities and advocacy of a fundamental right to adequate housing often disregarded due to lack of public resources or political regulation". Their motto is "building *with*, not building *for*", and they summarized their strategic goals as follows:

- Develop and share an ecological and social approach to the building practice.
- Contribute to the fight for the fundamental right to adequate housing.
- Learn and share a more ecological and sustainable way of living.
- Support initiatives that fight for racial, sexual, and social equality, as well as animal rights.

In these goals, CC explicitly connects and gives equal weight to the social justice and environmental sustainability aspects of adequate affordable housing. CC's motto and mission is indicative of community involvement and social advocacy principles of just sustainabilities and in their pursuit of affordable housing, CC is addressing a policy priority of just sustainabilities. Their work is structured around three pillars: (1) critical education, (2) critical research and (3) critical change. The first pillar, critical education, targets "people interested in sustainable construction and social engagement" via workshops and an international Summer School. It combines *practical workshops* in the design and building process of community-based affordable housing projects, utilizing novel sustainable building techniques researched in CCs second pillar, critical research, (e.g., alternatives to concrete, participatory design), with *theoretical input* by interdisciplinary experts and mentors (e.g., engineers and social workers). These actions happen in close collaboration with the communities using the tackled spaces. As such, the Summer

School embodies important co-production elements. The third pillar, critical change, is facilitated through *Co-Lateral,* Porto's first production center with co-working and co-building facilities, that aspires to a social and cultural program co-developed with the neighboring community. The production center houses CC's research and prototyping of long-lasting and repairable construction materials/practices that are environmentally friendly, economically affordable, and easily workable. CC also engages with its global community through social media and freely accessible online research and workshop publications. Although the production center in Porto is an important element of the CC program, it had been closed for over 1 year during the time of the interviews, first due to construction and later due to the Covid-19 pandemic, so that the case study will zoom in on CCs Summer Schools. However, as apparent in the three-tiered approach of CCs work, and the role of the production center in the processes and outcomes of the Summer Schools (as a place for production, lectures, meals, and local positioning etc.), it cannot be fully neglected.

Since its inception in 2016, CC's Summer School has remained Europe's largest summer school, based on the number of participants, reaching 159 students from 41 countries and 6 continents. Figure 1 shows a geographic overview of CC's Summer School participants by cohort. CC Alumni can engage in knowledge exchange after the Summer Schools through an online platform, sharing their future projects and ideas.

The primary goals of the Summer Schools were to:

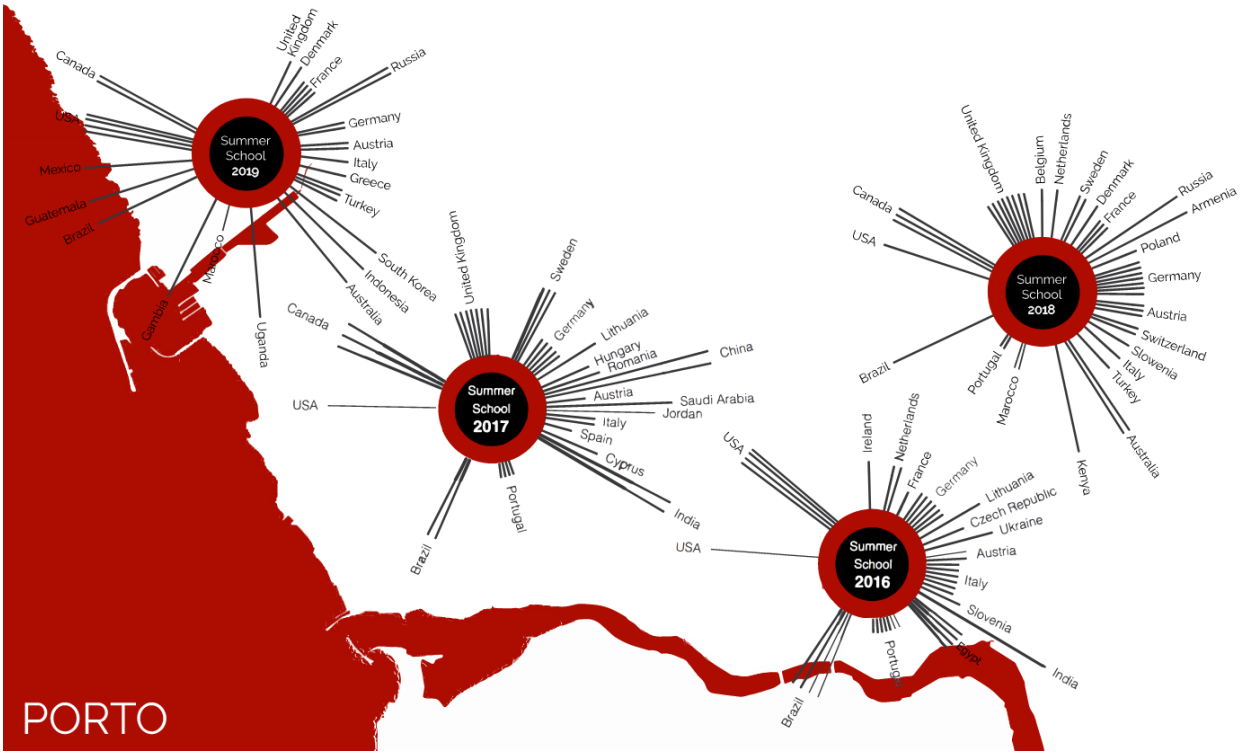
- Provide an alternative to traditional architecture education
- Facilitate citizens with expertise, who act from within the community
- Promote 'thinking through making' in the co-design/ production tradition

- Promote the context of architectural intervention in social and environmental sustainabilities
- Demonstrate how working closely with students, mentors, the local community and other stakeholders to refurbish affordable housing can address urban problems, and accelerate more sustainable results

Summer Schools were a three-week program focused the refurbishment of residential housing units or public spaces that are selected in partnership with the municipality of Porto. During the first part of each day, small groups of ca. 10 students worked with one practical mentor, typically a senior architect or designer from CC or external, on one aspect of the reconstruction project, and experiment with both traditional way of building and the sustainable techniques developed during the year in Critical Concrete's Lab (for example setting tire foundations, installing mycelium insulation, or designing and installing new plumbing). Students discussed the development of the building collectively in the large groups at determined intervals through a participatory design process, that also aimed to involve residents of the reconstruction sites. Late afternoons and evenings were dedicated to discussions, lectures and presentations, screenings, complementing the practical activities by invited international and local experts. Some of these activities were open to the public, and thus provided a chance to engage with the surrounding communities. The Summer Schools were run and managed by Critical Concrete staff. The Summer Schools were open to a wide range of students from architecture and design professionals, PhD-students, engineers, makers, DIYers, builders, and artists in their respective fields. In general CC aims to reach people with an interest in gaining experience in sustainable building with a theoretical input, to start their own projects, with the support of the CC network.

The Summer School format, while an important part of CC's programming, challenges the financial sustainability of the organization. CC has thus identified a need to understand the transformative potential of their Summer Schools to develop a more economically sustainable educational model of social and sustainable architecture and expand their current programming. Thus, the study was designed with the aim of providing much-needed feedback to the community organization and adding research capacity they were lacking at the time.

Figure 1. *Overview of CC Student Cohorts and Countries of Residence*



cc. Critical Concrete, Porto

2. Research Design and Methodology

2.1. Case study

Sustainable urban transformation scholars contend that there is an urgent need for research within "case analyses and developing insights that are both context-specific and more general" (McCormick et al., 2013, p.10). The study was conducted as an in-depth embedded single-case study involving "an empirical enquiry that investigates a contemporary phenomenon within its real-life context" (Yin, 1994, p. 13). It is bounded in place and time by the Summer Schools 2016-2019, from which data were collected to answer the research questions. I consider the Summer School project embedded within Critical Concrete as an organization and their three pillars of operating, recognizing the difficulty of defining the boundaries of the analytical unit. In

line with community psychology, people in context are foregrounded in a case study, enabling me to 'zoom in to zoom out' (Busch-Jensen & Schraube, 2019). The advantage of case studies is depth, while their problem is breadth (Flyvbjerg, 2006). As argued by Yin (2011), a single case study is useful when the research is both descriptive (RQ1), and explanatory (RQ2); therefore, an embedded case study method is an ideal methodological approach to study emerging transformations within the bounded setting.

2.2. Data Collection

The case study relies on semi-structured interviews as its data source, while utilizing organizational documents (CCs newsletter, website, program literature, and social media content), archival records (program documents, CCs newsletter archive, and reports), media texts (newspaper articles, op-eds, instructional videos, social media) and participant observations at CC staff meetings in September 2020 to inform the interview guide and analyses (Creswell & Clark, 2007),

2.2.1 Interviews

Semi-structured interviews were conducted with key stakeholders of the Summer School cohorts 2016-2019: staff (present/past), mentors and students. Accessing practices by talking to people embodying practices is the most direct route of investigation available. Further, airing practice through language has the added benefit of self-reflexivity, for both researcher and subject, of questioning those practices.

2.2.2. Participants and Recruitment

The study included a total of 12 stakeholders: a) 5 mentors (at least 1 per cohort) b) 4 CC staff (director and 3 project coordinators; 1 present during all cohorts, the others during 2018 and 2019) and c) 3 CC Summer School Alumni (all from the last cohort). While the study aimed to

interview community members from each of the reconstruction sites, COVID-19 related travel restrictions led to the exclusion of this aspect of the research, a limitation that is further discussed below. To protect participants' identities, basic descriptive demographics are only provided as averages. Four participating mentor alumni identify as a man and one mentor identified as a woman. Mentors are on average 42 years old, and four are trained architects, and one a trained designer. All work now as designers and/or architects. Of the Critical Concrete staff, three are current staff and one is former staff. Three identify as a woman and one as a man. On average the staff are 30 years old. Staff are trained in architecture, construction, design and urban planning and all work(ed) as project managers at critical concrete during at least one summer school. Of the student alumni, two identify as a man and one is unidentified. They are on average 25 years old. Students come from a range of educational backgrounds, in environmental science, arts, design, construction, communication and architecture.

Recruitment was facilitated through partnership with CC, who are well connected to the study population. As detailed below, the founder and current and former critical concrete staff were invited to participate in the research. CC staff were contacted directly by the research team via email invitations. With the mentors and student alumni, on the other hand, I used purposive sampling to select participants. Prospective participants were CC Summer School Alumni (student alumni, mentor alumni) that have opted to be part of the CC email list or are following the CC social media accounts. Prospective participants had to be 18 years or older, have participated in at least one Summer School as students, mentor or staff and be able to speak to the Summer School experience. Because the Critical Concrete program was run in English, all participants can communicate fluently and with relative ease in English. I invited all mentors and student alumni through: 1) Personal email invitations and the CC Alumni newsletter; 2) Social

media ads on CCs Facebook and Instagram page. The recruitment materials described the details of the research, including ethical considerations. Interested student and mentor participants were asked to fill out a short demographics questionnaire. From this list, I selected 5 mentors that vary with regards to their demographics including content expertise, and involvement with Critical Concrete. All students that expressed interest in participating were selected. Due to the non-personalized nature of invitations, response rates could not be calculated.

Through this purposeful sampling I created participant groups that represent a distribution of genders, age, country-of-origin, educational areas, and year(s) of participation in the Summer School using the maximum variation sample selection procedure. This approach is a strong choice for small samples because any common patterns that emerge from a diverse sample are particularly important in identifying core elements of the phenomena of interest (Patton, 2002).

2.2.3. Interview Procedure

Participants were interviewed individually via Zoom (60-90 minutes), and interviews were audio recorded with permission. Interview questions revolved around the study objectives and focused how just sustainability principles were implemented in CCs Summer School (community involvement, advocacy, integration of environmental and social justice), and what changes participants noticed in themselves, other stakeholders (CC stakeholders, local community and beyond), or in structures at both a local and global level. Furthermore, to determine emerging transformations of urban co-production projects, all participants were asked about the intended and actual outcomes of CC's work and the change of the organization's work over time. All interviewees were also asked about their professional background and their own understanding of the link between environmental and social justice to be able to evaluate the

quality and relevance of the interviewee's statements (Rohlfing, 2012). Interviews were conducted in English with Alumni, mentors and CC staff. Participants received a 20 Euro (~$30) gift-card as compensation or could choose to donate their compensation to a social/environmental non-for-profit organization instead.

2.2.4. Data Review and Observation

Organizational documents, such as evaluation and feedback documents, websites and social/ news media sites and archival data related to Critical Concrete's program were reviewed. These were important to understand general context, dynamics between different stakeholders as well as to identify important program elements to follow-up on in interviews. In addition, for three weeks, the researcher was involved as a participant-observer at Critical Concrete, observing activities during various times in the day and week to further understand local contexts and meanings. Unfortunately, this visit occurred during the Covid-19 lockdown in Porto thus there was no Summer School. Yet, observations provide important insight into plausible just sustainabilities narratives (Spradley, 1979).

2.3. Data Analysis

The analysis of data was separated into two steps. The first phase of analysis started during the interviews and with the writing of notes reflecting initial impressions. These notes were used to develop analytical short memos after each interview, which were later used to process the data. The next phases were performed after the data were collected and processed.

Interviews were transcribed verbatim to text and together with the data collection memos read several times while developing analytical memos to gather context and an understanding of the interviews as a whole. The transcripts were analyzed thematically using the online qualitative

analysis software Dedoose Version *8.0.35* (2018), following Braun and Clarke's (2006) 6-phase process:

1) Familiarize yourself with the data

2) Initial codes

3) Search for themes

4) Reviewing themes

5) Defining and naming themes

6) Producing the report

One of the benefits of thematic analysis is its flexibility. Although often (implicitly) framed as a realist/experiential method (e.g., Aronson, 1994; Roulston, 2001), thematic analysis is compatible with both essentialist and constructivist paradigms within psychology (Braun & Clarke, 2006). From a constructivist perspective, meaning and experience are socially produced and reproduced, rather than being inherent within individuals (Burr, 1995). Therefore, Braun and Clarke (2006) argue that thematic analysis conducted within a constructivist framework cannot and does not seek to focus on individual psychologies, but instead seeks to theorize the socio-cultural contexts, and structural conditions, that enable the individual accounts that are provided.

I utilized a mix of inductive and theory-driven coding. For the inductive approach, the themes identified are strongly linked to the data themselves (Patton, 1990) (as such, this form of thematic analysis bears some similarity to grounded theory). This first round of coding aimed to identify elements in the data that may challenge or even contradict the developed theoretical frame or the following analytic preconceptions. However, it is important to acknowledge even here that data cannot be analyzed in an epistemological vacuum and that researchers cannot free themselves of their theoretical and epistemological commitments. As such, stories are co-

constructed between the researcher and the participants; they help people make sense of new and old practices. A second round of coding specifically addressed elements as identified in the developed JUST paradigm and was more theory-driven and deductive. I began the development of coding categories according to processes and structures. In my analysis I considered the various elements of the just sustainabilities paradigm (locality and reach, community involvement, advocacy tools, partnerships, and coalitions). I coded descriptions of effects of CC's work, at various levels, from the personal (both reflected on for Self and others), the local community, and beyond (those changes also include changes in social and physical infrastructures, i.e., policy, practices, and buildings). Rather than coding at the semantic level, I employed latent coding to identify or examine the underlying ideas, assumptions, and conceptualizations – and ideologies - that are theorized as shaping or informing the semantic content of the data.

2.3.1. Rigour and Goodness

In accordance with Glesne's (2011) discussion of standards of rigour in qualitative work, I briefly outline the steps I took to ensure that my data collection, analysis and reporting aim to the highest standards of rigour. Case study tactics suggested by Yin (2014) were embedded in the research design to assure its quality and to ensure 'construct validity, internal validity, external validity and reliability' (p.45). However, in line with qualitative work, I focus on the related but distinct concepts of reflexivity and trustworthiness, dependability, credibility and authenticity, confirmability and transferability (Glesne, 2011; Lincoln & Guba, 2005).

I enter this space of research with my own standpoint and assumptions, values, biases. As argued, this is not only 'normal' but in fact a desired component of qualitative work. Yet it is important to maintain reflexivity throughout the research process to make my standpoint as

explicit as possible and account for personal influence on interpretations. I utilized several different strategies for **reflexivity** that serve to provide **construct validity and trustworthiness** (Lincoln & Guba, 1985). In keeping with developing a robust single case study, this research benefits from multiple sources of information. Through **triangulation**, data from all sources of data and subgroups were compared and cross-checked, enhancing credibility of findings (Baxter & Jack, 2008; Flyvbjerg, 2006; Yin, 2011). Triangulation across the four subsamples of interviewees highlight converging and divergent points between alumni, mentors, and staff. Convergence signifies validity of each separate data collection method. Through member checking (Creswell, 2003), participants were given an opportunity to review and comment on the analysis, findings, and interpretations. Member checks were conducted by following up with participants via email, providing executive summaries of overall findings and the interpretation quotes from their individual interviews. No participant responded with any objections to the analyses. Lastly through memo-writing/ audit trail, I took note of all methodological decisions, allowing a concise yet thick description of the sequence of data collection, processing, and condensing, leading to the final conclusions (Guba, 1981; Lincoln & Guba, 1985).

Dependability is ensured through a structured research design, protocol, and a database of information. Audit trail accounts and triangulation also support the dependability (or reliability) of my conclusions by providing evidence that the study is consistent and stable across time and methods. Other strategies I use to further satisfy this criterion are providing clear research questions and ensuring their congruency with methods, collecting multiple sources of data in an explicit and purposeful manner, and clearly specifying relevant links between methods/findings and analytical constructs in order to provide strong theoretical justification for the research.

Credibility and authenticity must be carefully fostered. This requires that conclusions ring true and represent an accurate understanding of the phenomena of interest. As mentioned, I triangulate among complementary methods and sources; converging conclusions among them to support the study's credibility. I explicitly grappled with contradictions and tensions emerged in data collected through different methods and sources. **Internal validity** was maintained through pattern matching (Campbell, 1975), using several pieces of information from the same case to inform each conclusion. Seeking and considering alternative explanations for findings was another central component contributes to its credibility. Continuous dialogue and feedback were maintained with CC and project supervisors throughout the research process, to ensure the fairness and ethical capacity of the research methods (Padgett et al., 2012) and ensure meaningful results for Critical Concrete and similar programs. To control for the interviewer's effect on interviewees' reactions and answers, efforts were made by the interviewer to remain open and neutral throughout the data collection process (Padgett et al., 2012).

Transferability was established by translating case study findings into a free online module on social-sustainable architecture and policy suggestions summarized in a report to the community partner. I utilize Critical Concrete as one case of a sustainable affordable housing project, while clearly articulating its unique context, to distil learnings that might transfer to other contexts. I also link emerging findings to categories of prior and emerging theory, demonstrating the basis of findings in theoretical constructs found in the literature.

2.3.2. Ethical Considerations

Ethical considerations at the individual level, which have implications for all participants, are that Critical Concrete is a small and close-knit organization and, thereby, privacy and anonymity cannot be guaranteed. Knowledge of who participates in the research was impossible

to keep completely confidential and there is a risk that other staff or student and staff Alumni will be able to identify participants' specific contributions. To minimize this risk, I omit personal details from all quotes used in reporting, and only note participants stakeholder affiliation instead of using pseudonyms to mask the identity of the original contributor. There are also ethical implications for Critical Concrete as an institution. Although this project has potential to support CC's further program development, and in fact a desire to do so, there is some risk that certain findings might negatively impact certain stakeholders' (e.g., politicians, urban inhabitants) perceptions of the organization or their programming thereby decreasing their support for CC. I aim to provide a well-balanced account of the findings, placing both positive and negative findings in context, and thereby minimizing any potential backlash. Ethical concerns were also assessed by the Research Ethics Board of Wilfrid Laurier University, who approved the study.

3. Results & Discussion

The results are presented in three sections that respectively answer each of the research questions and sub-questions. The first results section describes the change processes used by CC to realize JUST. It is divided into two main themes representing foci of change processes: structural & systemic approaches and enabling approaches. The second section describes the changes CC is making to structures that are driving transformative change. It is divided into two main themes: attributes of the community and attributes of the environment. While distinct themes and sub-themes are presented to illustrate specific change processes and structures, there is much conceptual overlap and complex interactions as processes and structures, individuals and systems, the local and the global exist in dialectical and interconnected relationships. The last section illustrates some scalar convergences and divergences of approaches, with focus on how

just sustainabilities principles serve as an integrating framework. The treatment of each theme is succinct and illustrative, rather than meant to be exhaustive.

3.1. Processes of Change

The following section describes the processes used by CC to influence (re)building structures and systems (structural and systemic approaches) and individual actors & communities (enabling approaches) (see Table 1).

Table 1. *Theme Structure for Processes of Change*

Main theme	Sub-theme	Aspect of the Sub-theme
Structural and systemic approaches	Demolition & (new) foundations	Experimenting & Inventing
		Risk-taking & Mistake-making
		Challenging power
	Scaffolding	Institutionalizing & Legitimizing
		Advocating & Lobbying
		Networking of Alternatives
Enabling approaches	Practices-as-performances	Embodiment
		Obligations & Ownership
	Practices-as-entities	Trust-building & Expectations
		Knowledge Dissemination

Structural and systemic approaches

Adequate affordable housing transformations rely on a re-ordering of the relationships between urban practitioners and society, through changes in social, technological, and political systems, norms and power structures. Changes to the conditions that are maintaining status-quo (re)building processes are the focus of CC's structural and systemic approaches towards JUST. There are two subthemes that further illustrate how these approaches were implemented by CC, *demolition & (new) foundations* and *scaffolding*.

Demolition & (new) foundations

This theme encapsulates the breaking away from the status-quo, perceived 'normality' of conventional building processes, by highlighting their shortcomings, and creating alternatives. CC aims to reduce the resilience of the dominant (i.e., common, legal, prevalent) urban development system as it pertains to adequate affordable housing, specifically refurbishment, and to position viable alternatives through *experimenting & inventing*, *risk-taking & mistake-making* and by *challenging power*.

Experimenting & Inventing

Experimentation and innovation are crucial in creating alternatives to current status quo building processes (Newman, 2006), i.e., the use of different materials, technologies and methods of design, planning, and (re)construction. Alternatives serve as a disruptive force in furthering transformations, as they can be implemented quickly in the right contexts, illustrated most recently during the Covid-19 pandemic in the fast adoption of new policies in global urban communities.

CC experiments with and innovates low-tech sustainable construction methods (such as mycelium insulation, tire foundations, or cork-based green roofs) throughout the year which are

applied in the Summer Schools. These alternative building technologies are combined with processes of co-experimenting and co-inventing during all phases of (re)constructions with stakeholders of the Summer Schools, encouraging the development of contextualized just and sustainable solutions. Learning about and co-producing with low-tech building methods encourages further experimentation with and innovation of low-tech designs meeting the specific needs of the residents or communities of the (re)construction. A mentor explains a moment of innovation in a project that was accounting for mobility issues when considering heating with heavy gas canisters common in Porto. *"This moment was quite interesting, especially because these two girls were very classical since the beginning in their way of thinking about architecture. I mean two weeks before they were probably going to answer all these questions with the high tech [solutions] … and then there was something in a conversation with [owner name] that they rethink a lot of things."*

CC tries to break down (systemic and structural) barriers towards experimentation; for example, the expectation of 'productivity' that comes with set deadlines as they are beholden to deliver a final product by the municipality. Thus, the finished product 'the outcome' and 'time-spent' on it becomes the objective assessment of the success of an experiment, rather than other transformations achieved through it. This puts mentors of the Summer Schools in difficult positions, as they need to deliver a refurbished house, the outcome, while trying to encourage experimentation without assured success. One mentor explains that *"it's always difficult. […] you have the obligation to teach, and you have the obligation to have a deadline, and it must work. This very often puts the project in difficulty because you always have to make compromises. You don't know your students before, so you need time to get to know [...] their potential and what their ideas are. Having the freedom to experiment and make things […] that*

don't work [means that you might] have to restart." CC aims to engrain experimentation and innovation as processes for urban transformations into the political system, as it opens space for the development of new low-tech building systems that respond to community demands. One mentor explains that *"you need to be okay to experiment. […] This is okay for an independent entity like Critical Concrete […] but for local government, this is like impossible and that's the problem. Only when the political side of our societies start to be okay with the fact that you can test, you can do mistakes, you can learn, you make it better."*

Risk-taking & Mistakes

CC considers risk-taking and making mistakes as necessary processes in transforming affordable housing structures and systems. Staff and mentors remark that risk management poses a structural barrier for government and other local authorities in enacting change, especially in the refurbishment of current social housing units. The perception is that unless there is a 'perfect' way to reconstruct a building, parameters which are set by status-quo understandings of building practices, no change is enacted at all. One mentor remarks that the reconstruction done by CC "*is definitely not the best quality construction [….] but it's a low resource alternative to improve this house for the next five years. […] I think that the local government, for instance, or the state, don't have the ability to see that. […] The grey area between not doing it and doing it in the most legal, perfect way, this is actually what keeps us from doing it at all."*

Yet, when assuming risks and mistakes remain in the hands of community organizations, like CC, it may prevent mainstreaming of these building processes. Support and short-term funding of small, localized projects by local government can thus prevent mainstreaming of structural changes to conventional building practices. *"Critical Concrete took this risk […] But then, either*

it continues like this - which was actually what happened. [Or], to have the infrastructure and the resources to [...] having a program that goes and goes over the years, you have to belong to, like, a local government. And that is not Critical Concrete taking the risk, it's the local government taking the risk and experimenting, and this is not happening", describes one mentor. In fact, when governments change and are hesitant to embrace changes to the systems and structures that uphold traditional building processes, mistakes can be used as indicators of failure and threaten the projects' sustainability. A staff member explains that *"we experienced this, for example, with, the last summer school project where the political community were really promoting a status quo and they were very resistant to experimenting. So, for them, they wanted the project to fail, so they made us fail and then they say, "Look, it didn't work".* For CC however, failure is a necessary and fundamental part of individual, organizational and societal learning processes. Failure to deliver a final product on a deadline – the finished building as the outcome – is not considered a failure in working towards transforming building systems and structures more broadly. CC thereby questions the value placed on building process versus building outcomes.

Challenging power

Change requires challenging and overturning generally accepted power structures. Power is here understood as stakeholders' abilities to bring about significant changes, "specifically by furthering their own interests and/or affecting the interests of others" (Lukes, 2005, p.65). Exercising power thus means having the capacity to 'act differently' in the context of systems and structures that limit choices and strategies (Lukes, 2005). CC challenges power dynamics in processes of community involvement by involving residents in reconstruction projects, who are usually left out of decision-making processes. *"Sometimes you need to just shut up and let the*

people tell you [...] what they need, because they may want to say something, but just haven't been given the space or been given the platform to be able to share how they feel", a student remarks.

Likewise, CC engages in a process of challenging power within and between the students and mentors of Summer Schools. On the one hand, mentors, staff and students work side-by-side and are given equal responsibilities for the task, empowering students. On the other hand, (future) urban practitioners, especially from the field of architecture, are learning to give up the power that is usually assigned to them. A staff explains that they convey the need to *"work together, work with people, stop proving shit to the world. You can learn, you are young, you don't know shit. I'm old and I still don't know shit. So, this breaking of ego that we do during the Summer School works well because the architecture community is a very ego trip community".* When power structures are challenged in projects involving political stakeholders and decision-makers, *"there's this group effect that very quickly passes outside of the Critical Concrete bubble. For example, it starts to affect the guy from the municipality that goes there every two days to just to see how it's going. [...] If you work with these interactions intentionally, this guy also then becomes one of the team and that is actually something that will give a huge impact when he goes back to the municipality […] saying 'This is amazing!",* a mentor reflects.

Scaffolding

This theme represents reforms to the conceptualizations governing political, social, technological, environmental and economic activity related to the housing sector in the municipality and beyond (McFarlane, 2012). CC aims to make changes to the formal rules and institutions governing (re)building processes and disrupt the network of relationships that help

stabilize and reinforce the status quo through *institutionalizing & legitimizing, advocating & lobbying,* and *networking alternatives*.

Institutionalizing & Legitimizing

Institutionalization and legitimization are processes that establish something as a convention or norm and that allow new ideas, concepts, or ideologies to gain legitimacy in an organization or culture (Chopra & Duraiappah, 2008). To encourage adoption of alternative ways of building, *"CC had this push to institutionalize in recent years, and to legitimize maybe some of the more informal and ad-hoc research and learning that they've had over the years. [...] A big part of that is about being welcomed and listened to by maybe more established academic and non-academic institutions",* a staff member comments. To gain access and legitimacy CC is engaging in networks, such as academic institutions, conferences, or journals that can legitimize the building practices CC developed and disrupt traditional knowledge networks that tend to exclude practical, lived experiences in favor of theoretical, so-called expert knowledges. The partnership that informed this paper is part of that aim.

Advocating & Lobbying

CC recognizes their role in utilizing their social power for advocacy and lobbying efforts. *"We need to lobby; we need to be part of this movement and be a strong actor",* says one of the staff about the need to change the housing sector. Advocacy and lobbying efforts also secure the support of residents for structural and systemic changes, which is essential in the adoption of new sustainability measures. One mentor explains that *"it has to be the local community itself or the administration to fix this problem. It is not Critical Concrete's task alone."*
Considering the complexity of urban systems, adequate affordable housing projects such as the Summer School cannot be seen in isolation from other urban developments. Thus, over the years

CC has increased its advocacy for principles of just sustainabilities in their communication with stakeholders and the public. During evening lectures and especially during unstructured time afterwards, students learn from each other, other organizations, and projects. One student reflects on the importance of being *"actively anti-racist and actively fighting for environmental justice and actively fighting for this social inclusion and you can do this easily from just your curriculum, from involving interactions and involvement of different community organizations and really just building a place where people can talk and learn and share aside from the doing."*

Networking of Alternatives

Networking of alternatives means introducing stakeholders to other similar projects and utilizing them to highlight that these projects are in fact possible, expanding conceptions of adequate affordable housing and decreasing (structural and systemic) barriers to their adoption. Buildings that are refurbished serve as *living examples* of alternative affordable housing developments and can be an important element in fostering further experimentation, innovation and risk-taking, expand projects across temporal and spatial scales, legitimize (new) processes and serve as a lobbying and advocacy tools, among others. One staff member remarks that they're "*using examples of projects [they] know […] and using these projects and disseminating these projects as much as possible because they show that it's possible."* Beyond convincing municipalities and other system actors of the utility of new forms of affordable housing, living examples motivate the continuation of ongoing projects and inspire new projects. CC points to their own finished reconstruction projects to highlight the possibility of building differently, while also running an economically sustainable organization. A staff member states that CC *"can do projects that are bigger and slowly scale up into hopefully like bigger housing projects,*

I hope are going to be exemplary for the future […] We are determined in really making this sustainable and making an example of what we can do and making a living for ourselves." In efforts to change the nature of higher education of urban professionals and expose students to living examples of other sustainable building projects *"evening lectures […] opened up case studies and examples that were from non-English speaking places […] These examples were of sustainable construction and experimental, low-tech methods that, I would not have kind of come across through sitting in a desk Googling because of […] language",* comments a student. *Lived experiences* by students, staff and mentors are an important aspect of CC's approach to higher education as they challenge the status quo of building processes and question current ways of knowing/ being/ seeing. Lived experiences, like living examples of buildings, also create ripple effects, as they are memorable. One student *"really championed the idea of going into a community and teaching and educating about alternative ways of constructing and to move away from say concrete and towards Earth construction. Those ideas would then empower community to continually refine work upon those ideas and it can develop a local economy. Those ideas were really eye opening because [other student] was saying it from their lived experience and it really contextualized and enriched that stance, you know, in a way that I'd never, never had before"*, reflects another student.

Enabling approaches

Enabling approaches enable transformations through individual actors who gain actionable knowledge by challenging and changing practices. Practices are changed through affective, cognitive, and/or behavioral phenomena that aim to disrupt, uncover, and/or challenge individual human experiences and their social contexts. These approaches are based on the belief

that the relation between knowledge and power is not inevitably one of complicity (cf. Foucault 1980) but becomes so because of the ways professionals situate their practice. Di Nunzio (2019), asserts that "individual attempts to produce change can contribute to making social justice a potential objective of urban politics" (Di Nunzio, 2019, p. 8).

This section has two subthemes that describe two types of practices that CC influences: performances and entities. Critical Concrete takes advantage of the intimacy of the Summer School format, to influence the performance practices of individuals involved in (re)construction; students, staff and mentors. Change approaches targeted at entity practices focus on all stakeholders, including municipal and public sector employees and the public, and often go beyond the individual.

Practices-as-performances

Practices as performances refer to all practices that are maintained by 'doing', that is, through the act of performing the behaviors. CC strategically challenges how students, staff and mentors make sense of their role as (future) urban practitioners in urban development and the extent of their responsibility to 'doing differently' through *embodiment*, *obligations & ownership*.

Embodiment

In a field such as urban development, that is dominated by planning, drawing and theorizing (Healey, 1992), embodiment creates experiences that can question assumptions of the limits of what is possible, normal, or desirable, amidst the status-quo landscape. *"Just describing or telling them that there is the necessity of something won't convince anyone. You have to be part of it, in order to feel what it is",* explains a CC mentor. The involvement of all senses and

physical engagement with the built environment offers a stark alternative to the detachment designers, planners and architects conventionally experience. One mentor explains that they *"think it's a big failure that our architecture students don't know how to build; don't know how to make things with their hands".* The centrality of design in architectural practice enables practitioners to see the extent of their responsibility to the safe boundaries of their technical expertise, whilst denying responsibility for remedying injustice (Di Nunzio, 2019); embodiment disrupts this centrality and thus encourages an engagement with questions of justice. *"I think this is really where we are going, […] because it's not the same to do like an online course and doing three weeks in depth sweating experience",* comments a staff member. For students that were engaged in social justice work prior to the Summer School, embodied experiences were a vector for inspiration and energy. For one student, the Summer School *"was a break from the work that I am doing. You always need to take breaks and get energized and inspired. So, I thought, yeah, this is great. Let's go build something."*

Obligations & Ownership

Students, mentors, and staff are challenged to reconsider their role in changing (affordable) housing development and creating just cities through experiencing obligation and ownership. CC works based on the premise that the ways in which students conceptualize their sense of obligation towards cities and their residents shape their involvement in JUST. Practices of 'doing differently' increased students' awareness of the limits of their own knowledge and the need to co-produce – involve communities and work collaboratively. Stakeholders resonated how the Summer School directly challenged the notion that architects 'do not work for or with 'the poor' directly' (also observed in Di Nunzio, 2019), as they were working on refurbishments of homes for low-income residents. Further, CC's approach to co-production aims to ensure that

the urban built environment serves the needs of its residents, and thus fosters a more just city. Through co-production, feelings of obligations and ownership are also shared with community members. A student reflects their learnings from the Summer School by explaining that *"if you drop into a place in the world and you build something – and that could be the most desired and needed thing for that that community – you also rob them of the capacity to achieve that themselves and develop things, further dwellings, further school buildings."* This reflection also illustrates how CC's motto of 'building with', is taken on by students who describe how building something *for* someone else creates a reliance on foreign development approaches, whereas building *with* someone else builds capacity and ownership for future community-lead development. A focus is the recognition that to change the status-quo in housing development, community knowledge needs to be embedded in the design and construction process and in order create JUST obligation and ownership must be experienced, practiced and shared.

Just like community-ownership of the project is emphasized, student-ownership over their learning journeys was built. Students are encouraged to 'own' their learning and the acquisition of actionable knowledges towards JUST and describe *"being blindsided but for the best"*, by how much and how quickly they were given responsibility and opportunities to decide their learning journeys, and contribute to the planning, design and construction of the housing units. The student further explains that *"it was very intense, but I remember when we spent the first week you know there was a team that worked on the conceptual phase […] and another team that just went straight to the house […]. I was really amazed that they focused on getting a part of the students to like sit down and learn, sometimes within a day."* Beyond their own learning, students were also encouraged to consider their obligation towards sharing their knowledge. One

student remarks that they gained an *"understanding that you can democratize a lot of the learning and disseminate it in palatable ways."*

Practices-as-entities

Over repeated performances, practices can become linked through their elements - meanings, competencies, and materials - and become entities. Practices as entities can be recognized to exist across time and space, even if they are not currently being enacted. However, there is a dialectical relationship between performances and entities; whilst practices as entities may guide performances, it is through these performances that entities are (re)produced and either stabilized or changed (Higginson et al. , 2015). Influencing practices that have become entities requires patience and process. CC's process involves building and changing *trust & expectations* and *knowledge dissemination*.

Trust & Expectations

Building trust and changing expectations are important facilitators CC uses to change individual actors within the housing systems. CC relies on trust-building to change the municipalities' openness to their approach of refurbishment of social housing units. A mentor describes the process of slow change being *"a little bit like first you gain the trust of the municipality and then they would let you do a bench. Then you actually move to benches, then advance to a table. Then a little shade for that […] and then they are doing three buildings. And then it's something. But, of course, to be able to do this since the beginning, you have to be looking to the big picture."*

Established trust also becomes a process through which students remain open to sharing ideas and to learn from each other, community members, mentors and staff. *"For me being a*

tutor, it is also very important that I managed to create this relation of trust, […] because in the end, it's a two-way relationship with them because it's not like I'm telling something, and they are doing. We are actually exchanging knowledge and ideas and stuff. So, for me, it's that part of sharing in teaching, but also in the learning process. It's very important that I personally manage to keep it strong, because I think it's part of the recipe," comments one mentor.

Knowledge dissemination

"On a global or a much wider perspective, I guess [creating change] comes down to the dissemination of the messaging, the learnings and the research of Critical Concrete, which I think they're doing a really good job", says a student about how CC is aiming to influence JUST beyond the scope of each individual Summer School. CC engages in direct communication with all interested stakeholders and the public through media and social media. Staff and mentors are, however, aware that *"a big part about reaching out to the wider public is to find the balance between disseminating but not preaching information. I think that is a really hard thing to achieve, especially when information that you're trying to talk about […] can be seen as very specialist"*, a mentor reflects.

Social media especially plays an important role in reaching out to the networks of students, mentors and staff. A student shares that they *"have been sharing and signposting people to the YouTube page and social media pages. […] The reputation of Critical Concrete seems to be building and snowballing. I think that's probably through social media content and adopting a democratized dissemination of information and research."*

CC's process also relies on indirect dissemination becoming an entity practice of Summer School alumni, also termed the 'ripple' effect (Bourassa et al., 2019). *"Participants, whether they like it or not, become ambassadors for Critical Concrete. I think it's kind of impossible to*

have that experience and then not go away and start shouting about it. Even if it's just to your friends and classmates, or the people in your office. And so, you yourself become part of the dissemination and part of the spread to facilitate the wider messaging and the ambition of Critical Concrete", one student explains this practice.

3.2. Drivers of change

The previous section discussed the processes 'the *how*' CC is utilizing to create emerging transformations. This next section explores *what* transformations are emerging. I am referring to emerging transformations as 'drivers of change' to recognize that these are context-specific hard and soft infrastructures of a city that foster the potential and opportunities for further change. The following section captures what changes are emerging in *attributes of the community* and *attributes of the environment* that can drive further just transformations towards adequate affordable housing.

Table 2. *Theme Structure for Drivers of Change*

Main theme	Sub-theme	Aspect of the Sub-theme
Attributes of the community	Human Capacity/Agency	Understanding
		Utilization
	Social Capital	Relationships & Partnerships
		Power & Privilege
Attributes of the Environment	Technology and Buildings	Building Process
		Material and resources
		Structures as Legacy

	Governance and Culture	Governance
		Education
		(Financial) Capital

Attributes of the community

Attributes of the community describe human and social infrastructures that play a role in transformations. CC is changing these infrastructures by building *human capacity and agency* for change and *social capital*. These community infrastructures refer to the three broad stakeholder groups considered here: Critical Concrete staff and mentors, students, and residents (and other community members). These groups independently and collectively interact with emerging changes in infrastructures of the environment discussed next and both are directly and indirectly influenced by change processes discussed previously.

Human Capacity/Agency

This theme encapsulates changes in stakeholder's expression of evolved skills, conceptual and emotional capacities, intentional acting on their world, functioning and life circumstances. CC is driving emerging transformations in stakeholders' capacities and agency by enhancing *understanding* and *utilization* of principles of just sustainabilities. These changes are most prominent in student alumni of the Summer School[10].

[10] Since no community residents or municipal stakeholders could be interviewed, no conclusions about emerging transformations for these stakeholders can be drawn.

Understanding

I conceptualize understanding as the outcomes of questioning and adjusting one's worldview in light of new-found knowledges and concepts. Understanding goes beyond the cognitive and involves other senses (psychomotor or behavioral learning) and emotions. CC fosters understanding in all project stakeholders through transdisciplinary learning and problem-solving involving co-operation among different parts of society and academia (Salama & Alshuwaikhat, 2006). Transdisciplinary learning, referring to processes that create collaborations among science and society (Bieberhofer & Rammel, 2017), starts with the tangible, real-world challenges of the Summer School project. Solutions are devised in collaboration with multiple stakeholders and include academic and non-academic localized knowledges, worldviews, and values. This approach minimizes the bias from each of those perspectives (Klein, 1998; Klein et al., 2001).

Stakeholders are uncovering, unlearning, and relearning the meaning of sustainability and justice in different contexts and are expressing changes in their understanding of this topic and how it applies to housing. One student comments how CC *"really pushed me to look beyond green accreditation. […] it's kind of a tick box exercise that really focuses on like the material, the construction, which is incredibly important… But I think it is massively lacking to observe the social sustainability of that and of those metrics".* A CC staff further reports that these processes are ongoing and do not end with the Summer School, "*[the Summer School] makes them realize that we can do things differently. It opens fields that they may not have been exploring. These people come back to me and ask me, like, "What do you think is more sustainable? This or that? It's nice."*

Further, changes in understanding sustainability more broadly translate into a changed understanding of their professional role as urban practitioners. A mentor articulates that *"one day the students will be architects and politics will come in, I hope that they not lose everything on the way. And, of course, as members of the society. They are already educated to think a little bit different; I hope. So, this is a very long shot thing but it's of course how societies evolve."* Students describe how CC's approach in the Summer Schools differs from status-quo education and building processes. The Summer School *"kind of almost reset my architectural understanding after I started architecture with this idea of sustainability and humanitarian architecture. Then education took me more towards the more flashy and beautiful architecture and then Summer School took me right back […] Subsequently in my Master's that's been what I've explored and doubled down on",* says one student. For staff, this was one of the main reasons for seeking out CC as an employer. One staff member says that they *"studied architecture, but didn't want to be an architect ever, because what they teach in the schools is to be like this architecture superstar thing. So, when [they] found Critical Concrete, it was like 'Wow […] let's go there'".* Also, mentors show an awareness of the 'traditional' image of the architect and explicitly distance themselves from it. *"Especially here in Portugal, the image of an architect is something that it doesn't help me to work with woman and where I want to work. The image of an architect in Portugal is still very traditional. So, it's like somebody from a high level of the society so I only speak with the rich people and stuff like this",* notes a mentor. What these various stakeholders share is a changed understanding of the normative role of architects (and urban practitioners) and an intentional acting (e.g., not using title) to resist this role. These resistances are both internal and relational because they are expressed and experienced in relation to other people.

Utilization

Utilization describes the integration of understanding into actions, such as the incorporation of new tools, models, or knowledges. This utilization was most apparent in increased e*ngagement* with just sustainabilities broadly. Engagement during the Summer Schools is described by stakeholders as manifestations of (internal and external) motivation, such as researching and discussing the project in one's 'free time' or feeling like one is on a mission. The refurbishment process becomes more than a 'project' due to engagement. One mentor describes a time when the team was trying to figure out a heating system for water: *"you have to have money to buy the gas and this was concerning to these two [students] and also because [resident of building] was having some mobility issues and a gas bottle is something that is very heavy. It was like Monday or Tuesday, of the third week and they came in and they said, 'During the weekend we didn't go out for beers. We were thinking about this and did a small research' […] So, they identified a problem and they kind of put their own time researching on an alternative."* Critical Concrete staff and mentors stress the importance of the practical component of CC's Summer School, as it forces all stakeholders to work together and literally *take action*, in this instance through design and construction. *"What I think is very interesting about Critical Concrete, is that you have the academic part, but you also have the practical part. And for me, what's missing in our society, especially in architecture and design is that you always have either one or the other"*, says a mentor. This focus on action-taking then extends past the Summer Schools. One student exemplifies this, when they learned of a proposed policy change that would eliminate timber constructions in their country of residence: *"I believe that sustainable construction is one of the key ways that we can still produce large scale [...] And so, I was kind of quite proactive in the lobbying to have this particular part of the review removed from the*

classification […] I don't think I would have as been involved had I not have been through the Summer School." Utilization is a skill that is practiced during Summer Schools and then becomes an avenue for further transformations by having established the necessary capacities for creating change (see Hickman et al., 2016, for a thorough discussion of fostering action-taking).

Social Capital

Social capital refers to a social structure and the ability to facilitate (or hinder) certain actions of individuals who are within that structure (Robinson et al., 2002). CC builds social capital consisting of bonds that foster community capacities and enable science-practice collaborations through *relationship- and partnership* building and by being deliberate about the *power & privilege* of their social networks. In turn, CC utilizes social capital to drive transformative changes in the housing sectors.

Relationships & Partnerships

Relationships and partnerships can serve to increase capacity, trust, and enhance the intrinsic value of co-production as *"you have a group of partners normally that come with the idea we're going to help them, but they don't ask them what they need. And if you don't ask them, they will never see that project in a way that you want"*, says one mentor. A focus on building personal relationships between various stakeholders is apparent in CC's programming. In relation to the local community, those relationships are crucial in enabling co-production (the involvement of neighbors and neighborhoods) and the engagement of the students. For students that come from various countries around the world, the maintenance of connections beyond the Summer School can facilitate further exchange of ideas, information, and drive change in their local communities. One student reflects that they were *"interested in meeting new people working in the same field, working in the same sector, making those connections, […] meeting*

different people that are already interested in what I'm doing and already have experience in what I'm doing. […] I got to meet some like really, really like lifelong friends". One way CC's approach is unique from most other housing developments is through their presence in the neighborhood. A staff comments that *"at the end of the day, we're just neighbors. Just not in the pejorative sense but like actually in very humble way. Now we are neighbors, and this is a very different relationship than just coming into a place, live there for a year and then just go. In our case, we live here. I literally know everyone in the neighbourhood and everyone knows me, so there is almost no strategy needed [...] and it's more about like opening our doors and saying, "Hi, We do this!"*.

Trust is another crucial component of maintaining these relationships and utilizing them to ensure a continuation of the project beyond a one-off, *"that is not only trying to achieve a once a year an amazing Summer School but trying to create a work relation and a trust relationship with a certain local, territory, neighborhood or whatever you are able to work.",* reflects a staff member. CC is also changing community integration into re-construction projects, by asking for residents' input into the design and construction. However, while this is a departure from conventional practices, there are also missed opportunities due to the current partnership structures of the Summer School. A student noted that they *"feel like a lot more of them team members could have been from the community to have a bigger impact […] we really only got to interact with the community during our coffee breaks"*. One mentor further outlines that without relationships and partnerships, building social capital is *"one of the things we miss in this kind of interventions, because you're supposedly making an intervention within our community and you're hoping to have some feedback from them and make some involvement with them. What*

normally happens is they are they are okay with you going there, they think it's a nice thing, but they don't want to be involved in anything."

Power & Privilege

Power and privilege can serve to uphold the current status quo of building practices and likewise serve as social capital. In order to empower the community, CC raises consciousness about existing inequities in all stakeholders. One mentor reflects that *"coming here, you really feel this gap between rich and poor which I am not used to. […] If you come from another country, you notice this. But for those who live here, they don't feel it so strong. They are used to this gap between rich and poor […] and so, it's also difficult to change this because people don't have this perception of injustice."*

Being in a relative position of power and privilege in comparison to the communities they work with, CC builds on their social capital, that is, the privilege of students (in terms of access to education and/or funds), or the privilege of mentors (professional expertise, time to invest) to drive its change efforts. Yet, CC struggles with the tension of meeting the demands of the community and inadvertently upholding the status quo by reducing responsibility for action of political or other actors. One mentor reflects that *"people in difficulty should have the help of the municipality and of the public to be able to live in acceptable conditions [...] It is not the task of 50 international students who come from very rich families because it wasn't so cheap to participate in this. It is not their task to solve this problem."*

CC is connecting social and environmental sustainability considerations to challenge a siloed approach to urban sustainable change and to question all stakeholders' relative positions of power and privilege. "*The tool we have that is most efficient, the one that really impacts people, is to be radical and to last. […] one very blunt example is veganism. Being vocal about being a*

vegan in a sustainable architecture project and explaining why, is something that makes people think and I think it's important to embrace this radicalism", says one staff member.

Further, while existing privileges in the organization serve to drive change efforts, there are also inhibiting changes within the organization and might stifle emerging changes among students from historically disadvantaged groups. One student noted the lack of racial diversity among CC's staff and said that *"it would have been great to have another staff member, not necessarily like a Black or African or South American person. But just like a person of color or coming from more of a marginalized community that could be able to relate a bit more"*. Through the process of co-production and input from students and mentors, CC shows changes in their own understanding of their power and privilege. Having clear principles and acting in accordance with them has taken on a more crucial role in current years. *"Maybe we were a little bit too shy at the beginning to be so vocal about our principles, but that's something that we want to change. One thing that we talked about, like, for example, is to actively say that this is a safe place for minorities and not omit it",* says one staff member. Being intentional about shifting power and privilege within its own organization also includes the need for more equity, diversity and inclusion training for students, mentors and staff that participate in the Summer School "*there needs to be a lot of education and learning and learning about why this is wrong, and I feel like that training should be done for them and their staff"*, says a student.

Attributes of the Environment

Attributes of the environment describe soft and hard built infrastructures and emphasize the practices, discourses and material expressions that emerge from blending 'nature' and 'society'. I echo James (2015) in my definition, rejecting the notion of the 'natural' as a mere

backdrop for social existence, recognizing the importance of human engagement with and within nature. Thus, the environment is not treated as a "background context but a place of being" (James, 2015, p. 52) and contains environmental features such as physical spaces and organizational structures. The soft and hard built environmental infrastructures that CC is influencing are *technology and buildings* and *institutions and culture*.

Technology and Buildings

This theme refers to the methods, processes or devices that serve to extend human capacities and fulfill certain purposes. CC is transforming technologies and buildings through a participatory, low-tech *building process*. CC also transforms perceptions of the *material and resources* used in the building process. Finished refurbished houses are *structural legacies* in urban spaces that can further shape urban life.

Building Process

CC is transforming the processes (including tools, technologies, and methodologies) of constructing physical structures by utilizing their research of low-tech sustainable construction methods that lend themselves to co-production and capacity building. Unlike in conventional building processes, the focus is community stakeholder needs and demands. A mentor explains that *"we are always working with this basic idea that that it should always be an open process and should be participative. Otherwise, we don't do it. It doesn't make any sense for us to create something on the basis of our ideas that actually is for somebody else to use."* Changing the building process facilitates justice in terms of process and procedure, as community residents are actively involved in shaping their own living conditions.

Deliberately co-producing and insisting on changing *how* we built sets new standards and norms for stakeholders of the Summer School. Co-production encompasses "processes that iteratively

bring together diverse groups and their ways of knowing and acting to create new knowledge and practices to transform societal outcomes" (Wyborn et al.,2019, p. 4). *"Building together is a common thing that we are all doing something, and I think that is something that [is] structural and intentional from the beginning and thought to be a way of bringing the people from outside of the Critical Concrete bubble (like organization, participants and tutors) because really the effect goes really fast to others if you if you do that in an in-depth intentional way"*, reflects a mentor. CC is both co-producing knowledge and a physical structure. Co-production occurs between various stakeholder groups: students, mentors (who are architects, builders, engineers), CC as an organization, the owners of the house and their neighborhood. Experiencing this different building process can in turn transform practices of (future) urban practitioners taking part in the Summer School. A mentor outlines that *"every participant sees a personal advantage in them and in joining together and doing things collectively instead of individually […] Now, mostly they can't imagine it because it has never happened. So, if it has not happened, then maybe the reason why it hasn't happened is because it doesn't work or because it doesn't now give you an advantage. So, showing the potential of this process of this project is really important."* Living the principles of co-production, CC's building process is continuously evolving, as new knowledges and expertise from participants are integrated. A staff reflects that *"when we talk about building communities, I think of the community outside and I often forget about the community inside, because in there, the community has changed a lot, and our strategy has changed a lot and it really is very much because of how we learned together through this kind of building group and the people going in and out, the things that went wrong, learning from there."*

Material and resources

CC is utilizing different materials and (natural) resources in their (re)construction process and changes status-quo conceptualizations of resource use (from linear to circular). One staff member explains that *"we use circular economy to multiply our resources […] But I think that you really need to be forced to make it differently."* All stakeholders are further encouraged to think creatively about the (re)use of materials and build expertise in working with resources without negative environmental or social impacts (free of toxins, waste etc.). Building 'differently' necessitates conversations about norms and standards. This is especially true with building materials that have become associated with status (such as concrete). Certain building materials and technologies of building are considered 'backwards' and not an indicator of development and progress. One mentor reflects on an interaction where they were asked *"why are you telling them to make it with bricks and then he said, 'Oh, please, modern construction is this, you shouldn't go back, you have to go forward, and concrete is that.'"* This awareness is an important consideration in CC's communication with stakeholders.

In the Summer School, stakeholders learn about *"what are the materials exactly, how do they come to the to the construction, how do you transform them. What time do you need them to be rigid or stable or wherever? It goes from that until actually to the fact that, you can do a door in 1000 different ways and you can have 1000 different materials […] It's like, you see everything like in one to one scale in that that relation. I think it's professionally, it's huge what they get"*, explains a mentor. The Summer School goes beyond teaching the properties of building materials and encourages stakeholders to bring in their own (professional) backgrounds to facilitate a re-thinking in how and why we use materials. The (in)experience of stakeholders is used as an advantage to keep evolving CC's (natural) resource use. One mentor reflects how their education was a barrier to consider (different) uses of materials: *"why? Because this is the*

way that you normally use that [material] and then because sometimes somebody comes with a different background or they don't know why that material is used, they actually are able to come without limits to their ideas and creativity. So actually, they come up with a completely different way of using that to do something completely different. And that you see that actually it's also like everybody, even us sometimes we are actually learning and gaining from that moment because you are taught to look at it that way". Stakeholders also reflect on the connection between materials and capacities, as changing building materials also requires matching skills. One year, *"we had to close it enough to be able to actually execute it because there are limits to budgets, to materials, time and of skills […] somebody wanted at the time to do something using stone, nobody knew how to work with stone"*, said a mentor.

CC's approach goes beyond considerations of resource use only during the construction process. Incorporating principles of just sustainabilities, (re)construction is seen in the larger context of global resource use. One mentor for example remarks that they "*make much less compromises now. I spent two or three days on the train going to Portugal and I make much less compromises with the choice of materials. I eliminated all of the plastic and unrecyclable materials in my project. And I ride the bike. And so, I make much less because there is always this, if you if you make projects, people justify their choices now. Like, 'I use this material, I know it's bad, but it's better than another one.'"*

Structures as Legacy

Through reconstructing existing buildings in Porto, CC is creating physical structures as legacies of their approach to urban development. This is especially important given Porto's status quo of favoring demolition and new constructions over refurbishments. Existing structures are often tied to existing communities and thus CC's strategy is to maintain community and cultural

values in their reconstruction. One mentor outlines that *"every area has a certain history and characteristics and if you knock this down and you get something new, then you lose this characteristic. So, let's protect this and let's also maybe find out more. Now, let's investigate the area and discover first, what do we really need? I don't have the answer. But I would like to reflectively think about our lifestyle and what would you really wish."*

The construction of the actual housing units is also an important pedagogical tool. Practicing trans-disciplinarity means that stakeholders *"realize there's a straight relation between what I'm designing and what I'm able to think how to do it and actually how to do it. So, this is really interesting because normally you are detached. From what you design, what somebody else will build. In this case, even if it's somebody else building, the connection is so direct that actually there's a symbiosis between these two that sometimes you don't understand. When the design is finished and the construction starts, we see that it's actually related and from these you actually see that this is the thing that they are seeing for the first time, because they normally don't have these kind of situations in their universities or even if they work at the classical office, they don't have this",* notes a mentor.

Governance and Culture

This theme describes the structures that harness an affective, cognitive, or behavioral phenomenon that are planned or unplanned and express common social meanings. CC's approach to adequate affordable housing provision is changing *governance*, *education* and *(financial) capital* structures that drive transformative change.

Governance

Governance refers to the structures, processes, rules, and traditions that determine how people in societies make decisions and share power, exercise responsibility, and ensure accountability (Folke et al., 2005, Lebel et al., 2006, Cundill & Fabricius, 2010).

The reconstruction projects that CC focuses on during the Summer School are municipally owned. Hence one focus of CC is changing municipal governance structures around housing development. Through their involvement CC is adding new structures and processes to a reconstruction *"that was supposed to be a project for an architect that works for the municipality and he's the one in charge of all the projects for the municipality"*, comments one mentor. In this role in-between municipal government and community, CC is negotiating structural barriers, such as power-sharing from municipal architects. One mentor reflects that *"here comes ego and comes and issues like 'I'm the one that is in charge' [...] in the end, these people didn't understand the project [...] because in Portugal, these kind of activities and events, they are not used to this. This is something new. And so, it's difficult for them to accept them."* Beyond the local impact, CC continues to strive to collaborate with other governments, nationally and internationally. During one Summer School *"there was like the national TV coming to talk a little bit to us and a small article on it. And I think, of course, that will create an indirect impact […] If you are, for instance, a local government of have another city, you're actually again being educated that there's also another way that I can actually find alternative ways to respond to these questions of urban problems or questions that come up"*, reflects a mentor.

CC is also deliberate about changing national, international, and global governance structures such as building policy and standards. Through gaining legitimacy and expanding the Summer School to a post-graduation certificate program in collaboration with a local university, CC wants to *"reach the political level because the big practices, the big polluters, and the one that*

are actually in power to build houses for people in numbers. We globally elect them. So, I think this is why I want to be more mainstream. Also, I want that we become more mainstream to eventually touch these people, eventually be part of the greater voice that pushes to have legislation that goes in the direction of a more sustainable future", says a staff member.

Education

Educational structures refer to the economic and social factors that typically make up (public) schools and other educational institutions at the national, municipal or community levels. Such factors include public funding, facilities, staffing, compensation, employee benefits, teaching resources and more.

Education is a structure that is difficult to change. Especially in fields such as architecture, urban planning. and other urban development professions, change at university level is slow. One mentor remarks that *"there is a very standard way of teaching in university. Still, it's very standard, very classical. Everybody teaches the same. It's very limited in one way, so what you feel is that actually they kind of open completely to these people that are doing these experiences because they are forced to see stuff from a different perspective of resources, of timing, of skills, of actual like real life."* CC is challenging traditional norms of education, such as what scientific expertise means or what education's role in social change efforts can and should be. One student comments on the effect that this short experience had on their broader educational trajectory. *"I don't think I'd anticipated that it would shift my understanding of architecture quite significantly. I kind of thought I would have a fun three weeks and get my hands dirty; I would make some friends and that would be the most of it actually. I'm not kind of being disingenuous to say it really has shifted my trajectory within the architectural field."* This is what transformational learning is about.

CC describes itself as an educational initiative and can issue university credits and train (future) urban practitioners. One student remarks that they *"wanted to explore maybe some alternative and sides of an architecture and found that basically most schools were really, really expensive and then came across Critical Concrete and kind of thought maybe this is too good to be true because it felt fairly affordable, but was a really interesting, alternative approach to education."* CC transforms status-quo educational structures through the Summer School format that integrates education with social change. CC has worked with national institutions and European educational formats, such as Erasmus, to legitimize their certificates. A staff remarks that *"on the day to day, I want to be challenging practices. I want to be ensuring that they [(future) urban practitioners] are conscious of the impact of their work. On the other side, I think the lobbying of higher institutions to implement structural changes which are then unavoidable. Let's say the whole industry."*

CC's educational approach is transdisciplinary, and thus the selection of the cohort of students for each year of the Summer School is important in ensuring its success. One student comments that *"it wasn't a cohort made completely of architecture students and […] there was loads of perspectives and different courses that yes, had similar kind of threads and themes, but understanding the ways in which different causes in different places in the world were approaching in tackling these issues. I thought that was kind of a really rich learning experience that I got from my peers in the course."*

Further, applied and hands-on practical working is another hallmark of CC's educational format. One architecture student comments on how this changes structure enhanced their own learning journey: *"You would imagine, that as an architect, I should be very comfortable on the construction side. But actually, my experiences on construction sites was quite minimal. I was*

[…] not understanding anything that I'm looking at really. So the time on site for me was probably the most educational."

Most Summer School students were enrolled at other educational institutions during their participation. Thus, CC utilizes these connections to encourage changes in these institutions by the student ambassadors. One student reflects that they *"went straight from Critical Concrete into the final year of my Master's and that's kind of where I think those changes really manifested themselves. I found myself advising other people to look at the work of Critical Concrete and the research that they publish because a lot of people had shared interests but didn't really have the depth of understanding or knowledge or knowing where to kind of find further information about tire foundations or an alternative ways of insulating a building and those sorts of things."*

(Financial) Capital

(Financial) capital represents human-created assets that can enhance one's power to perform economic tasks. CC transformed how (financial) capital is used during housing development. A mentor explains that *"the Summer School showed another way of developing this now, refurbishing this. And showing an alternative to selling it and knocking it down or refurbishing it for tourism."* By leveraging collective capital - social capital and financial capital from various sources (student tuition, project funding, donations and gifts), CC refurbishes housing without dependence on traditional housing financing through private capital. A staff member reflecting on this says that *"you need to make up a more economical model because the grant system is not adapted to you. You cannot really find traditional clients because that's not, you know, like your traditional clients don't have money at all. They cannot save 20 euro per*

month. So how are they going to hire you? You're putting yourself in a place where there is basically a need more than anything else." This (financial) independence from market capital allows for housing development that does not demand profits or returns on investment. *"You have to focus on the income first and then gradually solve the problems like living conditions. […] So, uh, of course you have if you want a sustainable city, you have to start with refurbishing houses."*, says a mentor. However, this approach can also at times feel like a band-aid solution as it is not alleviating general issues of community poverty.

Further, this financial structure limits the replicability of CC's approach and continues to threaten the sustainability of the project. Without long-term financial security, the organization cannot plan for long-term change efforts. One staff member reflecting on the early years says *"when you do something that is not on the socially prepared highways, you need to be prepared to face a lot of resistance. You need to be prepared to be like a monk, when it comes to the amount of money you spend in things, about how rigorous and coherent in your decision process. You need to almost have a cultish kind of spirit, where, you know, and you're almost religiously determined to reach your goal because you're opening a fucking road."* Further, CC relies on woofers (volunteer workers) that exchange lodging and food for work during short stays and student internships to supplement their full-time staff. Salaries and benefits of CC cannot compete with traditional architecture or urban design offices, which led to much staff turn-over during the beginning years of the project. One staff member reflects that they are *"surrounded with amazing brains and abilities and capacity. I want to be able to pay them. […] we need also to have our own business plan that can function without any charity, right. So, this is a challenge, but it's a challenge that worked out quite well with the Summer School but not enough. You know, like enough to survive for four years, not enough to be really developed from*

there. So that's why we dropped this Summer School and from what we have we build up something new that can be stronger."

3.3. Convergences and Divergences across Scales

Several realities of the current status quo pose challenges towards affordable housing transformations. To answer the second research question, "What role do the principles of just sustainabilities play in the development of emerging transformations for just and sustainable communities through CC's efforts of adequate affordable housing provision?", I examine the resulting themes in the context of the just sustainabilities paradigm (JSP) (Agyeman, 2005). Table 3 provides an overview of the connections between the JSP and CC's approaches for JUST. Change initiatives focused on complex problems must content with the fact that there is more than one way to enact change, that change is not predictable and that fostering change therefore relies on ongoing feedback loops and adjustments (Whitney, Dreyer & Riemer, 2020). CC is grappling with convergences and divergences of synergistic goals to achieving just and sustainable communities across *spatial* and *temporal* scales.

The central premise and focus of the JSP is that the "interdependence of social justice, economic well-being, and environmental stewardship is a prerequisite for developing sustainable communities" (Agyeman, 2005, p.89). Critical Concrete shares this conviction. With their focus on adequate affordable housing through low-tech methods, and environmentally friendly, regenerative materials, Critical Concrete advocates for sustainable development that is not only economically and ecologically sound but also just. The connection of planning/designing (collaborative idea generation, community involvement), what is being built with (technology, natural resources), how it is built (low-tech methods, collaborative, shared power), and who it is

built for (marginalized communities) is a central theme of emerging transformations. At all stages, a focus is maintained on establishing a quality of life for present and future generations and living within ecosystem limits, by building with regenerative materials and encouraging creative design solutions, and on justice and equity in the processes of collective decision-making with community members and CC stakeholders and advocating for these approaches municipally, nationally and internationally. Education through co-production with (future) urban practitioners is also considered a key ingredient in long-term JUST plans by CC. This is also a principle for just sustainable development articulated at the Environmental Justice Resource Center conference "Healthy and Sustainable Communities: Building Model Partnerships for the 21st Century".

Table 3. *The Just Sustainabilities Paradigm and emerging transformations in CC's work*

	Just Sustainabilities Paradigm	Critical Concrete
Central premise and focus	The interdependence of social justice, economic well-being, and environmental stewardship is a prerequisite for developing sustainable communities. Focus on quality of life, present and future generations, justice and equity, living within ecosystem limits.	The connection of planning/designing (collaborative idea generation, community involvement), what is being built with (technology, natural resources), how it is built (low-tech methods, collaborative, shared power), and who it is built for (marginalized communities) is central.
Approach to community involvement	Aim is to create an inclusive, representative, deliberative civic process using deliberative and inclusionary processes and procedures that serve to include the public in all areas of policy formation and implementation. In other words, *process* is as important as *product*.	Co-production of knowledges in order to facilitate citizen with expertise who act from within the community. The building process is as important as the refurbished buildings.
Approach to social advocacy	Proactive approach and adoption of the precautionary principle. As a politically transformative	Proactive approach that focuses on housing to foster just and sustainable communities. As a local, hands-on,

(policy-based solutions)	paradigm, the JSP looks toward a participatory democracy. However, in the transition period, it looks to joined-up or connected policy: integrated socio-economic-environmental policymaking based on principles such as demand management and resource decoupling.	and low-tech project, CC fosters co-production in all areas of the building process. Limited policy influence.
Attitude to planning	Comprehensive plans should include just sustainabilities considerations.	Comprehensive plans should include just sustainabilities.
Attitude to markets and economy	Focus on deep structural inequities in the globalized free-trade system (strong local-global linkages). Call for "new economics" that says after a certain amount, more money (standard of living) does not mean more happiness (quality of life). Markets where they are the correct mechanism, should be imbued with values that ensure the work for the common good. Sufficiency is as important of efficiency.	Recognition of deep ongoing historical inequities in housing systems (due to globalized free-trade system) and enhanced valuing of other-than financial capital. Call for "new building practices" that aim to preserve cultural and social capital by working on restoring existing communities mindful of gentrification processes while improving environmental conditions. Adequate and affordable housing as important as low-impact.

Note. Table adapted from Agyeman, 2005.

Spatial

Targets

The approach to community involvement of the JSP is to create inclusive, representative, and deliberative processes and procedures that serve to include the public in all areas of policy formation and implementation.

By combining education with social change, the processes employed by CC target different stakeholders and have unique effects on each. There is a direct effect on the residents of the refurbished house, who become involved in the process of refurbishing their homes through low-tech, low-impact methods in co-production with a local organization and international

(future) urban practitioners. This process has an indirect effect on the housing sector of Porto and its stakeholders. A mentor is commenting on how conventional building practices exclude community stakeholders and residents. *"The city center of Porto was quite barren ten years ago […] there's been big investment into refurbishing this, but obviously the people, the locals moved out and now that prices are rising so they can't afford anyway to live there anymore. So, there is a huge investment going on. Obviously, they are improving the conditions of the city, the houses are now built up again. And the city is much more alive and colorful, and it has a positive impact. But the reason behind this is absolutely obsolete. You refurbished a city without thinking how the inhabitants of the city would like to live in the future, not just apartments for tourists who come by plane."* CC's approach thus while targeting individual dwellings was also focused on changing municipal structures to adopt more of their processes. To date, CC has not influenced municipal housing or related policies directly.

Akin to residents, individual students that are involved in the initiative are directly affected by CC's approaches. Co-production facilitates emerging transformations in performance and entity practices, that in turn interact with changes in community attributes such as understanding and utilization of new capacities and agency. The *process* of design and construction was a more significant driver of emerging transformations in Summer School stakeholders than the final product of the refurbished house. *"The experience was very intense, as everyone worked together in very close quarters, sometimes lived together, and worked to finish the refurbishment in just three weeks. So, working in such a short time frame with a lot of people that are not experienced trying to put this together. It's an experience",* reflected a student. Above applications to the Summer School, CC's low-tech process has an indirect effect on communities of urban practitioners. While in traditional co-production research little attention is paid to

technology, both structural and individual transformations are emerging at the level of technologies. At CC's Summer Schools a 'diffusion of innovation' is taking place, with technologies being adapted and championed by stakeholders (Rogers et al., 2014). Technologies here become an appropriate tool to work towards JUST goals.

Locality

True to the saying 'think globally, act locally', CC has focused on creating small-scale local changes in their locally situated Summer Schools. CC's structural and systemic approaches to affect policy however are missing a close link to municipal government officials, limiting direct influence on the larger policy landscape of adequate affordable housing. While the project is supported by local government bodies through funding and cooperation, there is little power sharing which limits CCs influence of the formation and implementation of wider housing policies.

Beyond the locally bound Summer Schools, CC aims to reach global communities to inspire more projects like it in other major cities around the world and to contribute to global sustainability transformations. The global influence of CC is facilitated through their intentional selection of students and mentors from various countries and purposeful engagement with media and social media. However, there is also a certain humility that characterizes CC staff's perception of their reach. *"You also have to be very honest with yourself when you do this project and see also that a lot of people don't give a shit. [...] They change a bit but you know [...] we move a lot of things, but then like we have this little impact, but at least is there, you know, it's there. We're not harming the world and eventually we will live with a better place for what we're concerned"*, says one staff.

While acting locally can increase engagement for the duration of the Summer School, CC struggles with the maintenance of their relationships to communities over time. *"Because the Summer School is a very time limited experience, [it] isn't much of a sustained impact in that area because we go, we renovate a single dwelling and it feels very energetic at that particular time. But as time goes on, then that house is there as testament, but it maybe does not aid other relationships"*, reflects a student.

Temporal

Considering the immediacy of the affordable housing crisis in many global cities, there is a need to react to the crisis at hand, while also working to prevent future crises from unfolding. CC is balancing these responsibilities by refurbishing social housing units now and at the same time aiming to transform the housing sector. CC's attitude to planning and global markets therefore stresses the focus on long-term inclusion of just sustainabilities principles. A mentor comments that *"if you really want to have impact, I think that you need to always think long term. You have impact [with the Summer School] but it just at that moment. That said it's like a thing that, of course, they could always have like a second life because of people. For some reason they connect with it or they see that something else could be done. But as I said, you create a hot moment and then it cools down, really, really, fast."*

The connection of students online after the Summer School is an important element of the longer-term changes CC is encouraging, as students have made connections and built social networks. The intensity of the Summer School facilitates quick relationship building, but it provides little time for deeper conversations that can be fostered in CC's Alumni networks. A student describes *"while we were there, there are lots of interactions with people that I didn't*

really have. Once we finished the program, you know, we all like connected online. And then we move past this like really hectic. So that's good that we have this kind of sense of community".

CC is also, through their construction center and CC house, a constant presence in the neighborhood that remains when Summer Schools are not happening. This 'in-between time' contributes to the success of the Summer Schools. A mentor describes that *"Critical Concrete wanted to work in two ways. [...] Like the house itself becomes this kind of local hub of cultural activities, let's say, and part of actually the [Summer School] was to improve the house to be able to accommodate these kinds of initiatives, activities and stuff. In parallel, they wanted to have a strong direct social impact so they wanted to be able to cross paths to be practical and efficient. They wanted self-sustainable models, which of course would support ways of improving somebody's house or somebody's space for people that don't have the possible resources to do this."* The theme of in-between time also was relevant for students at the Summer School. All stakeholders commented on the importance of unstructured time to connect with the place, the project and the people. A lack of this unstructured time, especially for students who did not stay with other program participants could be a source of frustration. *"I kind of had a bit of a weird or work schedule and not as much free time to do any other interactions that we're not already in the schedule"*, says a student.

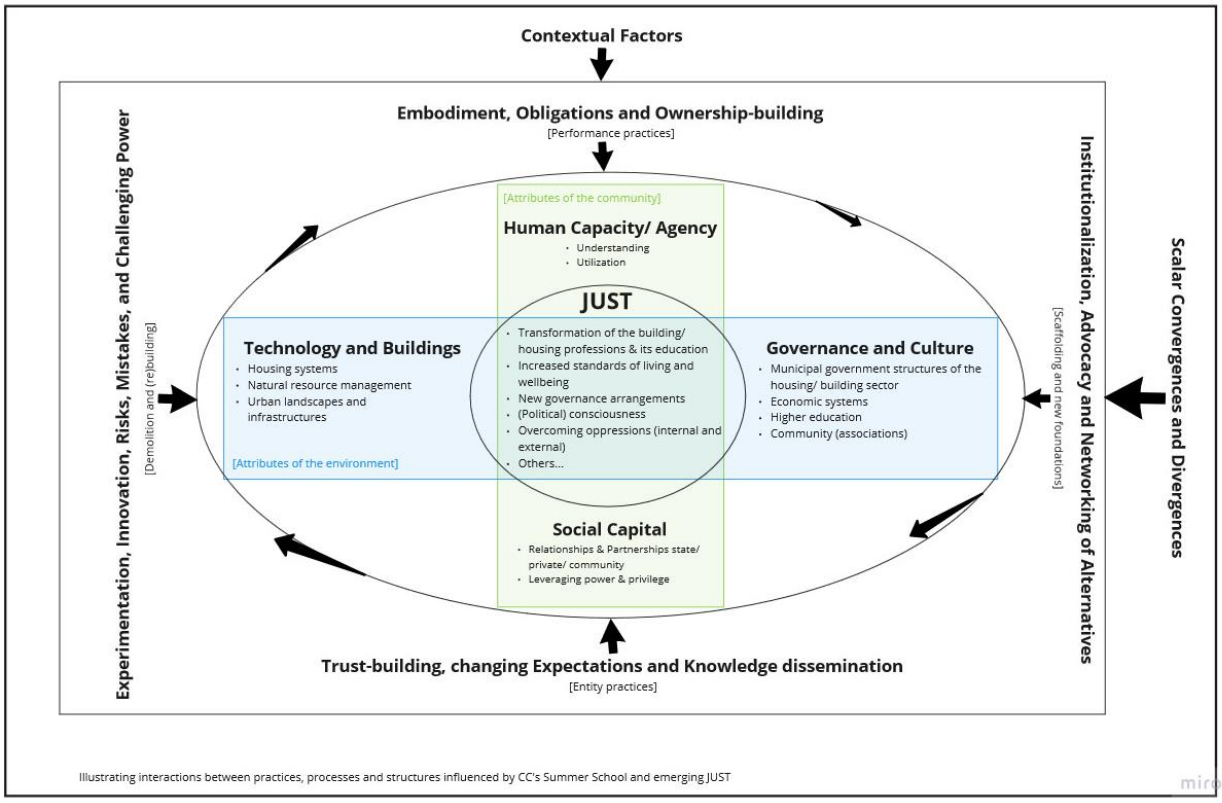
In recognizing the strengths and limitations of the Summer School format, CC is shifting its focus from intense, short-term learning formats into a longer-term post-graduation certificate project. These shortcomings were particularly apparent in struggles to break down barriers towards more engagement with residents, making time for more experimentation, and facilitating the financial sustainability of the organization. Dependence on an intense once-a-year Summer School was especially challenging in the context of the global Covid-19 pandemic and associated

lockdowns. Processes that build trust, relationships and legitimacy in their approach facilitated this transition. One staff remarks that *"the Summer School was a good idea to kick start a project and to solve situations that were very critical, that were very problematic, that were dangerous for the inhabitants sometimes. It was not best response when it comes to of course get high quality results and this is the gap that we are trying to reach right now with like really betting a lot on the research part, with developing this kind of more long term format, doing consulting, separating the budgets, also separating education from construction. All these kind of little strategy are motivated by observations about the limitation that we have found in our projects."*

3.4. Summary

The resulting themes of emerging transformations in this paper highlight deliberate change processes used, and soft-and hard-built urban (infra)structures tackled by CC to further JUST through adequate affordable housing, summarized in Figure 2.

Figure 2. *Summary of CC's approach to JUST through adequate affordable housing*



The figure highlights how CC simultaneously works to both overcome (or tear down) current structures and systems that are halting desired change (pressures from the left) and build structures and systems that are working towards that desired future (pressures from the right). This approach is mirrored in the three-horizons tool to foster sustainable development (Sharpe et al., 2016). CC hereby has two foci. On the one hand, they focus on changing building processes and existing structures upholding them (norms, institutions, policies, systems); these approaches are focused on systemic and structural changes. On the other hand, they work to disrupt the complicity with and acceptance of the status quo by individual actors (and by extension the communities they belong to); these approaches are focused on enabling individual changes. Both approaches target attributes of the community (capacity, agency, and social capital) (in green) and the environment (technology, buildings, governance, and culture) (in blue) and exist across

temporal and spatial scales. In our urban spaces, we have long known the impacts of pollution, green-space access, adequate housing, and other urban inequities on quality of life (Dreyer et al., 2018). Yet, few urban practitioners are influenced by who benefits from the (re)furnishment or clean-up of previously less cared for urban spaces and who carries the burden, and how affected communities are engaged with. Not just to be consulted with, but given responsibility to help manage, design, and implement projects that in turn affect the communities' capacity to implement similar projects on their own. JUST defines new strategies for urban transformations based on values. Individuals involved in Summer Schools, especially students, demonstrate emerging inner transformations congruent with principles of JUST. Practicing just sustainabilities plays a role in building human capacities through shifts in worldviews and values and subsequently shape actions and engagement that build on these. At the level of institutions and culture just sustainabilities principles legitimize working from a value-based system, serve to create alternative pathways, provide a model for change, and supports a culture-shift that is accepting of just sustainabilities initiatives. In fostering just urban sustainable communities, we need to contend with creating projects that create mutual benefits towards ecological health, social justice, and economic viability, and that are truly engaging with communities.

The Summer Schools embrace just sustainabilities principles and reject neoliberal urban growth discourses by leveraging student funding (power and privilege by association to social class or education) and CC's social capital (co-produced knowledge and relationships) to invest in refurbishment of adequate affordable housing units, without reliance on state or market capital. While this independence allows the organization to break away from status-quo processes and structures, it also limits its influence on them. Resulting refurbished spaces are 'living example' of structures built with different technologies (low-tech), materials (re-used,

recycled, renewable) and processes (experimental, participatory, embodied, engaged), yet they have not meaningfully shifted larger scale housing policies or practices. However, these spaces serve as 'alternative settings' (Rappaport, 1987), in which residents can resist oppressive systems, experience a sense of community, and imagine possible alternatives.

3.5. Limitations

Just as an exclusively quantitative study would be limited by its exclusion of qualitative data, the work's use of purely qualitative methods lacks the complementarity of quantitative insights. There are certain limitations related to interviewees' ability to recall information about events that occurred at some point in the past. Furthermore, "interview partners may have been prepared to share some pieces of information while not reporting others" (Rohlfing, 2012, p.170). The importance of using qualitative methods to explore the complexity of this study's target phenomena, especially its focus on capturing processes, has resulted in a resource-intensive data plan, which makes additional inclusion of meaningful quantitative data collection methods to be too far beyond the scope of this research. In that sense the triangulation of data sources was crucial for obtaining the less distorted picture about the phenomena. As this is the first in-depth examination of a case example simultaneously focusing on social and environmental sustainability in adequate affordable housing projects, it is conceivable that results from this qualitative study can inform future quantitative work, especially with regards to transformative processes. Thus, despite this exclusion, the rigour of the proposed study is strengthened using multiple methods and triangulation between sources. Quantitative data could be used in subsequent research and capture progress towards emerging transformations as defined by the community partner's own theory of change (see also Patton, 2019).

As noted by one of the committee members, the current research focuses on the extent to which CC *fosters* emerging transformations. This outlook was chosen to provide applicable information to the community partner and examine which aspects of the program might contribute to JUST, to maintain these aspects in future programming. The analysis could have also been framed around ways in which CC *hinders* JUST. Notably, emerging themes outlined numerous challenges and barriers in CC's approach towards JUST. These challenges and barriers were shared with the community partner as possible areas for change of their current programming yet were not further examined in the analysis itself.

Given the location of Critical Concrete in Portugal, this study would ideally have been conducted in more than one language to allow all participants to use their first language. Some concepts, especially around already murky and diluted concepts such as 'sustainability' and 'social action' do not translate the same across all languages. However, the interview guide approach allowed me to reword questions and/or ask clarifying questions when language barriers existed. Similarly, it is argued by Corbin and Strauss (2008) that different hypotheses and research questions can give different meaning to the same set of data. Thus, secondary sources of data are examined with greater caution. Finally, conducting the research as a non-native speaker and in foreign cultural contexts, as well as the researcher's own abilities to read, observe, analyze, and write in English have influenced the research as well.

With regards to data collection, I was not able to access two important stakeholder groups: community members in reconstruction sites and municipal partners. Covid-19 related travel restrictors are the reason for the omission of the former while time and resource limitations are the major reason for omission of the latter. Many residents still lack access to reliable internet connections, and the technical difficulties of conducting phone interviews with translators meant

that the research team was unable to make the necessary arrangements required to reach this group. Therefore, important questions regarding emerging transformations in residents cannot be answered at this point and remain an important focus of investigation for future work. In CC's work, due to the nature of the partnership, or lack thereof, with municipal or other social housing providers and capacity, only one house in a neighborhood was refurbished per Summer School. In this vein, it would be interesting to envision future projects that utilize change strategies of small, low-tech refurbishment, and apply them to a larger area, involving multiple housing units.

4. Conclusion

Urban injustice is produced and maintained through status-quo processes and structures of urban development; thus, changes to them can challenge what is deemed to be inevitable, necessary, or normal. As argued by Young (2010), the status quo is a cumulative product of the ways we accept and become complicit with processes and structures that enable both privilege and inequities. In this paper, merging the paradigms of urban transformations and just sustainabilities into the JUST concept aids to identify processes and structures that lead to emerging transformations through co-produced adequate affordable housing. It also outlines methodologies for research and practice in JUST. Adopting a JUST lens changes the focus of assessment of transformation initiatives. Defining and assessing JUST require intangible markers for *progress towards*, rather than *realisation of*, the just city (Perry & Athterton, 2017).

Calls for JUST are first and foremost calls for a reorganization of living conditions. JUST are processes of working towards a set of social goals to enhance quality of life for all in a just and equitable manner that recognizes urban spaces as intertwined socio-technological-environmental systems. To create deliberate change, one must understand how the entire urban fabric functions as a whole. While in isolation endeavors such as the Summer Schools are not

structurally transformative, as a component of broader national and international movements they add to overall pressure for restructuring growth-oriented urban development into a more humane system (Fainstein, 2010). Just sustainable housing cannot be seen as separate from other urban processes. Ultimately, this means critically examining the extent to which existing living formats, as 'living legacies' in built spaces or as ideas and models of a quality life, are still adequate for today's living conditions. I will end with some reflections on what this means for future research and practice of JUST.

On the one hand, further housing research which considers housing for all life situations and phases, and intersecting identities is required. This is the role of higher education in bringing about urban transformations, through critique, engagement, and the creation of possibilities for action (Pinheiro et al., 2013), as practiced by CC. Co-production as an approach to change has emerged at an important methodology for the research practice of JUST. Through co-production, both "social relevance" and "scientific reliability" (Polk, 2015) or "intellectual insight" and "wider public benefit" (Campbell & Vanderhoven, 2016) are possible, echoing the emphasis on excellence and relevance as mutually compatible and achievable goals of social science (May & Perry, 2016). As with all research endeavors, co-production can serve to maintain the status-quo if policy makers seek research that supports current policies rather than design policy around existing evidence. To this extent, as Conti (2005) notes, the goal of research is not the interpretation of the world, but the organization of transformations. Community-university partnerships must continue to support and report on JUST change initiatives. On the other hand, it requires putting into practice creative ideas that enable adequate affordable housing – beyond the usual models of social housing and associated stigmatization. It is about developing enabling actors, places, and structures that create adequate affordable housing, but also (co)open up room

for self-organization and reduce the unreasonable demand for autonomy imposed by neoliberalism. This requires openness to new constellations of actors from local initiatives, social institutions, politics and administration coming together in deliberate efforts to create JUST. At the same time, non-linear processes geared towards co-production and transformations must also be made possible – as this is how Critical Concrete was able to develop and transform.

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The JUST curriculum – Higher education for just urban sustainable transformations

Abstract

Urban professionals must respond to increasing social, economic, and ecological crises. Higher education is a public good that could be catalytic for change in this area, by empowering participants in the co-creation of their socio-spatial context. However, contemporary higher education in key fields such as architecture, design and construction are ill-equipped to prepare future practitioners for the challenges posed by urban crises. What is needed are learning experiences that foster individual and societal transformations and make students change agents for more just and sustainable cities. The current paper aims to contribute to this endeavor by suggesting a higher education teaching & learning framework for just urban sustainable transformations - the JUST course. It encourages critical pedagogy building on transformative and global citizenship education. The framework was developed and pilot-tested through a case study in collaboration with a social and educational initiative in Porto. The article describes the teaching and learning framework and discusses the role of higher education and urban spaces in societal change towards just sustainabilities.

Keywords: Transformative learning, global citizenship education, urban transformations, just sustainabilities

1. Introduction

'[In Portugal], there is a very standard way of teaching [architecture] in university. Still, it's very standard, very classical. Everybody teaches the same. It's very limited in one way'
– Architect and Mentor of the Critical Concrete Summer School

'Urban' professions[11] are challenged by ongoing social, economic, and ecological crises (Kvan & Yunyan 2005; Nicol & Pilling,2000; Salama 2009; Smith & Boyer 2015). They are being asked to address the needs and demands of a public that is facing increasing social inequities, neoliberal economic systems that fail to provide well distributed community wealth and wellbeing, and urban environments that suffer the consequences of and perpetuate climate change. A central goal of higher education is for students to undergo substantial personal changes as they learn the knowledge, skills, attitudes, and goals, that a profession prizes and societies need (Benner, Sutphen, Leonard, & Day, 2010). In this sense, higher education hones practical and critical reasoning as well as an understanding of professional and civic responsibility (Colby et al., 2011). Complex urban challenges require learning processes that are transformational, learning experiences that shift learners already acquired unsustainable paradigms (Mezirow, 2000; Clark, 1993), and learning outcomes that facilitate the creation of systemic and structural solutions to meet the urgency of these challenges (Chambers, 2009).

[11] I refer to 'urban' professions in this paper to group all professions, industries and disciplines that are concerned with the development of urban built infrastructures, such as architecture, urban planning and design, engineering, building and construction.

However, teaching and learning methodologies in higher education are largely not aligned with the complex and unprecedented challenges faced by urban practice (Hasanin, 2013). Social aims of higher education have been overshadowed by prioritizing vocationalism, instrumentalism, and economic goals, including employability skills and preparation for the workplace (Barnett & Coates, 2005; Barnett, 2007; Walker, 2006). This is reflected in the increasing emphasis and valuing of STEM - science, technology, engineering, and mathematics - fields instead of social science disciplines (Benneworth & Jongbloed, 2010). Bastalich (2010) further notes, these so-called 'knowledge-economy reforms' rest on a "policy environment [that] undermines the value and role of universities within a democracy and fails to recognize and support the distinctive, diverse nature of university knowledge innovations" (p. 845). As such, I see current challenges to urban professions as two-fold: needed changes in the professions themselves, and thereby their education, and the need to develop suitable learning methodologies that consider the context of the learners and the localities they work in (Hokstad et al., 2016).

This paper presents the results of a co-learning research partnership between one social and educational initiative focused on teaching 'sustainable sustainable architecture[12]', Critical Concrete, and the first author, aimed at tackling these challenges: JUST – the Just Urban Sustainable Transformations course. Critical Concrete (CC) is an initiative for social and sustainable architecture in Porto's Ramalde neighborhood that combines social advocacy for adequate affordable housing, research and innovation in low-tech sustainable construction

[12] The repetition of the word is chosen consciously by the organization to suggest that sustainable architecture goes beyond 'green' infrastructure.

methods, and education of future urban practitioners. Interviews conducted with stakeholders of their annual Summer Schools that explore how this educational format contributes to individual and structural transformations affecting urban sustainabilities (Dreyer et al., 2022, paper two in this dissertation) guided the development of the course. Results indicate that CC's approach fosters emerging individual and structural transformations, for example in a redefinition of the role of the urban practitioner and changes in building processes (Dreyer et al., 2022). The quotes embedded in this paper are drawn from these stakeholder interviews. At the time of the research, the organization was restructuring its educational format from a short-term intensive month-long Summer School, into a year-long post-graduation certificate program. This transition happened during the first COVID-19 lockdown in the summer 2020. There was concern among staff members about how to maintain elements of their transformative pedagogical approach in an online learning environment over an extended timeframe, instead of during an intense, short-term, in-person program. Important in the Summer School was the integration of practical hands-on experiences and theoretical knowledge, which built ownership, responsibility, and collaboration, and focused on sustainability and justice. The approach was also facilitated by strong relationships and trust (Dreyer et al., 2022); each element part of interrelated processes driving transformations. A former student notes that *'it'd be just worth reiterating how key I found the social side to the Summer School and which I think will be challenging with the year-long course when it isn't all face to face, or it's not going to be kind of largely in person.'*

Given restrictions on in-person, collaborative action research and a defined community need, the research partners decided to shift the focus of the ongoing research towards the development of a new online course module, building on the learnings from the Summer School formats. It draws on transformative learning and global citizenship education as the main

pedagogical perspectives to develop a teaching and learning environment that provides rich learning experiences for students, their mentors, and the communities they work with, and to address issues of local (un)sustainabilities (Dreyer et al, 2022). This paper offers a review and initial reflections on the JUST course, that aims to support educators of (future) urban practitioners to reflect on their own teaching approaches. In the following sections I will outline the background and rationale of the JUST course in the context of urban transformations and the role of higher education in social change. The second section illustrates the pedagogical approach for the JUST course, examining transformative learning and global citizenship education. The third section applies these pedagogical approaches and their conceptual frameworks to the JUST course, its methodology and activities. The last section ends with reflections from the implementation of the course.

2. Background and Rationale

We began our collaboration with three assumptions. First, that higher education is a public good that encourages processes of transformation toward more sustainable and just futures (Dreyer et al., 2022; Dewey, 1938; Saltmarsh, 2009; Sterling et al., 2013). Second, critical learning experiences can be conceived as vehicles for transformative pedagogy that foster emerging individual and societal transformations (Davies, 2004). Third, accordingly students are change agents; it is expected that the development of their individual skills and knowledge also increases the organizational capacity at CC in the short-term and contributes to more just urban sustainable futures in the long-term (Bourassa et al., 2017; O'Sullivan, 1999).

2.1. Sustainable urban transformations

'It's kind of an advocacy project that uses architecture to be a voice. The thing that maybe is interesting to really understand from this project is that this is not an architecture project but rather it uses architecture because there is a problem with housing.'

- Critical Concrete staff

We are living in unprecedented times; a global pandemic continues to disrupt public and private lives, behind the backdrop of climate (and connected) crises that continue to exacerbate existing global and local inequalities. These crises are intensified by an increase in the adoption of neoliberal development policies (Long & Rice, 2021; Hursh & Henderson, 2011). Processes of urbanization are integral to the neoliberal process of global capital circulation and (uneven) development (Weaver, 2017; Harvey, 1982; 1985). More than 50% of people globally now live in urban areas, and it is estimated that urban residences will increase by more than 70% in the next three decades (Heilig, 2012; Rink, Banzhaf, Kabisch, & Krellenberg, 2015). Cities are spaces of contention; they perpetuate unsustainable systems and practices and suffer their consequences (Uitermark et al, 2012). Thus, they are uniquely positioned as leverage points for broad scale societal transformations towards sustainability. The defining features of cities—density, size, and diversity (Wirth, 1938)—provide the basic elements for contention to develop: Their density triggers conflicts over space, their size can sustain organizations of even small minorities, their diversity can facilitate the formation of robust relationships. But they are also important sites where tensions and resistance arise, and discriminatory and oppressive neoliberal growth-oriented practices are enacted through urban, regional, and national policy (Uitermark et al, 2012, Armstrong, 2002; Chauncey, 1995; Massey, 2007;Maussen, 2007; Mitchell, 2003). Any action working within the current neoliberal context threatens to exacerbate "a crisis-contingent

mode of capitalism that would intensify various forms of inequality and injustice" (Long & Rice, 2021, p. 722). Local officials may employ a range of strategies through housing regulations, transit policy, and zoning to favor certain groups, such as white middle class, over others, such as minority and working class (Davis, 1990). Yet, neoliberal policies offer only one perspective on progress and development. Equity, human rights, and sustainable development provide valid alternative perspectives (Walby 2009). There is a growing consensus that the pursuit of sustainable development, and by extension urban sustainable development is one of the major societal challenges of our times (McCormick et al, 2013). While in theory, sustainable *development* is not only concerned with economic success but also health, social inclusion, quality of life, and quality of environment (Barton et al. 2010, p.6; UN 2015, UN 2016), in practice its original discourse on the inadequacies of neoliberal market frameworks in addressing our crises is lacking. This failure of sustainable development and later urban sustainable development to live up to its promise of integrating environmental protection, economic equity and social justice has led to the development of more comprehensive approaches towards urban change (Agyeman, et al., 2003). Sustainable transformations have been defined as changes in "structural, functional, relational, and cognitive aspects of [complex] systems that lead to new patterns of interactions and outcomes" (Patterson, 2017, p. 2). To facilitate transformative processes, "justice and equity issues must be incorporated into the core of sustainability" (Agyeman, 2008, p. 752). This partnership therefore devised the concept of just urban sustainable transformations as radical changes to the dominant structures and processes, and hence identity of urban systems, leading to more just and sustainable social, institutional, and systems configurations (see Dreyer et al, 2022a for a theoretical consideration of the concept; Gunderson et al., 2002). Put simply, sustainable urban development is primarily about

development *in* urban areas while just urban sustainable transformation is about development or change *of* urban areas in just and sustainable ways (McCormick et al, 2013). For urban professions to move towards being able to contribute to these transformations, justice and equity principles and associated skills must be incorporated in their higher education. If students lack this exposure to issues of social justice, they are ill-equipped to respond to the realities of current life, which is detrimental to the development of current societies (Iyer-Raniga & Andamon, 2016).

2.2. Higher education of urban professionals

'I maybe started architecture with this idea of sustainability and humanitarian architecture then education kind of took me more towards, the flashier, the more you know refined and beautiful architecture and then Summer School kind of took me right back to, "oh no this was why I wanted to get into this profession, don't lose that." Then subsequently in my Master's that has been what I've explored and doubled down on.'

– Architecture student and student of the Critical Concrete Summer School

Recognizing that higher education indeed has a public role, many scholars problematize a linear, instrumental perspective on the relation between education, learning and the solution of social and political problems (Biesta, 2006; Todd, 2010; Säfström, 2011; Masschelein & Simons, 2013) such as sustainability challenges (Jensen & Schnack, 1997; Ferreira, 2009; Van Poeck et al. 2014). Beck et al (2015) ask 'how can higher education educate graduates who know more than 'just knowledge'?' Such an education includes developing an awareness of the limits of one's own knowledges, an ability to discern what kinds of knowledge are appropriate in each

situation and a sensitivity to different forms of knowing. It demands that students engage in a lifelong process of relating to their knowledges and values through self-aware engagement with moral and social issues crossing the levels of the Self, the individual, the collective and beyond (Beck et al., 2015; Green, 2011). This view of education recognizes that students are not only gaining knowledge and skills, but also growing emotionally, spiritually, and morally as embodied people in society; learning broadly becomes 'change in a person' (Marton, Dal-l'Alba, & Beaty, 1993). Viewing students as people in context "is inherently integrative; it emphasizes the connections and relationships between thinking, feeling and action, rather than separating cognitive dimensions of education from affective or moral dimensions" (Quinlan, 2014, p. 010). Barnett (1997) urges all in higher education – postgraduates, intellectuals, and professionals – to develop the capacity to be open to multiple discourses and to engage in them. When is scientific rigor appropriate and when is another type of knowing appropriate? When should one set aside one's own preferences in favor of the needs of others? What practices in higher education contribute to processes that enable students to live rich lives and contribute to democratic societies and social justice through work and civic engagement (Bergan, Harkavy, & Land, 2013)?

Architecture and other urban professions have begun to move away from form and aesthetics towards issues of social justice and equity (Keddy, 2015). Since the 1960s, mainstream pedagogical approaches have been criticized by educators and practitioners (Cuff 1991; Gutman 1987; Holtz 1975) and a wide range of experimental models have emerged as a reaction to the dominance of the conventional approach (Salama, 1995). Yet, formal principles of urban disciplines such as architecture, urban planning, design, engineering, and other professions continue to be taught disassociated from their historical, cultural, and theoretical development

(Keddy, 2015). In the early 1990s, Dutton (1991) observed that, “ironically, while architecture is widely assumed to reveal much about the character of a society, students learn little about their society beyond that which is necessary to function professionally” (xvii). Current educational formats for future urban practitioners reinforce superficial analysis of urban spaces without in-depth research or testing; emphasizing the product – a designed/ constructed space - with little attention paid to the process, context, or other social values. This teaching format encourages students’ aspirations of becoming ‘star architects’, who treat architecture as an art detached from social, cultural, ethical, and political contexts (Mayo, 1988). Despite the relative autonomy of higher education institutions and their relative freedom to prioritize cultural and social purposes of higher education, neoliberal thinking and language has dominated educational thinking and practice for decades (Beck et al., 2015), privileging their economic and functional missions (Karseth & Solbrekke, 2010) to the deficit of more liberal and humanistic interpretations of the role and nature of education (Smyth & Shacklock, 1998). A primary instructional method in architecture design studios is the master-apprentice instruction, stemming from early French and German schools of thought (Bashier, 2014; Salama, 2009). A comprehensive literature review (Bashier 2014; Salama 2009) concluded that contemporary architectural education in general is still reminiscent of these two traditional approaches, which emphasize formal aspects of architecture and fundamentals of form, without addressing equity issues. This format encourages individualistic work without opportunities for collaboration, which decreases students’ feelings of ownership, engagement and responsibility over projects and increases copying of others’ architectural approaches (Ciravoğlu, 2014). Status-quo teaching and learning prepares students to be successful in current unsustainable systems, thus perpetuating these (Burns, 2011; Cress, 2004; Sterling, 2002). Education hereby serves the neoliberal goal of producing productive

employees, rather than conscious citizens (Hursh & Henderson, 2017). One student remarked, *'I have no experience of working with a community as a client, despite having referenced it as a concept in many hypothetical university projects!'* The isolation of education from public spheres and local communities further diminishes the democratic responsibilities of education (Graham, 2009). As the non-profit sector shrinks under neoliberalism, academics' engagement with this sector shrinks and partnerships for service provision with the private sector become more normalized places for academics to locate their work. This trend diminishes research and knowledge creation with community members in favor of more lucrative "consultancy" contracts to fund research and graduate students. Yet, as the incontrovertible educational maxim states, 'learning needs to start where people are'. This is the profound challenge of higher education. There is a need for urban professionals to incorporate considerations of social justice and sustainability. These considerations must be deeply embedded in these professions and not just add-ons (Sterling, 2004).

2.3. Need for a Radical Shift

'So, it's different from person to person, but I would say that that in almost 99% of the cases, you feel that in the end there's personal and professional value added to these people, because they actually understand other ways of doing stuff. I think that especially if they come with a background of architecture.'

– Architect and Mentor of the Critical Concrete Summer School

In their educational vision for the 21st Century, O'Sullivan (1999) suggested that a radical shift in education is necessary if we are going to create change agents who can put an end

to current crises. The sustainability crises were seen as a cue for moving education in a transformative direction at all levels (Sterling, 2004; Reason, 2002; Lyle, 1994; Orr, 1994; Jucker, 2002). I am drawing on the legacy of Freire (1993) and Giroux (1992), who questioned the purpose of higher education, and advocated that education needs to be a radical force for personal *and* social change. The key issue is one of 'response-ability': "how far [are] institutions and higher education as a whole are able to respond sufficiently to the wider context of the crisis of unsustainability and the opportunities of sustainability?" (Sterling, 2004, p. 50). Lambrecht's et al.'s (2017) argument that 'education has an individual as well as a social aim', and Mélard and Stassart's (2017) assertion that higher education can be considered 'an open ended and democratic practice that creates in-between spaces for individual and social transformation' further supports the conceptualization of higher education as a dynamic interplay between individual learning (construction of knowledges, values, skills, habits, etc.) and the transformation of society (see also Denizen, 2010; Garoian & Gaudelius, 2008). Educators are faced with the challenge of not only teaching sustainability but doing so in a way that "acknowledges the personal and collective transformation inherent in sustainability work" (Burns, 2011, p. 2). Teaching an undergraduate university course on sustainability, I was struck by students' deep concern about the ecological and socio-cultural problems we are facing. Traditional sustainability education critically examines these issues and explores potential solutions; however, it rarely acknowledges its own complicity in upholding the status-quo. Students can become hopeless if the learning processes do not prepare them for *how* to engage in these complex issues and facilitate change (Burns, 2011). Salama (2015) states that, "in essence, critical pedagogies identify and place emphasis on the influences of educational knowledge that establish an unjust situation in society…Instructors try to foster a critical capacity in learners to

provide them with the tools and skills to resist the effects of unjust, biased, or illegitimate authority, dominance, and power" (p. 311-312). In response to Henry Giroux (2000), who calls for critical educators to 'create conditions for social agency and institutional change' (Giroux 2000: 181), the JUST curriculum aims to instigate 'a pedagogy that expands rather than closes down the possibilities of a radical democratic society' (Giroux 2000, p. 192). This paper thereby draws on and expands previous frameworks for social justice education in architecture (see e.g. Brown et al., 2003; Sen et al., 2017; Baptist & Nassar, 2009), by explicitly linking concepts of societal (urban) transformations, with individual transformations, local and global concerns, and sustainability and justice. The modules and units are designed to break down barriers between students, diverse populations (Morrow 2000; Hewitt & Nassar, 2005) and the 'everyday city' which lead learners to view planning, construction, and design as distinctly separated from and yet directly influencing 'the everyday life' (Jarrett, 2000). In the following section, I will illustrate how transformative learning and global citizenship education are uniquely suited to this endeavor.

3. Teaching philosophies

In the following I am introducing two specific pedagogical approaches and their frameworks that informed the JUST course. In addition, JUST is underpinned by a range of pedagogical principles based on personal experiences of the first author from teaching a third-year university course in 'Environment, Psychology and Action'. Many of the ideas of the course

were first experimented with in this course; albeit in a physical setting[13]. These include, some basic assumptions derived from adult learning theories (Knowles, 1983) such as learner-focus and self-directed learning, acting as a co-facilitator and co-learner; ideas of experiential learning (Kolb, 1984), enquiry and action-based learning, also known as problem-based learning (Cree & Davidson, 2000, Taylor, 1997), and many strategies set out to encourage 'deep' as opposed to 'surface' learning (Entwistle & Ramsden, 1983).

3.1. Transformative learning

'I think this moment was quite interesting, especially because these two girls were very classical since the beginning in their way of thinking about architecture. I mean two weeks before they were probably going to answer all these questions with the high tech [solutions] … and then there was something in a conversation with [owner name] that they rethink a lot of things.'

– Architect and Mentor of the Critical Concrete Summer School

Current urban challenges call for learning that goes beyond the accumulation of knowledges. Knowledges about sustainabilities cannot be 'handed over' but need to be developed (Tassone, Dik, & van Lingen, 2016). Higher education thus demands space and time for reflection, dialogues, and engagement (Beck et al., 2014) as learners actively own their

[13] The course had been developed as part of the 'Youth-leading Environmental Change' (YLEC) research project "to raise consciousness about environmental justice among young people in different parts of the world and motivate them to act for change" (Hickman et al., 2012).

participation in both personal and societal transformation (Dittmer, 2019; Colby et al., 2011; Englund, 2008). These are the basic components of a transformative approach to teaching and learning (Mezirow, 1991; Mezirow & Taylor, 2009; Dirkx, 1998; Taylor, 2009). This type of learning enables us, teachers, and learners, to recognize, to reflect upon and ultimately to modify the system of assumptions and beliefs that frame our tacit viewpoints and influence our way of thinking, being and acting in the world (Mezirow & Taylor, 2009). Mezirow (2003) described transformative learning as leading to students becoming "more inclusive, discriminating, open, reflective and emotionally able to change" (p. 58). It engages not just with the content of what is known, but also with how to think (Tassone, Dik, & van Lingen, 2016). It involves the whole person and as such moves beyond intellectual or conceptual learning by engaging our emotional and intuitive selves as well (Sterling, 2004). According to the Center for Transformative Learning at OISE at the University of Toronto, transformative learning involves experiencing "a deep structural shift in the basic premises of thought, feelings and actions. It is a shift of consciousness that dramatically and permanently alters our way of being in the world. Such a shift involves our understanding of ourselves and our self-location: "our relationships with other humans and with the natural world" (Morrell & O'Connor, 2002, p. xvii). Transformative learning also actively connects the personal with the political (societal). Schurgurensky (2003) articulates that transformative education involves the nurturing of caring and critical citizens who raise important questions and problems in overt ways, probe the status quo, and communicate without appealing to authority and tradition. Transformative pedagogy, according to Giroux (2012) is a "moral and political practice... central to proclaiming the power and necessity of ideas, knowledge, and culture... and the goal of living in a just world with others" (p. 197).

To summarize, a transformative curriculum challenges tacit viewpoints and assumptions, encourages new ways of thinking (epistemologies) and inspires a holistic development of the whole person that acts in the world.

The pedagogical frameworks based in transformative learning that are applied in JUST are the Initiative for Transformative Sustainability Education curriculum (ITSE) (Wals, 2011) and the Educating Yourself in Empowerment for Sustainability learning tool (EYE) (Tassone, Dik, & van Lingen, 2016). ITSE provides educational dimensions to consider in the promotion of learning for change. The framework differentiates between four dimensions of education, which must be in balance to promote learning for change: objective (it – theoretical and applied approaches to sustainability), subjective (I - personal development needed to become actively engaged with sustainability), inter-subjective (we - collaborative competencies for working in inter-disciplinary environments) and cross-boundary dimensions (it, I & we – integration of dimensions). The EYE learning tool, is a dynamic instrument characterized by four interrelated phases, which focuses on fostering capacities within each phase: understanding (objective – understanding *about* sustainability and subjective - perspective-taking), awakening (developing agency), positioning (contextualizing knowledge and viewpoints) and enacting (developing action skills through real-life application). Each phase fosters capacities for empowerment for sustainability.

3.2. Global citizenship education

'So, this breaking of ego that we do during the Summer School works well because the architecture community is a very ego trip community.'

- Critical Concrete staff

To understand and respond to global issues, and foster just urban sustainable transformations, a complex web of cultural and material local/global processes and contexts need to be examined and unpacked. Camicia and Franklin (2011) argue that the resistance to neoliberal discourses in educational contexts should be based on understandings of global communities that allow for multiplicity and emancipation, as opposed to subjugation. Nonetheless educating students and teachers as mediators of knowledge and cultural critics capable of using critical theory and pedagogy is far removed from the realities of most higher education, as argued above (Lapayese, 2003). Global citizenship education presents an alternative approach to the neoliberalisation of education (Lapayese, 2003). There is much debate and contestation around what is meant by global citizenship education (GCE); although there is general agreement on the common agenda for a social justice-oriented approach to teaching and learning about global issues (Eidoo et al., 2014). Various scholars on global citizenship education clearly acknowledge the potential of global citizenship education to provide a space for students and teachers to tackle issues of equity and justice in increasingly plural and fast-changing societies (Osler & Vincent, 2002; Scott & Lawson, 2002; Schweisfurth, Davies & Harbor, 2002).

In its educational approach, GCE is focused on extending an exclusively local or national perspective of global issues while avoiding tokenization and exoticization of foreign places and peoples. In my interpretation of GCE I link this aim to the work of Spivak (1999) who challenges educators, academics and intellectuals to question our own privilege and complicities in the political economies of knowledge production (both in terms of research and teaching), following others (Kapoor, 2004). She argues that through a relational stance that demands an ethical

responsibility towards the 'Other', we can 'learn to unlearn, to learn from below and to work without guarantees' (through mutuality and reciprocity and the crises and cross-fertilizations that these entail) towards genuinely co-determined outcomes. 'Unlearning privilege' or 'learning to learn from below' is related to "a suspension of belief that one is indispensable, better or culturally superior; it is refraining from thinking that the Third World is in trouble and that one has the solutions; it is resisting the temptation of projecting oneself or one's world onto the Other" (Spivak, 2002, p.6). I am also influenced by Andreotti's (2006) distinction between 'soft' and 'critical' GCE and Eidoo et al's (2014) discussion of GCE as a kaleidoscope. Andreotti (2006) emphasizes the importance of critical literacy, "the analysis and critique of the relationships among perspectives, language, power, social groups and social practices by the learners" (p. 7), as an educational approach that promotes engagement and reflexivity. Thereby learners challenge their own and others' epistemological and ontological assumptions which transforms viewpoints and relationships. In the GCE curriculum different epistemologies are offered that by 'opposing them' can challenge learners' own ways of thinking and being; by pluralizing knowledges in the present, the future is pluralized as well (Nandy, 2003).

In its learning goals, GCE aims to increase an understanding of globalization, increase awareness of one's own implication in local and global problems, engage with pluralities of perspectives and diversity (Pashby, 2008) and develop action competence (Dittmer & Riemer, 2012) towards effecting social change. As such, GCE includes a transformative approach to learning, focusing on the connection of the personal and political. A central issue in GCE is "whether and how to address the economic and cultural roots of the inequalities in power and wealth/labour distribution in a global complex and uncertain system" (Andreotti, 2014, p. 024). Shultz (2007) asserts the dynamic nature of globalization and sees GCE working towards the "erosion of

North- South hierarchies" (p. 249). Inherent in these assertions is a clear transformative stance: we need to move beyond amelioration and reform. Through clear connections of the local to the global, critical thinking, meaningful experiences, and radical activism, spaces of learning can contribute to an understanding of power relations and structures of oppression. Within dynamic spaces of learning, diverse and changing communities and contexts are accommodated, without imposing a specific mode of action on them (Eidoo et al., 2014). Citizenship learning is a life-long and life-wide process (Schurgurensky, 2003) as evolving forms of globalization require fluidity and variability in models of GCE (Lapayese, 2003). Thus. GCE needs to critically engage students with the notion of global citizenship itself, ensuring the fluidity of its discourse and pedagogy.

To summarize, Eidoo and colleagues (2014) have identified a set of five inter-related GCE principles:

1. Critically understand globalization and interrogate global hierarchical power relations;
2. Work with a broad and deep concept of citizenship learning;
3. Adopt a caring, self-critical, and reflexive approach to how individuals, groups and nations are implicated in local and global problems;
4. Engage in intercultural perspectives and diversity through critical literacy; and
5. Use and enable citizen agency.

The conceptual frameworks embedded within a GCE pedagogy that are applied in the JUST curriculum are Spivak's conceptualizations of learning (Spivak, 1999, 2002) and the Through Other Eyes educational initiative (Andreotti & de Souza, 2008). Spivak's propositions to 'learn to unlearn', 'learn to learn from below' and to 'to work without guarantees' lead to an educational project that creates spaces and provides the analytical tools and ethical grounds for

teachers and learners to engage with global issues and perspectives addressing complexity, uncertainty, contingency and difference. Spivak's suggestions could "enable learners to value and learn from difference and to reconstruct their worldviews and identities based on an 'ethical relation to the other'" (Andreotti, 2008 p.89). The Through Other Eyes (TOE) educational initiative, which was designed to enable educators to develop a set of tools to reflect on their own knowledge systems and engage with other knowledge systems in different ways, in their own learning or in their classrooms also draws on Spivak's work. It is specifically designed to expand less critical approaches towards GCE than the ones described and embraced here. TOE focuses on Indigenous knowledge systems as epistemologies (ways of knowing) that offer different ontological choices (ways we see reality and being) to those of so-called 'Western' mainstream cultures and leads the learner through six stages of learning: getting started (self-reflection), mainstream perspectives, different logics (based on interviews with indigenous people), through other eyes (exposure to personal narratives), case study and reading the world again (examination of ones transformation in relation to the beginning self-reflections).

The next section explores how these pedagogical approaches were merged to create the JUST course.

4. The JUST curriculum: Bringing it together

'What I think is very interesting about Critical Concrete since the beginning that you have the academical part, but you also have the practical part. And for me, what's missing in our society, especially in architecture and design is actually that you always have either one or the other. You just have a few moments or few programs that combine both.'

– Architect and mentor of the Critical Concrete Summer School

TL and GCE both foster knowledges and understandings of ourselves, as teachers and learners, and the world in which we live, while foregrounding equity and justice at both local and global levels. They share an emphasis on social analysis and political participation as well as key skills including critical thinking, being, feeling and acting, active citizenship, and collaborative learning. JUST integrates these two pedagogical perspectives and their components in an online-learning format, to stimulate not only knowledge development, but emerging transformations as necessary preconditions of just urban sustainable transformations. Table 1 summarizes the course information.

Table 4. *Course information*

Course level	Bachelor degree of higher
Degree programme areas	Any program area
Duration	One academic term (12 weeks)
Couse delivery method	One main question (2 units) active per week on an online platform; one module every 3 weeks. In total 4 modules with 3 questions (6 units) each
Course Objectives	After completion, students will have familiarity with: - The origins of urban sustainability challenges; - Different assumptions about sustainability, justice and their implications for urban transformations;

	- A framework for improved dialogue, engagement, and mutual learning (with each other and the communities we work with). After completion, students will be able to: - Critically reflect on their role in meeting urban sustainability challenges; - Conceptualize just urban sustainable transformations in their own professional and educational backgrounds in inter- and trans-disciplinary ways; - Utilize practical tools and methodologies for participation in urban transformations; - Develop just sustainable solutions for both real-and imaginary scenarios; - Motivate others to join them in becoming agents of change.
Target groups	Anyone interested in urban transformation; specifically geared towards current students in fields such as architecture, design, construction and other urban professions.
Prerequisites	There are no pre-requisites. Bring an open mind and readiness to challenge your own and others' worldviews.

JUST utilizes a course format that **consists of four thematic modules** that learners engage with in succession: (Sustainable) Development, Just Sustainabilities – on Equity and Environment, From Urban Development to Urban Transformations, and Building Sustainable Communities. Each module responds to three fundamental questions for transformative change: *Where are we at and why?, Where do we go from here?, Why does it matter for others and for us?,* and follows the same structure consisting of **six units making up the JUST framework,** which integrate elements of both TL and GCE (see Table 3).

Table 5. *Course structure*

Thematic Modules	**Leading questions and units**
Sustainable (Development)	Where are we at and why? Unit 1 + 2
Just Sustainabilities – on equity and environment	Where do we go from here? Unit 3 + 4
From Urban Development to Urban Transformations	Why does it matter for others and for us? Unit 5 + 6
Building Sustainable Communities	

The learning goals for each of the four thematic modules are facilitated through three types of activities. Reflection questions focus learners on specific aspects of learning materials to engage with and reflect upon. Some reflection questions are also key for the learning journals, which are helpful in guiding students personal learning journey (Stern, 1996) Learning journals are open access for educators and other learners and thus create spaces for dialogue and conversation and allow for feedback on the course itself on an ongoing basis. Lastly application

tasks are designed to foster the development of shared knowledges among learners or with the communities they exist in. They make class-based learning relevant, such as developing practice skills through real-life application, developing action skills and 'Use of Self' classes (Dempsey et al., 2001). Each module draws on a wide variety of online resources (e.g., short, recorded lectures, videos, audio recordings, articles, reports or other narratives by people with scholarly, or lived expertise, and activities).

Table 6. *Application of TL and GCE frameworks to each module of the JUST course*

Framework Unit#	ITSE	EYE	Spivak	TOE
Unit 1	I	Understanding (subjective)	learn to unlearn	Getting started
Unit 2	It	Understanding (objective)	learn to unlearn	Mainstream perspectives
Unit 3	It	Positioning	Learn to learn from below	Different Logics
Unit 4	We	Awakening	Learn to learn from below	Through other eyes
Unit 5	We	Awakening	Learn to learn from below	Case study
Unit 6	Cross-boundary	Positioning & Enacting	Work without guarantees	Reading the world again

The following section describes the six units of the JUST framework, their purpose and learning goals, and provides illustrative example activities from one of the thematic modules.

Where are we at and why?

Unit 1. Change starts with…?. The first unit of each module 'Change starts with…?' begins with a clear articulation of one's own standing in the world in relation to the topic. The activities in this module are an invitation to brainstorm one's own individual perspectives and relate them to perspectives in one's own social groups. In pedagogical terms it could be considered a pre-test that articulates the learner's own understanding of their standpoint and assumptions. It stimulates deconstruction as it uncovers the origins and (hidden) agendas of taken for granted concepts, such as 'development'. The first module on development for example begins with the learning journal task to "write down your own definition of sustainable development". This is accompanied by a range of reflection questions to prompt critical reflections about their definition in relation to their own and others local contexts. In the third module on urban transformations, students watch Tajye Selasi's TED talk 'Don't ask me where I'm from, ask me where I am a local'[14], to critically engage with the concepts of locality, identity, and country. Learners apply Selasi's 'Three R's (Rituals, Relationships and Restrictions)' approach to investigate their own localities.

Across modules, in this first unit, learners recon with articulating that what one considers as neutral and objective is just one of many perspectives related to where one is coming from socially, historically and culturally (Andreotti & de Souza, 2008). In other words, we are

[14] https://www.ted.com/talks/taiye_selasi_don_t_ask_where_i_m_from_ask_where_i_m_a_local?language=en

uncovering the lenses, through which we interpret and approach ourselves, others, the world (van Egmond & de Vries, 2011), and thus our contributions to just urban sustainability transformations. Learners focus inwards while practicing perspective-taking through investigation of different perspectives, or worldviews, that we can adopt within the context of each topic. This step is crucial in fostering reflexivity and self-awareness required to develop personal missions, passion, talents, and leadership skills for making positive transformative changes in the world.

Unit 2. Mainstream perspectives. The second unit, 'Mainstream perspectives', as the name suggests, identifies and reflects on mainstream scientific and non-scientific paradigms and theoretical and applied approaches to sustainabilities. It thus adopts objective 'it' dimensions of transformative learning. A transdisciplinary approach fosters analysis and deconstruction of mainstream notions, facts, theoretical and practical approaches, models, paradigms, and analysis and intervention tools. In module two, on equity and environment, students watch a short lecture on the dominant social paradigm (DSP), materialism and consumerism, read scholars critical take on mainstream sustainability narratives and reflect on how their community's sustainability narratives have become mainstream. Learners recognize the heterogeneity of perspectives and evaluate different aspects of the debate for 'solutions' towards sustainabilities. In connection to the first unit, learners continue to question what we consider 'good and ideal' as only one perspective, related to where we come from socially, historically, and culturally.

Where do we go from here?

Unit 3. Beyond the mainstream. Unit three, engages with the legitimacy of multiple scientific and non-scientific perspectives on sustainability 'Beyond the mainstream' (van Asselt, 2000) and to discusses their complementarities and contradictions (Baumgärtner et al., 2008) to

each other and mainstream perspectives. Learners identify their own positionality, as this unit contributes an analysis of another possible (and logical) way of thinking about the issues. Furthermore, it recognises that people learn from their total environment (Haigh, 2008), which should be designed to create interaction with difference and creativity. Learners identify the effects of the limits of their own perspectives and become receptive to new understandings of the world. Recognition of the context within which one is operating and one's own position in it is crucial for the achievement of sustainability outcomes (Zimmerman, 1995). Especially empowering (Zimmermann, 2000) is the understanding of contextual and structural factors, as well as awareness regarding resources – including one's own competencies – that can either hamper or enhance one's capacity to engage for sustainability. In module two, learners critically engage with Dr. Vandana Shiva's claim that "everything that produces growth creates poverty" from her talk 'Growth = Poverty'[15]. In the last module, 'Building sustainable communities', learners connect Meadows' (1997) text 'Places to intervene in a system' to the case-study of Aamjiwnaang, an Indigenous community in south-western Canada that uses Toxic Tours to raise awareness of the effect of the surrounding petrochemical industries (Gray & Damiano, 2019).

Unit 4. Creating alternatives. The fourth unit sits mid-way through each module and focuses on awakening learners' personal agency - the motivation and the belief that one wants to and can influence a given context, and that a certain outcome can be achieved - through 'Creating alternatives'. It is grounded in the understanding that we have an innate desire and tendency to express our true potential (Maslow, 1943) through self-actualization. Learners

[15] https://youtu.be/7M3WJQbnHKc

receive new perspectives, re-arrange, and expand their own, and deepen understanding, going into the uncomfortable space of 'what we do not know we do not know'. This unit also builds capacities for working across disciplinary boundaries, emotional and social skills through engagement with one-another, mutual respect, and facilitation of constructive interactions; activities that bring learners together. In the third module for example, learners watch the UrbanA video series on the drivers of urban injustice[16], before reflecting on how they influence each of the mentioned 10 drivers in their professional lives. Learners then create a brief (3-5min) ignite video to share an example of a driver of urban injustice in a neighbourhood/ community/ project they affiliate with (this can be where they live now or a community they belong to). In this video, learners 1) describe one of the drivers of urban inequality, 2) interpret this driver in the context of a neighbourhood/ project they affiliate with, 3) relate the example to urban transformations and sustainable development and 4). identify what action(s) are/could be taken to address this issue.

Why does it matter for others and for us?

Unit 5. Alternatives in Action. To facilitate further development of personal agency, the fifth unit fosters self-efficacy, the core belief that one has the power to effect change through one's actions (Bandura, 2006) through exploration of real-life examples of 'Alternatives in Action', of existing transformative change efforts. Students are guided to switch between perspectives, understand how they can influence processes of just sustainable urban transformations, and discuss and develop hands-on ways of dealing with such variety. This

[16] https://www.youtube.com/watch?v=2aU90IXiBPs&list=PLjbNPZqbaFXxg-RG_wYebOPp-MFhoGgLc

requires reflection on personal perspectives and agency, as well as group-reflexivity on objectives, strategies, and outcomes of various approaches towards change (Godemann, 2008), which is facilitated by learning with and from each other (and/or other perspectives) through open and honest dialogue. The fourth module for example uses Critical Concrete as a case study of 'architecture in action'. Learners watch Critical Concrete's video 'Insights into a value driven project - Critical Concrete'[17] before developing a program theory of change that is then collectively reviewed and reflected on.

Unit 6. The Self in Action. This last unit ends each module by putting the 'Self in Action, applying learning to our own contexts and in our relationships with others (in communities outside the classroom). It begins to integrate subjective, objective, and inter-subjective learning dimensions and ties back to the beginning of the module, continuing to reflect on and explore the unknown: new possible ways of being, thinking, doing, knowing, and relating. Learners become engaged with each other, in real-life actions, or local sustainability concerns through which they can contribute to sustainability in a manner that fits their capacities. The student can learn from others, can challenge what they hear, can reconsider their own knowledge and insights and, in case, can adopt new ways of viewing certain issues. Together, these steps can yield interesting discoveries and can serve as a transformative process through a self-assessment of thinking and implications for professional practice. This creates engagement and empowerment through development of action skills, as well as the capability to reflect on the impact of one's own actions and behaviors. This phase considers that we human beings are – in essence – beings of

[17] https://www.youtube.com/watch?v=NA2sROicCSE&t=22s

praxis, as argued by Freire (1993). We can both reflect and act, and in doing so, we can impact upon and transform our reality and the world in which we live. A spiral of experiential learning can be created through continuous peer and coaching support that 'touches all bases' of experiencing, reflecting, thinking, and acting in order to continuously enhance understanding in a way that integrates "the functioning of the total person – thinking, feeling, perceiving, and behaving" (Kolb & Kolb 2005, p. 194). The first module for example ends by having learners reflect on their opening definition of development and the assumptions behind their beliefs. In their learning journals they further comment on whether their understanding of development and sustainable development has changed in any way. Lastly, they engage in an 'Envisioning a Sustainable Future Exercise', where they choose among principles of sustainability (one of each: Economy, Environment, Society), such as 'a living wage should be paid to all employees' and describe one way that principle could be implemented in the community and one way it could be implemented in their own home.

5. Implementation, lessons learned and conclusions

The JUST course was developed with the intention of creating a pedagogical tool for urban practitioners that responds to the challenges of urban professions. Throughout four thematic modules, across six intentionally designed units that each ask three fundamental questions, learners consider their professional and individual responsibilities for urban change. Integrating sustainability justice into urban transformations encourages us to ask what quality of life we want in cities and how to get there. Further, we begin to define common goals and consider tools and approaches useful in getting there. The collective dissatisfaction with the conditions of urban life calls into question the patterns of thought and practice that have gotten

us to this point, and the ways of understanding and perceiving the world that have enabled us to construct societies and urban infrastructures that have these problems embedded within them. Seeking change thus becomes a values-based endeavor. Changes to the system will not be encouraged by the dominant institutions upholding it, but by those most harmed. JUST recognizes the knowledge of individuals who we may not consider experts, such as community members, because of their wealth of knowledge about local conditions and context. The pedagogical framework developed for the JUST course was applied to the topic of affordable housing provision in the context of a post-graduation certificate program. Yet, associated learning dimensions presented can be applied to a range of other topics and educational opportunities at addressing global inequities, such as food systems. Aside from the theoretical framing of the course, there are practical considerations when implementing the JUST course. In the last section, I am reflecting on the implementation of the JUST course with a first cohort of 13 students, facilitated by Critical Concrete staff and taught by me during the 2021 spring term, and discuss main challenges and opportunities in and beyond the classroom.

In the classroom

For many facilitators, adjusting to an online environment creates unique challenges and opportunities for transformative learning. The instructional format chosen for the JUST course aimed to facilitate participation through interaction in online-spaces and application of course content to real-life situations. Interaction in online spaces can be a challenge to facilitate unless course modules and units are taught concurrently to a set of students. Facilitators and organizations wishing to teach the JUST course benefit from a set timeline for concurrent instruction and suitable deadlines to complete each module. As the content of each unit

purposefully connects to prior and latter units to facilitate transformative learning, modules should be engaged with in a short-enough timeframe to allow for these connections. The first edition of the JUST course was taught over the course of 12 weeks (one academic term); each module being engaged with during a 3-week period. The modules were set to only become available at the start of each next period, and latter units only unlocked after previous units were successfully completed. This way students had to engage with each unit in successive order and complete modules in a collective timeline. The content of each unit can be lengthened or shortened to fit teaching needs, if the general learning dimensions for each unit (see Table 3) are sufficiently addressed. It is crucial that the expected timelines are communicated clearly to learners in advance with clearly defined timelines for student feedback and engagement periods. It can be difficult to match and account for different learning speeds in an online space, thus the inclusion of 'optional further materials' in each unit is recommended. Accessibility to online materials can be challenging when students can attend globally and may have diverse learning needs. Learning videos and other content can be made accessible to all audiences using some technological tools, such as speech captions, and transcripts. Facilitators can ask for learning needs prior to the start of the course and implement student suggestions on an ongoing basis. Inclusion can be challenging due to contextual factors, such as community members cannot be engaged with during the course due to a lack of reliable internet access, or factors inherent in the design of the content. Academic approaches and language can be exclusionary; especially towards community members one aims to engage in transformative processes. Thus, it is important to highlight theoretical foundations of practical approaches without alienating learners or community members. Materials, such as texts, narratives, videos, that will facilitate each learning step must also consider and vary author locations – historically, socially, culturally.

These materials could be chosen in collaboration with learners and respond to their identity locations. Despite its embeddedness in pedagogy, the course aims to maintain a balance of various sources of information and knowledges as well as giving learners access to 'optional materials' for self-directed learning. Academic testing can also be exclusionary. Yet, changing patterns of instruction and testing can also pose a challenge. Assignments throughout the courses are increasingly open-ended and devoid of a predefined "correct" answer, which some students find much harder to "solve" satisfactory, both for themselves and for their facilitators. Previous experiences in the educational system have set-up ideas of educational success that are no longer valid. It requires time and individual work to unlearn these approaches. It is worth considering how these challenges can be anticipated and learners supported throughout their learning journeys. Check-ins through the learning journals can facilitate this process.

Beyond the classroom

To meet the challenges of the 21st century in terms of equipping teachers, learners and communities to listen to one another and work together to create new possibilities for just and sustainable futures, higher education will need to challenge its boundaries, operate trans- and inter-disciplinarily, articulate the connections between theories and practices, (re-)engage with local and global communities as equal partners, engage learners as whole people around many forms of knowing and be accountable to the societal challenges we are facing today. Change is about opening the idea space and discourse to a diverse range of actors and experiences. Bringing in people who haven't been included in decision-making must go beyond adding them to existing structures of decision-making. The decision-making space must change and ultimately the nature of institutions holding decision-making powers. Otherwise, if the goals of

institutions, such as higher education, don't align with just and sustainable values, different decisions are unlikely to emerge even when including different voices. If the goals don't change, we compress diverse perspectives to meet pre-established goals instead of multiplying voices. Transformative curricula designed to develop global citizens require more than individual, enthusiastic, and creative projects or teachers. They require a change in the orientation of the purpose of higher education institutions from a corporate neoliberal to a civic discourse, which replaces striving for individual gains with consideration of society - locally, nationally, and globally (Cliffort & Montgomery, 2017). The JUST course spans the boundaries of socio-technological-ecological disciplines and sectors, and connects communities, government agencies, non-governmental organizations, and business sectors through higher education.

Adams, Bell, and Griffin (2007) argue that it is best to "draw upon multiple pedagogies to help [learners] consider information about various forms of oppression in light of their own personal experiences in ways that foster critique, self-assessment, and more conscious choices about the actions they take in the world" (xvii). In the case of the JUST course presented here, those conscious choices refer to how urban practitioners make decisions about the make-up of urban spaces. What JUST goals are in specific contexts and neighborhoods must be driven by people living there. Thus, this course cannot be static. It needs to evolve and adjust to topics, students, teachers, and always operate with an awareness of local complexities and global uncertainties. This points to a main limitation of the JUST course. While the online format allowed continued education during the challenges of the Covid-19 pandemic, it also prevented the physical engagement of communities and students in collective action. There is an emerging literature, describing learning benefits of more expressive and embodied interactions (Richards, 2012). Proponents of embodied cognition argue that how people think and reason about the

world is deeply connected to their sensorimotor system and the body's interaction with the physical environment (Glenberg, 2010). Embodied learning facilitates engagement, agency, perspective-taking and problem-solving (Anastopoulou, Sharples, & Baber, 2011; Grant & Spivey, 2003); all goals of the JUST course. Therefore, future editions of this course must consider and weigh the advantages and disadvantages of online education.

A 'just' pedagogical approach is only one step towards more just urban sustainable transformations. While higher education is certainly one crucial aspect, needs for radical shifts do not stand in isolation and cannot be disconnected from needed changes in market structures or cultural changes to name a few. It is the sincere hope of the author to have contributed a small piece to this larger transformative change that is needed so we can continue to imagine a better future for all in an equitable and just manner.

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General Discussion

This dissertation investigated transformations towards just urban sustainabilities from a community psychology perspective. It began with the premise that the enthusiasm for sustainable urban development has not yet decisively influenced either ecological or social outcomes and the reality that urban challenges have implications for the everyday life of communities and residents. As long as development strategies prioritize economic growth while limiting attention to the socioeconomic distress of (historically) marginalized communities and residents, ecological and social inequalities will continue to accompany urban sustainable development outcomes. Essential to changing the status quo is a deep understanding and integration of equity and justice considerations in all areas of city-making. This work seeks to support anyone aiming to do just that. It has employed various methodologies in its exploration of the concepts of just sustainabilities and urban transformations, including literature reviews, including theorizing concept-fusion, an analysis of JUST in one embedded single-case study and a framework for a transformative curriculum. Further knowledge mobilization activities will include presentations of key findings and insights to the community partner Critical Concrete and their network. All individual articles making up this dissertation will be prepared for publication in academic journals, with differing audiences, as discussed in the introduction. Finally, the developed course is now property of the community partner and can be used either in its entirety or in modules in furthering post graduate education.

A common thread is simultaneous zooming in and zooming out - considering the local and global, the individual and the social, the personal and the political, the past, present and future - necessary for urban transformations. The first paper both outlines the importance of considering the city a socio-technological-ecological system connected to wider global processes

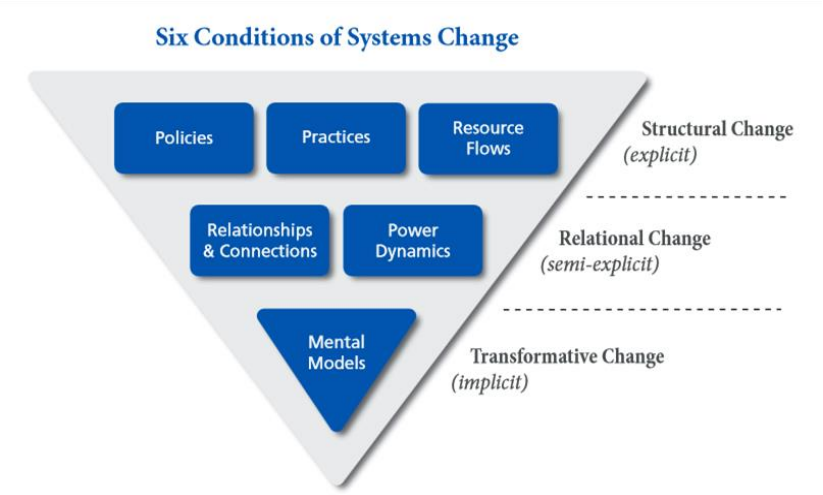
and the role of local residents, especially the most vulnerable, in processes of urban transformations. The second paper contends that urban processes and structures of adequate affordable housing provision must change in a dialectical relationship while keeping in mind past, present and future injustices in sustainability efforts, highlighting the temporal and spatial dimensions of transformations. The last paper advocates for the role of higher education (and by extension other government structures) in changing urban narratives while connecting personal to societal transformations. This is community psychology. A discipline that goes beyond the individual, integrating wider systemic considerations, to try to effect change at both individual and systemic levels. Community psychology is research and action based on theoretical foundations; its main academic affiliation named the 'Society for Community Research and Action', Division 27 of the American Psychological Association, its tagline being 'Social justice through collaborative research and action'. True to this mantra, this work first outlines theoretical considerations for JUST, then examines them in the context of an applied case-study, which is translated into practice in the context of a course outlined in the last paper. Yet, while grounded in the discipline of community psychology, the papers are intended for audiences outside and thus make sparse direct reference to concepts, frameworks and methodologies common to it. The community psychology reader however will recognize the utility of concepts such as empowerment, the ecological model, and equity to my enquiry. I have summarized community psychology approaches to the environment in two book chapters, in which I outline the applicability of these concepts for researchers and practitioners inside and outside of the discipline (Dreyer & Riemer, 2019; Dreyer & Riemer, 2022). At Critical Concrete, stakeholders describe how the program breaks down the usual detachment of architects - breaking the ego - and facilitates identification with the places being designed and constructed. Place-based

attachment and place identification are considered important levers of change in community psychology. Community psychology scholar Niki Harré in her book 'Psychology for a better world', as well as Du Nann and Winter in the 'Psychology of Environmental Problems' emphasize that the root causes of unsustainability are caused by the collective actions of human beings. Conventional framing of environmental problems helps people distance themselves from their responsibility to act. By adjusting this framing and looking at it from a psychological perspective, possible solutions beyond technological or political ones emerge, such as fostering moral responsibility through place-based attachment and identification. Increased identification with one's neighborhood is concurrent with increased dissatisfaction with the status quo, because zooming out of one's individual level perspective illuminates social injustice, environmental racism, and the suffering of others. In fact, place attachment can predict environmental concern better than demographic variables (Vorkinn & Riese, 2001). Our current widespread perception of human beings as separate autonomous beings is inaccurate and destructive. Empathy, often a result of feeling more connected, is important in the engagement of individuals in collective action (Hickman & Riemer, 2016). As neoliberal capitalism relies on individuals who depend little on fellow residents or the natural world (Riemer & Harré, 2017), connection is a radical force for change.

I conclude in paper two that Critical Concrete has not yet decidedly shifted policies. Thus, one could argue that they are not in fact an exemplary case study illustrating emerging transformations, as structures remain unchanged even if transformations are emerging at the individual levels. Here, another community psychology concept might provide useful in untangling this seeming contradiction. As cities are herein considered complex (socio-techno-ecological) systems, complex systems thinking, and the ecological systems theory can provide a

framework of thinking about this type of radical change. Bronfenbrenner (1994) in the ecological systems theory, defines complex levels of the environment that influence a child's development. Since then, community psychologists have extended the understanding of the ecological model to illustrate that humans are embedded in both social systems, but also in non-human ecosystems, such as by introducing a biosphere (Levine, Perkins & Perkins, 2005) or geosphere (Moskell & Allred, 2013) as an additional level beyond the societal macro-level. Levels of the ecological model range from the individual to close social connections, such as friends and family, community organizations or public, to social systems and ideologies. These levels are interdependent and interconnected. Central to JUST is exactly this dialectic and interdependence. One characteristic of complex social systems is that change is emergent (Vargo & Akaka, 2012), just as transformations are considered emergent in the JUST framework. Transformations in urban spaces can emerge due to changes at any system level (Frow et al., 2019).

Figure 3. *Six conditions of system's change*



(from Kania, Kramer, & Senge, 2018)

The image of the upside-down iceberg is used in systems thinking to illustrate levels of systems change. In this model, while events are visible, above the surface of the water, they are influenced at the deepest level by mental models (Betley et al., 2021). Many scholars have thus described the relevance of mental models, "habits of thought – deeply held beliefs and assumptions and taken-for-granted ways of operating that influence how we think, what we do, and how we talk" (Kania, Kramer, & Senge, 2018, p. 4), as crucial leverage points for systems change (Betley et al., 2021; Kania, Kramer, & Senge, 2018; Monat & Gannon, 2015; Meadows, 1999). Of course, individual mental models are also rooted in institutional structures and systems - there is a dialectic - and thus a sole focus on individuals is insufficient. Relationships and power between community members need to change, such as through participation and empowerment. At Critical Concrete, emerging changes of mental models and of the relationship and power dynamics between various stakeholders of the re-building process are evident. It remains to be seen if this pathway will continue or end abruptly. There are multiple pathways of change. They involve personal and political action. They involve taking responsibility for one's own behaviour while working on changing the norms, rules and laws that shape the behaviour of many others, such as by contributing to social movements. Creating different mental models even in a few individuals can influence structures eventually. Personal transformations can lead to many forms of community and political action. This work has emphasized that a first step is by giving communities more power to shape their cities.

Considering the diverse actors and interests that must be involved in just urban sustainable transformations, future research should focus on movement-fusion, coalition building and community-capacity building. Municipalities can have most impact by regulating access to land, resources, and technologies, as these are basic capabilities for poverty alleviation. Contrary

to creating more conventional economic approaches to environmental problems, that is, carbon markets that privatize common resources, a JUST approach would focus on creating new forms of common property through sharing, land reforms and ‘open source’ technologies. Research and education also need to take an active role in shaping cities through values-based, inter-and transdisciplinary work. Until justice and equity are foregrounded the call for just and sustainable cities will remain stuck in the echo-chamber of the status quo.

Conclusion

Just and sustainable cities require new kinds of conversations between environmentalists, social justice advocates, urban social movements, and decision-makers so that urban transformations are both more equitable and more consistent with the urgent imperative to reduce the carbon footprint of urban life. Local policymakers, urban theorists, and practitioners must contend with unintended social and ecological outcomes of narrowly focused low-carbon or 'green' urban policies if they wish to achieve their stated social and environmental goals. In addressing one of the most pressing challenges of urban life to date – housing insecurities - better coalition building and more intentional conversations between urban sustainability champions and affordable housing advocates are necessary to address the effects of gentrification and other ongoing injustices (Rice, Cohen, Lang & Jurjevich, 2019). Let's imagine a future together where we engage in a politics of listening, coordinating, sharing, caring, and acting, rather than competing and market-shaping. Urban transformations towards sustainabilities cannot be abstracted into market-shaping policies, regulations, and investments with effects emerging years from now. They are happening here and now. Urban spaces manifest relational webs that are at least as dense and complicated as markets, brimming with potential to reshape urban sustainability narratives. The prospects for a 'global civilization' rest on our ability to realize it.

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