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Research Article

Capital Sequestration: Degrowth through Investing in Community-Led Transformations of Provisioning Systems

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Abstract: Investing in different futures is an existential challenge that much research within and adjacent to Ecological Economics engages with, yet organizations that recognize this social ecological imperative have few options for funding and implementing radical transformations to the needs and well-being provisioning systems that currently exist. Ecological macroeconomic ideas and EE principles of long term well being and justice on a livable planet will be explored in the context of the housing crisis in Canada, and a rural Ontario community organization attempting to find transformative solutions to the lived, local experience of this crisis. Provisioning systems for housing, when tied to real estate markets, debt money creation, land enclosures, and financialized supply chains, contribute to capital accumulation cycles; it is hardly possible to meet our housing needs, in aggregate, without also perpetuating the form of this provisioning system. The idea presented here, that of Capital Sequestration, proposes to remove capital from markets and 'invests' this capital in land trusts as an intentional transformation of financial capital into social and ecological values. Through land and housing trusts as well as non-market funding pathways, Capital Sequestration is a method of investing in the transformation of provisioning systems through the sustained and collective boundary management of financial markets and incommensurable values. This practice offers significant promise as it applies ecological macroeconomic theory work, is grounded in the normative goals of and emerges from empirical research of EE, and meets a pressing need within society for imagining alternative economies.

Keywords: affordable housing; capital sequestration; climate action; decommodification; ecological economics; ecological macroeconomics; housing; investment; land; markets; provisioning; trusts; world-building.

1. Introduction

We are faced, as we have been for the last four decades, with a Global Ecological Crisis (GEC) in the form of climate change, increasing social inequality, environmental injustice, loss of biodiversity, massive species extinction, and more. In 2018, the IPCC report [1] called for "rapid, far reaching and unprecedented changes in all aspects of society" including the (re)negotiating of values, fairness, justice, and well-being. This confirms the need for the systemic structural change that frontline communities, activists, and climate scientists have long been calling for [2]. In addition to this system transformation that many within Ecological Economics (EE) position their research in relationship to,

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the current popular calls for 'building back better', 'a new normal', or 'a new future' in the wake of the global coronavirus pandemic has brought the prospect of bold policy and social changes to the forefront of public, private, and academic spaces. The challenge of engaging in participatory transformation of the provisioning systems that constitute our economies presents an opportunity to bring the systems-based, justice oriented, ecologically-informed research and proposals of EE into policy discussions and application.

Tied to rising social inequalities are the lived impacts such as housing crises, homelessness, addiction and mental health issues, and more. As in most high-income countries with rising income inequality [3], Canada has a housing crisis that has long been identified as a policy priority, yet has seen very little shift in outcomes in the last decades [4]. Most attempts at 'solving' the housing crisis treat homelessness and precarious housing as a mere housing market failure, and attempt to create a non-market 'bridge' for people to enter the housing market. This centres and reinforces a real estate market that clearly does not provide sufficient well-being for enough of the peoples of Canada. Advocates for transforming the housing provisioning system or for degrowth-compatible housing struggle with financing truly non-market solutions to homelessness and precarious housing [5,6]. Applying Ecological Macroeconomic theory and EE principles to housing provisioning systems as participatory, community-led transformation of this aspect of society brings into focus pathways to degrowth and post growth many have long envisioned.

Here I propose a concept of Capital Sequestration as a method of investing in the transformation of provisioning systems through the sustained and collective boundary management of financial markets and incommensurable values. This practice offers significant promise as it applies ecological macroeconomic theory work, is grounded in the normative goals of and emerges from empirical research of EE, and meets a pressing need within society for imagining alternative economies.

To explore this idea, we will focus on housing provisioning systems, the housing crisis in Canada, and proposed solutions from both a mainstream and social ecological perspective. We will begin with some background defining the critical work this concept draws upon and connects with. Next, an ecological macroeconomic analysis of the housing crisis as well as the solutions will be elaborated on and the emerging concept of Capital Sequestration will be discussed.

2. Background

2.1. Ecological Economics

Ecological Economics is a transdisicplinary research and scholarship community that identifies "the economy" as the name we give to the way we acquire, process, and distribute what we need and want for our lives [7]. This economy is embedded in society and in the biosphere in ways that cannot be conceptually isolated from the ecological relations this implies. Arising from this empirical grounding in ecological systems is the normative position that the human economy should be explicitly oriented in policy and institutional spheres towards meeting needs for long term well-being and justice on a livable planet. This has many implications for research, scholarship, and policy that continue to be explored by researchers, theorists, and activists.

While there is discussion about what *exactly* the common principles of EE are [8,9], I identify the EE lens, based on these discussions, to be: 1) taking a systems approach to understanding the complexity of social and ecological relations, 2) the incommensurability or non-substitutability of values, 3) the subject of meaningful inquiry having many scales from the individual human to communities to bioregions to the global macroeconomy, 4) research that is empirically informed, 5) the embracing of normativity, and 6) recognizing the finite limits of planetary systems. Social Ecological Economics has been identified as a sub-field of EE that considers these principles to constitute a distinct macroeconomic and onto-epistemological perspective, and engages with theory development as part of a research agenda [9–11]. Much of the empirical research conducted since the origin of EE in the 1980s has contributed to establishing the case for the broadly accepted EE policy goal of degrowth towards a post growth or steady state economy with a lower throughput of materials and energy.

Degrowth is defined as a "voluntary transition towards a just, participatory, and ecologically sustainable society" [12] through the "planned reduction of energy and resource throughput designed to bring the human economy back into balance with the living world in a way that reduces inequality and improves human well-being" [13]. Whatever name we give to future economies, economic growth as it is understood and characterized today is unsustainable, thus 'post growth' and 'steady state' are often used to name the time after a process of degrowth to a scale of throughput within ecological limits. I use the term 'post growth' to differentiate from today's growth oriented public policy approach to a time when economic growth is no longer the primary economic policy goal of governance bodies. I use degrowth and post growth together because the proposals dealt with in this article have relevance for both de- and post-growth, but this is not always the case and these are not interchangeable terms. There is a rich body of literature as to the distinctions between the two [12,14], with degrowth having a more explicitly northern hemisphere, normative, and justice orientation [6,14], with degrowth having a more explicitly northern hemisphere, normative, and justice orientation [6,13] than post growth theorizing which may be said to incorporate a more broad macroeconomic space that includes "degrowth, agrowth, steady state, and post-development thinking" [14]. Degrowth is understood within EE as a required process primarily because of the empirically demonstrated inability to decouple fossil fuel based carbon emissions from economic growth within meaningful time frames [1,15,16].

One of the core ideas of EE is that of value incommensurability, which is to say that there are a number of sources of flows of value such as human labor, social practices, the ecologies of the biosphere, built infrastructure, and money, and these flows of value are not fully substitutable to one another. These are often named as capitals: human capital, social capital, natural capital, manufactured capital, and financial capital; capital being a way of looking at the world and understanding value/s. The distinctions made between weak and strong sustainability in early debates within EE revolved around the commensurability of these capitals, with the recognition that the substitutability of any of these capitals for any other is limited if we also recognize the finiteness of the biosphere and the thresholds for resilience in ecological systems [17]. This value incommensurability led to the identification of 'critical' natural capital as the form of natural capital that must be protected from market exposure, commodification, and a process of financial valuation only [17]. The utility of naming these as capitals is contested and debatable, and often hinges on what one thinks the definition of capital itself is. Daly and Farley [18] have defined capital as "a stock that yields a flow of goods or services" which generally echoes other heterodox economics traditions, in which capital is described as: "any income-generating asset that generates some benefit, including income" [19], the production process itself [19], or how Marx [20] quite famously put it: value in motion. For the purposes of this discussion, I am using capital to mean the sources of flows of value, and I will use the terms social and ecological value instead of social or natural capital, and will continue to use the term financial capital.

2.2. Ecological Macroeconomics

Ecological Macroeconomic Theory (EMT) and model development hinge around the normative EE goals of how to manage an economy without constant growth in resource and energy throughput while also meeting needs for justice and well-being [21]. Ropke [22] suggests that EMT must present a 'third way' in contrast to neoclassical austerity policies and growth-oriented Keynesian approaches that dominate macroeconomic thinking today. Mainstream macroeconomic concerns are often productivity, employment, consumption, public spending and output, while EMT proposals by Jackson and Victor [23] seek to add financial stability, the distribution of income and wealth, and resource use/flows to these concerns. Models and theory, while they engage with the same normative goals, are distinct. Macroecononic models are generally national scale economic models tied directly to state governance and concerns [23], while macroeconomic theory, on the other hand, is engaged with whole system perspectives on total resource use and flows, and social, cultural, and political processes that structure economies [24], which includes but is not restricted to nation states.

As economist Sheila Dow [25] has said, the variables that are selected as focal points reveal a lot about macroeconomic approaches themselves. In the context of EE, the systems of provision approach originally articulated by Fine & Leopold [26,27] and adapted in the work of Roepke and Plank et al [22,28], is a systems approach to macroeconomic inquiry. Provisioning systems are understood as both physical and social systems such as infrastructure, technology, markets, and institutions that connect with investment, production, processing, politics, lock-in, practices, consumption, and waste of particular systems, whether for goods or services. These provisioning systems deliver the 'satisfiers of human needs' and have been used by researchers in food regime theory [29], commodity studies [30], and EE [28,31] as a means to understand "the transferring of symbolic value" [32]. Provisioning systems are metabolic in nature, bounded by the components and relationships of the systems themselves [32]. Critically, different provisioning systems, exhibiting different metabolic characteristics, can meet the same needs with different energy and material throughput, as evidenced by the distinctions between public transit and individual car ownership for meeting transportation needs [16].

The Canadian federal government, like many governments, has a sustainable development strategy that outlines policy goals for environmental and social outcomes, and has stated that all Canadians should "live in clean, sustainable communities that contribute to their health and well-being" [33]. EE research out of the Living Well Within Limits project has established that there is no country currently capable of meeting the well-being of everyone without crossing critical ecological thresholds [16], Canada included. What must be understood is that this dark prognosis is only under conditions in which the provisioning systems remain unchanged. The carbon intensity of a given provisioning system is not inherent. Recent research by Steinberger et al [34] has found a weak enough coupling among CO_2, primary energy use, and life expectancy to be able to say that improvements to human well-being are not significantly dependent on fossil fuels.

2.3. Housing as a Provisioning System

Understanding housing as a part of a provisioning system for well-being begins with land as a foundation, both in abstract terms as well as grounding housing in the biosphere and all the planetary and ecological processes of a given place. The physical structure of a home is built from materials from the biosphere like wood, stone, metal, or resource-derived products (like drywall or rock wool) processed using resources and labor. The distance that materials can travel to build and maintain a home depend on infrastructure like roads and seaports, mediated by communication and other technologies. Institutions facilitate and delineate how these processes are organized through rules and regulations at varying scales including building codes, trade governance, funding pathways, interest rates, and labor laws. Housing is also subject to local and community social norms and practices, and ideologies of justice and distribution. Housing is considered a fundamental 'need satisfier' for the purpose of well-being. Right now, provisioning systems for housing are intimately tied to real estate markets, debt-money creation, financialization through the creation of commodity forms such as mortgage backed securities, land enclosures and land legally defined as private property, and international material supply chains subject to financialization.

2.4. Capital Formation and the Market Provisioning System for Housing

Housing became an important site of capital formation in the post-war urbanization process, during which investments in housing correlated with economic growth overall [35]. Capital formation is generally understood to be additions to 'fixed assets' or increases to the capacity to create flows of value, or investments in the 'real economy'. Capital formation through housing used to be understood as both contributing to the well-being of the labor force and worthwhile for the further consumption and demand it represented. New houses needed to be furnished and maintained; they were sites of increasing throughput which would reflect well in national accounts like GDP. In the increasingly financially deregulated international and domestic landscape that characterizes the last forty years, however, understanding capital formation as contributing to a 'real economy' became blurred as mainstream understandings of what produces value, and is thus understood as an asset, became sublimated under a form of value monism that treated all profit as value creation [36]. Capital formation then came to be measured by merely assessing national changes in net savings, and any form of return on investment became an investment in capital formation [37]. As Schneider and Nelson [6] note in their book, Housing for Degrowth, housing has long been an important sector of the economy as a site of economic growth, and growth itself considered a solution to affordability issues and housing shortages.

Real estate is part of the acronym FIRE (Finance, Insurance, and Real Estate), which distinguishes public equity market investments in a post-industrial service economy as opposed to manufacturing sector sources of value creation [38]. Housing is a critical site for current debt-money creation through the issuing of mortgages. In 1950, more than half of owner-occupied homes in North America were debt-free [35], but recent trends in Canada show that this is no longer the case, with 43% of owner-occupied homes free from initial mortgage debt [39], though often still carrying home equity lines of credit (HELC), all of which contributes to total mortgage and HELC debt in Canada reaching $2 trillion in 2021 [40]. Banks issue 75% of mortgages in Canada and then issue 74% of the mortgage-backed securities as financial products [41]. Much of the remaining proportion is part of the private investment funds increasingly interested in rental properties as long term asset management in uncertain financial climates [42]. The bank-issued debt upon which rests further commodity forms of speculative securities is the predominant form of homeownership for Canadians (and Americans, it must also be said), and ties housing to a provisioning system with a financial growth imperative. In the context of the Global Ecological Crisis, this economic growth imperative has ecological consequences that are significant due to the current lack of meaningful decoupling of GDP growth rates from carbon emissions growth rates [43].

3. Housing Crises

3.1. The Housing Crisis in Canada

A housing crisis looks different in each community due to the varieties of rural/urban, geographic, ecological, and cultural landscapes that humans live within, but it generally refers to the combination of visible and invisible homelessness, housing costing more than 30% of one's income, having too many people in a home, housing in need of significant repair, or what is termed 'unfit housing'. It may be more broadly phrased as a state of housing that does not meet an agreed-upon baseline threshold for having one's needs met in such a way as to contribute to overall well being.

In Canada, homelessness has been on the rise between 2010-2017 [44], with 1% of the total population visibly homeless, that is, sleeping rough or using shelters, and 8% of the population experiencing 'hidden' homelessness such as sleeping in their car, with friends, 'couch surfing', or in a tent [45]. Canada also has the highest income to house price ratio in the world [46], which means that the average price of a house costs more for Canadians relative to income than anyone else in the world. This might explain Canada's household debt to income ratio at currently more than 170%, and vacancy rates for rental properties experiencing historical lows, and hovering around 1% in metropolitan centres [41]. It may be no surprise then, that more than 25% of Canadians spend more than 30% of their income on housing and/or require subsidies or housing support [47].

3.2. The Housing Crisis in North Hastings

North Hastings is the northern part of Hastings County in Ontario, Canada. This land is the home of the Kijicho Manito Madouskarini Algonquin First Nation, and the land falls under Gdoo-naaganinaa, also known as the Dish with One Spoon Treaty, a commons management treaty between the Nishnaabeg and Haudenosaunee [48]. The territory remains unceded as of 2021, though negotiations to resolve land relations with the Canadian federal government are ongoing. Post-colonization, the primary local economy has been extraction of minerals and timber, though today this occurs in lesser amounts relative to the growing service and tourism industry [49]. North Hastings is considered a 'more affordable' cottage country compared to areas closer to metropolitan centres such as Toronto, Ottawa, or Montreal, though this too is changing.

House price inflation during the pandemic has been widespread across Canada (and beyond), but the highest increases have been felt in rural areas like North Hastings, which experienced a 31% increase from February 2020 to February 2021 alone [50], and recent real estate reports claim a three year price inflation of 78% from 2017 to 2020 [51].

Compared to Canada more broadly, North Hastings is experiencing higher than national average rates of homelessness, both visible and hidden [52]. Even within Hastings county, the peoples of North Hastings, as a predominantly rural and geographically isolated part of the county, experience disproportionately high levels of housing stress. While a housing report from 2019 shows that 1/6 of county households have insufficient housing [53], this percentage is thought to be higher in North Hastings because of higher average rents combined with lower than average incomes; as of the 2016 census, the average median income of North Hastings was below the provincial poverty line [54]. Homelessness in Bancroft (the primary city in North Hastings) is estimated to be almost 2% of the population [55], disproportionately affecting indigenous people who account for 50% of homeless people, while constituting only 32% of the population [54,56].

3.3. North Hastings Community Trust

North Hastings Community Trust (NHCT) is a registered non-profit organization with a community-led mandate to address the root causes of poverty in addition to providing emergency resources and support to those in need. Following on broader understandings of anti-poverty work, the core importance of housing to addressing poverty through the 'housing first' approach recognizes that housing is a non-negotiable aspect of well-being and satisfaction of needs, and any work to increase well-being must address housing first [53].

Anti-poverty mandates often come into conflict with traditional funding pathways that situate the non-profit sector primarily as addressing market failures in the form of distributional social problems. Much public and increasingly private funding is organized around the problem framing of market failure [57], ie: that the lack of affordable housing is due to failures of the market to allocate housing efficiently, and thus the solution is to invest in practices that merely correct the market fault without affecting the market itself. Many organizations, NHCT included, have turned towards community land and housing trusts as a non-market solution to meet well-being needs as well as imagine truly sustainable futures. However, NHCT as an organization is interested in CLTs that are explicitly not imagined as a 'bridge' to the housing market, but instead are a form of world building towards a more just and sustainable future. Following in the footsteps of attempts to imagine other worlds through CLTs, the clarity of NHCT's goals align with the 'transformative vs affirmative' framework used by Defilippis et al [58], based on the work of Nancy Fraser [58]. This distinction is between responses to injustice which transform systems to no longer produce injustice vs affirm and reproduce these systems, and thus continue to reproduce the same injustices.

4. Proposed Solutions

4.1. Mainstream/Market Approaches to Market Failure

All scales of government in Canada are tasked with prioritizing increases in affordable housing as the solution to the housing crisis, and most official policy plans include language around this. Numerous NGOs, charities, non-profits, and private development organizations are also trying to create more affordable housing. Most solutions that include public funding treat the lack of affordable housing as a market failure, and target other aspects of the provisioning system such as zoning, funding pathways and risk management, as a means to make the housing market function more efficiently [59,60]. In Canada, despite 'affordable' housing being defined as representing less than 30% of monthly income expenditure [60], public funding or zoning reforms which, instead of being tied to needs through previous 'rent-geared-to-income' support, have been replaced by reframing 'affordable' as a percentage of market rent, which tracks with markets instead of needs. This might be understood as a commodification of non-market housing as new markets are institutionally defined for those who can't participate in the larger market.

The current ineffective response to the housing crisis has roots in the widespread 'downloading' of responsibilities from federal to provincial and municipal scales of governance, from the direct provisioning of housing to allocating funds to fund private or non-profit housing development [4]. This has been identified as part of the broader neoliberal governance regimes which shift service delivery strategies from the public domain to privatized or public-private partnerships [61,62]. This has led to less new affordable housing being built [4].

Charity, public grants, and private-public partnerships produce housing that is still part of a capital formation process, as they usually are required to service long-term debt for either social or private investors, and are often part of 'progressive' zoning reforms that uses profits from market rate rentals to subsidize the offering of lower-rate affordable rentals [63]. These are called non-market solutions because they are not available for allocation to absolutely anyone looking to buy (you must qualify as low income), but they mirror the market-mediated provisioning systems in most other ways through financing, administration, and time scales which often see properties return to the real estate market after periods of time.

4.2. Investing in Housing Solutions

Alternative, less widespread, approaches attempt to use financial markets and direct financial capital towards social ends. They acknowledge housing market failure but instead of merely correcting for the failure (lack of affordable housing), they re-situate funding as the novel approach to capital formation in the housing market. This happens not through bank financing and thus bank-managed risk, but through municipal bonds, social bonds, or community investment bonds, through which risk is managed either through private cooperative or social investment funds [64], public banks [65], or municipal governments [66]. In many of these cases, an investment opportunity is offered to private investors with varying rates of return, often named things like 'profit with purpose' or 'social impact investing'.

The general vision in these alternative approaches is to direct capital to do good deeds while it is busy accumulating. This assumes we can attempt to align investment, and thus production, activities with the logic of capital accumulation, and tie our purposes to that of capital. However, in most of these cases, we have not redirected capital to social ends as much as we have redirected our social goals towards the accumulation of capital.

The housing provided through these mechanisms may itself be non-market, but the other parts of the provisioning system such as the institutions, funding bodies, and administrative norms that are part of the provisioning system are still dominated by market logics of capital formation, debt servicing, and competing with other all-purpose capital for investment. It must be said that these projects still produce housing and this is important and required. This analysis is meant to merely clarify that these solutions do not transform provisioning systems. Organizations interested in transforming provisioning systems will need to look beyond most solutions currently practiced today that treat housing principally as a site of capital formation instead of as a needs-satisfier for well-being.

4.3. Land and Housing Trusts

Land trusts are legal structures which remove land from the real estate market in perpetuity. Land trusts define the relationship of humans to land and other humans, distinct from private property, which is an agreement of rights between humans about land or objects. Land trusts are often pursued for conservation purposes and are not always part of a process of 'commoning', or bringing land back into relationships of community governance. However, many land trusts become part of Community Land Trusts (CLTs) or housing trusts, which is considered to be more of a 'commoning' of land and part of a transformative approach to housing solutions [58]. A housing trust tied to a land trust removes land from real estate markets and redefines relationships of the people to the land through responsibilities to the community and to the future.

A housing trust is a specific form of home ownership within a land trust in which you don't own the land upon which your house rests, but the ownership of the house can be transferred with prescribed limits to financial gains. Houses are typically owner-occupied and cannot be a site of profit seeking such as renting, though other forms such as individual co-ops or cooperative property management organizations are also possible [67]. Community land trusts are considered a non-market 'third sector' of affordable housing, as opposed to government-produced or private for-profit affordable housing developments [68]. CLTs have been part of permanent solutions to affordable housing since the mid 1980s in Canada, though they have their roots in civil rights movements in the USA. In Canada, they are almost exclusively urban, though in the USA there are a variety of rural, urban, and semi-urban CLTs.

CLTs, which have goals of permanent affordability, attempt to hold onto the value of subsidies and grants through agreements with homeowners that limit equity gain on house sales, but most of the financing of the corresponding mortgages still comes through traditional pathways of private bank debt-money creation [68], which is part of larger securities trading and speculation. So while CLTs have removed land from markets, the housing on those lands remains substantially financialized.

5. Applying an Ecological Macroeconomic Lens to Housing Solutions

5.1. Markets: Governance and Commodification

Core textbooks of EE, like that of Daly and Farley [69], explicitly concern themselves with what the scale of markets should be within an economy, and recent work by Bliss and Egler [70] urge a decentering of markets, and propose a research agenda for EE towards non-market forms of economy. Debates within EE as to the appropriateness of any form of commodification are ongoing [71,72]. What should and shouldn't be commodified for exchange in markets and distilled into a single form of financial valuation as a price is of utmost concern to ecological economists and remains a vibrant area of research.

Markets are part of many provisioning systems for human needs and wants, as institutionally bounded spaces, both physical and conceptual/legal, for buying and selling goods and services with money. Markets are not unique to capitalism, but it is the scale of markets under financialized capitalism as the primary allocative regime that is under discussion here. Classical Economics makes distinctions between types of goods and services that are excludable, non-excludable, rivalrous and non-rivalrous. The parts of our world that are both excludable and rivalrous are considered by mainstream economists to be most efficiently allocated through market mechanisms in which we treat these goods as commodities in order to compare relative value through a single metric of price. However, for markets to function 'efficiently', the price must reflect supply and demand, with prices for goods or services by class; all corn is the same, all bitumen is the same, all coffee is the same. All the processes and social and ecological contexts that are part of production disappear as the good enters the market and becomes a commodity, immediately assumed to be an average within the class [71]. Aside from averageness, commodities have in common that they are all produced for exchange, and for profit. In order for a price to be set by supply and demand functions, these commodities have to be produced with supply and demand and price in mind. Yet, Polanyi [73] points out, labour, land, and money are not 'produced' to be sold in markets, so any commodification and market pricing of these factors of production conceals the true origin of their value.

The parts of the world that are shared, that are embedded in ecological relations that do not adhere to a clear distinction of rivalrous/non-rivalrous; that these goods and services should be allocated by markets does not fulfill even mainstream logic. This includes land and housing. While land has long been understood as a false commodity [73], housing, on the other hand, is indeed sometimes produced as a commodity to be sold in the real estate market (as opposed to owner-builds). And yet, housing has a demonstrated history as a badly behaved commodity. Even within mainstream economics which treats both land and housing as commodities, there has been much note of how poorly real estate markets adhere to market logic. For instance, though part of the housing crisis in the USA and Canada has been attributed to absolute and relative scarcity of housing, there is an acknowledgement that when new housing is added to markets, prices do not drop as one might expect [46]. Even in the 1950s it was already established that demand for housing corresponds to fluctuations in income much more than it reacts to price changes in housing markets [35]. If demand, price, and supply have weak, if any, relationship, we might be forgiven for surmising that markets are not allocating as expected, and market theory is not performing as desired.

5.2. That which is Essential

One reason for this might be that housing is non-negotiable. Neoliberal economist Hayek [74] whose theory work has effected enormous policy changes around the world, said that human liberty is best expressed as the freedom to respond to price signals. And yet, Brown [57] put it succinctly that under these market conditions, "the value of someone's well-being is determined by their ability to pay existing prices: no wealth/income, no share." When well-being is dependent on shelter, and on other needs satisfiers as determined by Doyal and Gough [16], or Max-Neef [75], there can be no 'freedom' to respond to price signals, one cannot choose to not have housing as an expression of 'preference'. Consent is often defined as the ability to say no, and an 'offer you can't refuse' is usually called coercion. In order to meet one's needs through engagement in a market, to express 'preference', there can be no consent when it comes to essential needs satisfiers like water, food, housing, safety, and health care. Which might suggest that markets shouldn't be the primary form of provisioning these essential needs-satisfiers.

5.3. Values: Incommensurable Capitals and All Purpose Money

The incommensurability of values recognized as critical to the well being of all life on earth is troubled by the existence of institutionalized fully commensurable financial capital and what Hornborg [76] calls all-purpose money. He explains that this single form of valuation via money conceals the unequal distribution, relations, and constitution of values within exchanges, much of which takes place in markets. Susan Strange [77] suggests that in market based economies that use prices to guide production choices as a form of governance and pathway to capital accumulation, the monetary structure itself, as it provisions credit, becomes of prominent importance. This echoes the work of Svartzman et al [78] in endorsing an EE understanding of money as endogenous to the economy, creating both the means and the language of full commensurability of value. Taking this into consideration, money and credit becomes an integral part of provisioning systems themselves and, proposals within EE that call for sovereign money [79], local currencies [80], ecological currencies [76], can and should be situated within the provisioning systems of our economy in order to better contextualize the impacts beyond theory and how these might contribute to transformations of provisioning systems themselves.

In theory, the creation of money through bank-issued credit such as mortgages does not need to be a driver of growth, a consideration that has received much treatment in EE and EMT theorizing [81–83] as well as in more mainstream economic circles [84]. However, as Ament [83] notes as part of an ecological theory of money, *all* money is a claim to resources. Situating debt-money creation within provisioning systems ties debt-money creation to resource use, production processes, markets, and regulatory institutions which determine parameters for the creation of money and to what end it is directed. The logically sound Keynesian monetarist theory which lays the groundwork for making a claim that debt-money creation does not create growth, cannot be said to adhere to the parameters of financialized global markets and the almost exclusive regulatory commitment to debt-money creation under a regime of fully commensurable values for the purpose of capital formation undifferentiated between private speculative returns to capital and investments in well-being and satisfaction of needs.

Markets and market logic fail in both theory and practice to successfully provision housing without leaving 25% of the Canadian population under-housed or homeless. If we accept the critique of mainstream solutions to housing crises as not addressing the causes of housing crises because of how they reproduce market logics elsewhere in the provisioning system, then the question remains what a transformation of this provisioning system might necessarily entail based on research and theory from within EE. The following section will attempt to articulate such a pathway using an emerging concept in contrast to current approaches to capital formation; that of capital sequestration.

6. Capital Sequestration

6.1. The Emerging Concept

Capital sequestration is about taking current financial capital in the form of all purpose money that has been part of cycles of accumulation based on full commensurability of values, and disaggregating this financial capital in a permanent and semi-permanent manner into social and ecological values. How to do this requires formal and semi-formal institutions to manage the boundaries of these values, for the purpose of shifting provisioning systems for housing to provision housing resources not through markets but through alternative governance bodies.

Capital sequestration is then a combination of taking already existing money, using it to invest in land trusts, which immediately moves land outside of markets, and housing trusts to move housing outside of markets. This movement from market to non-market provisioning disaggregates all purpose money into permanent forms of so-called critical natural capital [17] that remains outside of single-value market valuation, into long term well-being through housing, and into community forms of money through the terms of capital controls in housing and investment products.

Calling this capital sequestration is to be explicit about its ecological purposes. Not all removal of assets from markets is a form of decommodification, if they remain a site for the creation of new commodity forms such as mortgage backed securities, or if they are still tied to other aspects of the provisioning systems that are market-grounded. The implied connection with carbon sequestration is intentional, to stimulate a connection to building an economy that is recognized to be inherently ecologically embedded. Though there isn't a direct claim that can be made yet about the ecological impact in an absolute or macro sense about the practice of initial small scale choices like moving land into a trust, it indicates that it is part of a larger world building project directly implicating financialized markets as they are situated and structured within provisioning systems today as core drivers of ecological *un*sustainability. Capital sequestration removes financial capital from markets, while retaining the capacity for social and ecological flows of value for the purpose of satisfaction of essential needs. Provisioning systems being metabolic in nature [30], one might hypothesize that community-led transformation of the provisioning systems for housing could have significant and desirable ecological impact.

It can be called sequestration, as opposed to destruction or depreciation, because the land and housing is still an asset, albeit not on the record books of single-valuation financial institutions, and still provides a flow of value towards creating well-being, in the form of providing place and relationship to ecologies through shelter. Much treatment in EE literature has been given to the theoretical idea that "growth" might not violate planetary boundaries as long as it was growth of well-being, or ecological resilience, and the EE push for alternative metrics to GDP reflects this [85,86]. The neoliberal capture of the discourse around decoupling and green growth has diminished some of the excitement about advocating for forms of growth other than financial, and for good reason, because so many aspects of provisioning systems have either experienced market capture or fall under market logic and exclusively financial valuation. The concept of growth in well-being or ecological resilience being distinct from financially quantified economic growth requires transformations of provisioning systems as well as the creation and empowerment of new institutions to manage the boundaries of incommensurable values.

6.2. Investing in Degrowth

A paradox of degrowth has been how to invest in a transformation, producing intentionally less returns to financial capital (in aggregate), while also competing with single-metric valuations of financial capital for investors. The purpose of investing is usually capital formation, to create increased or new flows of income in monetary form. So investing in/as capital *sequestration* is a method of creating new stocks of incommensurable non-market value, from which flows goods and services such as housing, and as a process of shifting our human relationship to land from that of (false) commodity as private property and real estate to interconnected relations in ecological land trusts.

Investment matters, and what we do with money matters-capital sequestration is neither capital destruction in the form of consumption spending, nor capital formation. Investment is a form of world building, and where capital is directed matters because of the way it reinforces and structures provisioning systems and processes of production.

Some social change discussions hinge around grass roots or from-below transformations that originate in the activism and labour of peoples marginalized from hierarchies of power [87]; in this context, capital sequestration can be considered a middle pathway of investing-from-below. It is 'from-below' because it bypasses current dominant institutional forms of capital management, and it is a middle path because it leverages privately held capital to make changes to provisioning systems. This privately held financial capital yields a power that cannot be said to come from the margins or from below. Capital sequestration, then, as an investment in transformation, can be viewed also as the practice of forging a counter-hegemonic historical bloc in the tradition of Gramsci [88], as well as part of a process of resituating power in civil society institutions as a reimagining of The State in degrowth [89].

6.3. World Building

The process of valuation is itself a form of world building, and as the late David Graeber has said, "it is value, then, that brings universes into being" [90]. Recognizing incommensurable values, as EE advocates for, and creating value articulating institutions then becomes a pathway for transformation, for world building. The term 'world building' is used here as a way to think about social reproduction, about affective labor, about what we put our effort towards, what we invest in, and what we value. This ties to the work of many heterodox economists [91–93], theorists [90,94], and philosophers [95–97] to describe the power and agency of directing resources towards a desired end, while also avoiding the abstruse use of terms like social reproduction outside of theory discussions. World building does not exactly reflect the full complexity all of these terms, but it connects with all of them in ways that are meaningful, and ties into emerging onto-epistemological discussions happening in the realm of social ecological economics [11,98]. It should be mentioned that world-building is also terminology used in fiction writing to describe the ontology or construction of a creative landscape for the purpose of narrative, which seems less like a conflict than a complement to the literal, material, and social construction of the shared experience of reality I use the term to describe.

6.4. Institutions of Degrowth and Post Growth Economies

There is much discussion of how critical 'value-articulating institutions' are to governance in a degrowth or post growth context. It might be easy to take one of the fundamental assertions of EE, that within our shared world exist incommensurable values, and say then that some or indeed all of these institutions of degrowth/post growth must be able to articulate and thus govern the incommensurability of these values as a core EE mandate focused on allocation, scale, and distribution. Because as political economist Rodrik says, "institutional arrangements are the rules that determine the allocation of rights to a society's resources" [99]. But what might this look like? The extensive work by Ostrom [100] into place-based, ecologically and culturally situated institutional governance forms, as well as analysis of institutions by Vatn [101] and Veblen [102] are all parts of EE considerations of post growth, degrowth, and post-capitalist institutions, and the 'boundary commoning' work of De Angelis [103] is particularly relevant to imagining institutions for the purpose of governing the boundary between market/non-market and financial valuation/plural values.

To a certain extent, the disaggregating of capital into social and ecological value through land and housing trusts is the easy part, it is the keeping it disaggregated, thereby sequestered, that is the challenge. This is a role of institutions of degrowth: to manage the boundary of market and non-market, of incommensurable values. CLTs use language around 'permanent affordability' to hold the financial value of subsidies within housing trusts through the use of equity limits. This means that when a homeowner wants to transfer title to their housing (but not the land, which is held in trust), most of any increase in the sale price compared to the original purchase price is returned to the housing trust organization for the purpose of maintaining affordability and not to the owner (though there are exceptions for improvements and maintenance to the home). So while CLTs have removed land from markets, the housing on those lands remains substantially financialized, as most of the financing of the corresponding mortgages in CLTs still comes through traditional pathways of private bank debt-money creation [68], which is part of larger securities trading and speculation. As the institutional forms already exist to manage the boundary of land in the legal entity of a land trust, and the structures developed by CLTs such as equity limitations placed on housing, along with rights of refusal and other clauses written into contracts, serve as already-existing boundary management forms, it is the funding practices, then, that remain to be coordinated with these institutional forms to frame investment as world building, as sequestering capital.

This can be done as an institution such as a community investment fund issuing social or community investment bonds, with either municipal, public, or collective private management of risk. The risk is managed in the fund itself if the scale of financing is large enough, with anywhere from 10-200 million being suggested as the starting scale for community investment funds wishing to hold the trust of investors enough to warrant the risk of holding capital [64]. For discussion purposes, I will be calling this a Capital Sequestration Fund (CSF). Alternatively, the risk could be managed through the issuing of low- or no-interest loans or mortgages through public banks in relationship with the CLT, without a CSF, agreements with government to underwrite certain phases of bond issuance as is done in Ontario with green investing [104] or the municipal management and issuance of low or no interest loans, as is done for some UK green investment projects [66] and could also be done for CLT housing projects.

In a CSF, long or short term bonds, which are a financial product offered to investors, can be used to create a fund capable of then issuing mortgages for individual homeownership within the CLT, and/or can be used to fund what might be called a degrowth development initiative that builds and/or manages housing as rental properties, cooperatives, or co-housing. How this differs from existing non-profits already in the affordable housing sector is in the by-laws of the organization itself- as many non-profits and CLTs frame themselves as addressing market failures and attempting to create a bridge to the larger market for low-income people [68]. The by-laws for a non-market property management or development organization situated within a provisioning system largely structured by financial markets must be explicit in long term market-boundary governance goals not only for the organization itself but for the provisioning system it is a part of, as well as articulating what they are protecting from markets, why, and for how long. There are likely some organizations that indeed fulfill this role in practice already, and these should be identified as potentially part of a capital sequestering and degrowth world-building process.

6.5. Community Capital Controls

Capital controls are normally discussed in terms of cross-border trade and global markets. However, if we consider the boundary of market and non-market as a site of governance, then community capital controls becomes a framing that is not only meaningful, but potentially resolves some of the tensions around community currencies debated in EE and in degrowth [6,80]. Using ecological macroeconomic understandings of incommensurable capitals, capital controls at varying scales must become a community governance issue, and community capital controls becomes a method of managing decommodification as a part of degrowth.

Owners of private capital placing their financial capital in a community managed CSF for the purposes of long term transformation of a housing provisioning system, with this CSF financing housing, becomes a form of capital control. Capital sequestration treats currently existing financial resources people have as community money without needing a community currency. The use of this money and direction of this money need not be mediated by the market logics of private banks which seek a return in compensation for creating money for the public. Instead, if invested in social bonds, housing trusts, and land trusts with associated institutional structures creates a community scale of governance of money for the housing provisioning system. This becomes a community-based form of capital controls because it structures the management of some money, land, and housing; governing the boundaries of the all purpose money of markets with world building practices of degrowth.

6.6. Capital Sequestration is a Transition

Capital Sequestration is a transition term, and this proposal is not meant to describe an inherent and thus infinite requirement for capital management in an ecological economy. Capital sequestration may actually be a necessary part of degrowth, through scaling down the financialized capital and sequestering it into other values. Theoretically, after a degrowth transition, this idea and practice of capital sequestration doesn't need to exist. This is not because in a post growth economy that financialized capital never needs transforming, because value takes many value forms as it moves through provisioning systems, but that instead of being capital sequestration ad infinitum, it becomes a form of capital management, or capital governance with post growth institutions. In a post growth economy, in which multi-criteria valuation and a plurality of metrics stand in as shared goals instead of mere GDP, the concept of capital sequestration need not be relevant any longer.

In the transition towards community capital controls and Capital Sequestration through CLTs and CSFs, the interaction between larger provisioning systems and new alternative provisioning systems would likely not be without some perceived risks and frustrations. Even today, when homeowners move from CLTs with associated equity limits to open market housing which is priced according to growth norms, CLTs appear to offer less financial value when compared to other possible investments, especially if individuals are treating homes and land as retirement security. While this is a legitimate concern in the present and recent past due to financial insecurity and policy shortfalls in eldercare, given the time frames for larger provisioning system transformations to ensure a just future on a livable planet [1], this author suggests that if care for the well-being of all (including elders) has not been prioritized away from solely relying on growth oriented market provisioning systems, whether or not a home represents a secure retirement investment will be the least of our collective and individual concerns.

6.7. World Building for Degrowth and North Hastings Community Trust

As said by Schneider and Nelson, editors of a critical book on Housing and Degrowth [6], "The degrowth housing narrative must illustrate that another world is possible, that a realistic pathway exists for transformation- a strong, coherent, realist narrative where bottom-up and top-down action and interdisciplinary perspectives can inspire such a holistic movement." Degrowth scholars and housing advocates alike regularly assert the need for treating housing as a human right, without explicitly stating that to define something as a human right is a discursive method of managing a market and non-market boundary. Schneider & Nelson [6] and Mete [5] have all pointed out the ways in which financing, re-thinking property rights and participation, and inclusivity of degrowth or post growth housing are critical to and underdeveloped in the degrowth/post growth literature. Capital Sequestration is put forth here as a proposal to contribute to a conversation about what the financing of an alternative and non-market housing provisioning system might look like, how to engage with property in the form of land and housing trusts, and how the initiatives of organizations like North Hastings Community Trust can be supported by and support this transformative world building.

7. Conclusion

Capital sequestration is an idea that brings together many principles, ideas, and theory work within EE to assist organizations like North Hastings Community Trust in participating in community-led transformations of provisioning systems. By taking a provisioning system approach to housing, it is possible to collectively disaggregate financial value into ecological and social values through the combined use of legal and institutional structures of land and housing trusts and novel approaches to funding. This effectively sequesters financial capital for common benefit of common resources and creates a community form of capital control. Much has yet to be explored within this concept, but capital sequestration holds much promise for imagining how to invest in degrowth, and assist local anti-poverty and affordable housing initiatives to apply EE theories towards meaningful world building.

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