The Political Economy of Sustainable Urbanization

Martin Boucher

Martin holds an undergraduate honours science degree from the University of Waterloo. The primary focus of the degree was chemistry, physics, and biology. Martin has also recently completed his M.A. in Integrated Studies at Athabasca University, his final project being on the political economy of sustainable urbanization. While working through his M.A., Martin was a manager of the Ottawa office of an environmental and civil engineering consulting firm called the C3 Group. Martin is currently a doctoral student at School of Environment and Sustainability at the University of Saskatchewan. His research focus is on socio-technical transitions to urban energy decentralization.

Abstract

This paper endeavours to offer a preliminary overview and a survey of the key issues related to the political economy of sustainable urbanization. In order to accomplish this, an assessment of three key forms of urbanization will be addressed: the slums of the developing world, the middle class suburb, and the metropolitan megacity. As environmental degradation is increasing towards unsustainable levels, both political and economic forces in the global realm are paralyzed in producing effective ameliorative change. Conventional political power that has historically been yielded by the nation-states of the world is beginning to make way for a more decentralized power dynamic. Cities are becoming increasingly relevant in the global sphere and may become elements of positive change in the future. In addition, cities are ever expanding as a result of a mass exodus of rural dwellers to urban centres. A political economy of sustainable urbanization, then, entails the understanding that although the scope of concerns related to climate change are global, the solutions and forces for change may in fact be more localized, particularly at the urban level.

Keywords:
sustainable urbanization, political economy, global urbanization, suburb, slum, megacity, local sustainability, and sustainable development.

Introduction

Environmental issues are a global and therefore extremely complex matter. We are now well into the Anthropocene era—the era characterized by human activities having a significant impact on the ecosystem of the planet (Crutzen & Stoermer 2000, p.17-18). Dangerous anthropogenic carbon emissions are a major component of global climate change. As a result, many nations and individuals from around the world are taking steps to reduce their carbon footprint and increase their environmental stewardship. Although most citizens of the developed world have concerns over environmental issues, as witnessed in the increased popularity of Green politics movements (Castells 2010, p.177), the lack of changes on the international level are not representative of the desires of the electorate. For instance,

> at this turn of the millennium, 80 percent of Americans, and over two-thirds of Europeans, consider themselves environmentalists; parties and candidates can hardly be elected to office without "greening" their platform; government and international institutions alike multiply programs, special agencies, and legislation to protect nature, improve the quality of life and, ultimately, save the Earth in the long term and ourselves in the short term. (Castells 2010, p.168)

Although there is a lot of enthusiasm for environmental issues, corporations and governments seem unable to establish an effective path to alleviate the concerns of global environmental degradation.

There is no country in the world that is untouched by climate change. The combination of burning fossil fuels and forests has resulted in a steady increase of carbon emissions. The impressive technological capabilities of the world have come to bring humanity into conflict with nature. It is a problem that crosses all borders and has scientists in every continent making the same argument in unison - climate change is here. Even with these mounting concerns, positive change is slow in coming. This is in part the result of the level of international collaboration required in creating effective strong policy and change to address this concern. As Klein states,

"[d]isillusionment with the political process has been even more pronounced on the international stage, where attempts to regulate multinationals through the United Nations and trade regulatory bodies have been blocked at every turn" (2000, p.341). It is on the international stage that market capitalism is out of reach of the regulating powers of nation-states, where international law often goes unenforced, and there is an over-reliance on the soft powers of global governance.

Even the main body tasked with addressing international environmental issues—the UN Environmental Programme—is not proving to be effective in environmental policy enforcement on a global level. As such, environmental degradation is still persisting because governments and corporations are not being held accountable. Nonetheless, pressure for change continues, as the citizens of the world continue to be disillusioned with the increasing levels of environmental destruction as a result of the untethered capitalist system. It is with this as a background that a discussion of the political economy of sustainable urbanization can begin.

Taking all the above into consideration, this paper endeavours to look at the problems associated with climate change from an alternative perspective. This alternative perspective entails the understanding that although the scope of concerns related to climate change are global, the solutions and forces for change may in fact be more localized, particularly at the urban level. The political economy of sustainable urbanization can be defined as the political and economic activities that act as controlling interests to the potential development of an urbanization strategy that is sustainable. This paper brings to light this topic, and will attempt to articulate its relevance in the modern world and to sketch an outline of the key components of the political economy of sustainable urbanization. This will be accomplished by assessing the three main forms of urbanization that exist in the world—suburbs, slums, and cities—through three sections entitled: "The Slums of the Developing World," "The Middle Class Suburb," and "The Modern Metropolitan Megacity." A comparative analysis of these three different forms of urbanization will allow for insights into the deeper elements of the political economy of sustainable urbanization. Although addressed separately for organizational purposes in this paper, the interconnectedness between these forms of urbanization is significant and as such will be addressed explicitly throughout.
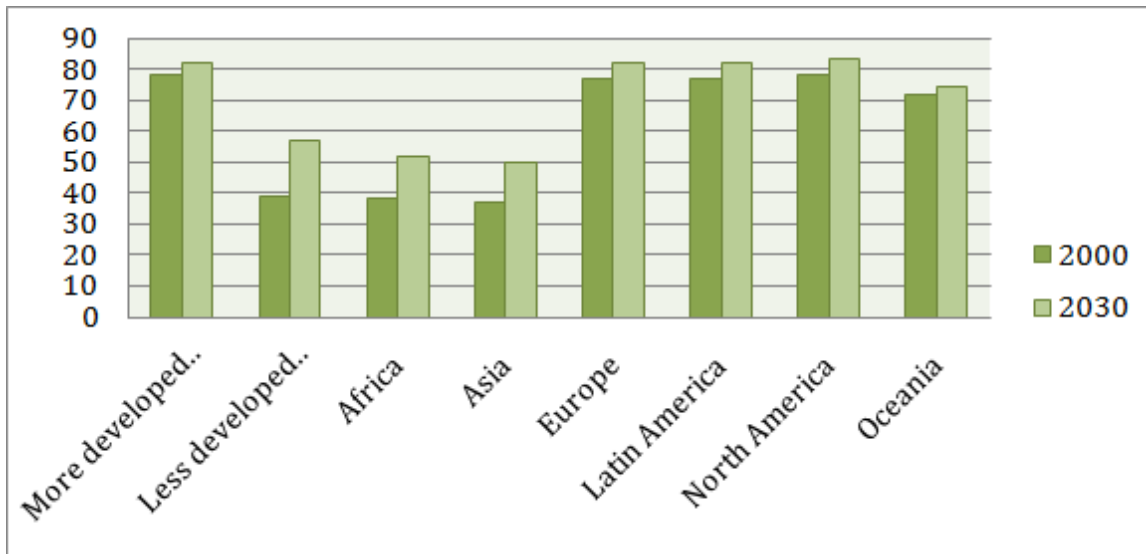
What is Urban?

There are a myriad of definitions throughout the nations, cities, and municipalities of the world with regards to delineating and defining urban spaces. This is one of the most difficult challenges associated with the study of urbanization from an international perspective. According to Cohen, "urban communities can be defined in any number of ways including by population size, population density, administrative or political boundaries, or economic function" (2006, p.65).

The purpose of this paper is not to delve into specifics but rather to develop a wide-angled perspective of urban development. In order to avoid the deep complexities associated with defining urban or non-urban, this paper will rely on the use of the United Nations bi-annual population reports as a baseline for understanding. The reader should be aware that United Nations population reports use local definitions of urban or otherwise to structure their statistical analysis. As such, definitions of urban will often differ from nation to nation.

The Trend of Urbanization

The trend towards urbanization has become a global phenomenon that has culminated in over 50% of the world's population now living in urban dwellings. This statistic is poised to increase in the future. According to United Nations Human Settlements Programme (UN-Habitat) and the UK Government Department for International Development (DFID), urban dwellers are forecast to increase to 60% of the world's population by 2030 (2002). Figure 1 illustrates the projected proportion of the world population living in urban areas in 2000 and 2030 respectively.

Figure 1: Projected Proportion of the Population Living in Urban Areas

Source: UN-Habitat & DFID 2002

As Figure 1 demonstrates, there is a trend towards urban growth in both developed and underdeveloped regions of the world. The particular trend of urbanization in underdeveloped nations will be discussed further in the below sections. But the overall trends and implications are clear. As centres of commerce, government, and industry, and now new population growth, the world and its nation-states will become reshaped by the ever-growing importance of the world's cities. This is unprecedented in human history and poses the necessity of a significant paradigm shift in human development and its relationship with the planet. These changes have implications for both the individual and society.

According to Babe,

It took one hundred years for the world's population to double from 1.25 billion to 2.5 billion (between 1850 and 1950), but less than forty years for it to double again…Some project that the world's population may stabilize at 8 to 14 billion over the present century. (2006, p.24)

Capitalism posits the possibility of an infinite increase in production juxtaposed to the stark reality that there are a finite number of physical resources, including the amount of energy and environmental degradation Earth can sustain. In other words, the economic system that dominates the world encourages infinite production but with a base of finite resources. As population growth continues to increase exponentially, the strain on the ecological resources of the world will become more pronounced. Neuman (2005) states: "[t]echnocentrists accept that over-population is an environmental problem, but posit that technological solutions exist or can be developed to accommodate additional population while avoiding ecological damage" (p.27). However, this means that urban development for all social strata will have to be re-envisioned in order to become more sustainable.

Sustainable Urbanization

The United Nations Brundtland Commission on March 20, 1987 published a report entitled *Our Common Future* that defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987, p.41). This definition has since been used as a basis for understanding the term 'sustainable development'. Additionally, the term sustainable development can be applied to the concept of lifting poorer nations out of the poverty trap. For instance, the same report concluded and identified "poverty as a fundamental cause of environmental degradation" (Neuman 2005, p.85). This will be further discussed in the section entitled "The Slums of the Developing World." For the purposes of this paper, the above noted definition of sustainable development will be used as it applies specifically to urbanization. With population growth focusing in on urban settings, as outlined above, the concept of sustainable urbanization will become increasingly relevant.
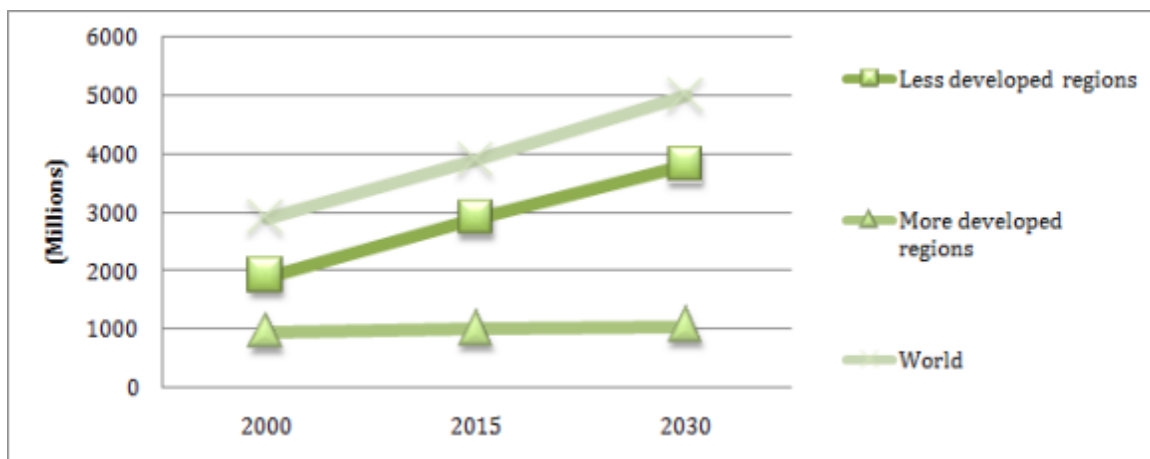
Global Political Economy

For this paper the term political economy will refer to both the political and economic forces involved in the process and development of urbanization. This will include the systems of world production and trade and the manner in which they are related to law, government, and politics. The 21st century has witnessed the growth of neo-liberal ideology and its infiltration into the economies and politics of the world. Since the 1980s, and the deregulation schemes promoted by Reagan and Thatcher in the United States and the United Kingdom respectively, there has been a stark change in the role of government and the function of private capital. This political and economic reality deeply influences the prospects of sustainable urbanization, and will be discussed in further detail in the sections below.

The Slums of the Developing World

For this paper a slum will be considered a peri-urban area with little to no infrastructure where residents do not possess legal tenure over their dwelling units. Slums of both low and high density levels will be considered as they are equally relevant to the discussion of sustainable urbanization. The statistical data for the information presented below has been obtained using United Nations (2002) bi-annual population reports.

The issue of slum development has become of increasing concern as human population trends begin to indicate that a significant portion of humanity in the future will be slum dwellers, particularly in developing nations. As Figure 2 illustrates, the trends for future urban growth will take place in the developing nations of the world. As such, the reality of urban sustainability in the developing world will be starkly different from those in the developed world.

Figure 2: Projected Growth in the Urban Population

Source: UN-Habitat & DFID 2002

Although there are indeed slum-type conditions in more affluent nations, the realities that exist in slums of developing nations are significantly more problematic. According to Cohen,

> Cities throughout the world exhibit an incredible diversity of characteristics, economic structures, levels of infrastructure, historic origins, patterns of growth, and degrees of formal planning. Yet, many of the problems that they face are strikingly familiar. For one thing, as cities grow, they become increasingly diverse. Every city has its relatively more affluent and relatively poorer neighbourhoods. But in developing countries, poorer neighbourhoods can have dramatically lower levels of basic services." (2006, p.75)

As stated by Cohen above, even basic services, such as water, electricity, and sewage removal, often do not exist in the slums of the developing world.

In terms of sustainability, the inevitable growth of the slums of the developing world will create serious concerns and put real strains on the planet's natural systems. The resources typically used for the construction and maintenance of slum dwellings often involve unsustainable practices. According to Davis, "[s]ustainable urbanism presupposes the preservation of surrounding wetlands and

agriculture. Unfortunately, Third World cities -with few exceptions -are systematically polluting, urbanizing, and destroying their crucial environmental support systems" (2006, p.134). Of course, the slum dwellers of the world have less ability to support sustainability initiatives, as their existence is often hand-to-mouth. Therefore, the political and economic factors involved in the prevalence of slums are highly important.

According to Shrivastava,

> Most developing country leaders strongly believe that poverty is the most aggravating and destructive of all environmental problems, and that improved market access to developed countries' markets would afford the Southern countries the financial resources necessary to address pollution and environmental degradation. (2001, p.111)

As such, in order to alleviate these concerns, the political and economic structures that persist on the global sphere will have to be re-evaluated. As Davis states, "rapid urban growth in the context of structural adjustment, currency devaluation, and state retrenchment has been an inevitable recipe for the mass production of slums" (2006, p.17). Davis also states that,

> Urban segregation is not a frozen status quo, but rather a ceaseless social war in which the state intervenes regularly in the name of 'progress', 'beautification', and even 'social justice for the poor' to redraw spatial boundaries to the advantage of landowners, foreign investors, elite homeowners, and middle-class commuters. (2006, p.98)

There are factors involved at all levels of governance; from local to national and international.

A report entitled *The Challenge of Slums: Global Report on Human Settlements 2003*, conducted by the United Nations Human Settlements Programme, outlined in detail the development of slums throughout the world. It is to date the most comprehensive study on slums yet conducted. In this report, it was concluded that,

> Conventional trade theories see increased trade and a liberalized trade regime as purely beneficial; but, as in all change, there are, in fact, winners and losers. Those participating in the active, growing areas of the world economy, or receiving (unreliable) trickle-down effects, benefit. Those who do not participate at best receive no benefits, but, in fact, are usually losers, since capital tends to take flight from their countries or their industries to more productive zones, reducing work opportunities and business returns as currencies and wages fall or jobs disappear. (UN-Habitat 2003. p. 40)

The report further articulates the following:

> The main single cause of increases in poverty and inequality during the 1980s and 1990s was the retreat of the state. The redirection of income through progressive taxation and social safety nets came to be severely threatened by the ascendancy of neo-liberal economic doctrines that explicitly 'demanded' an increase in inequality. The neo-liberal ideology was based on individualism, competition and self reliance, and collectivism in all except the most rudimentary forms was anathema. Markets were somehow regarded as being capable of delivering prosperity for all, and the major problem was regarded as governments who were sapping the ability of the people to generate wealth. (UN-Habitat 2003. p.43)

Therefore, the political and economic restructuring that occurred in the 1980s and 1990s has had significant negative impacts on the growing slum communities around the world. Market neo-liberalism fails to provide appropriate parameters or evaluative measures to encourage sustainable urbanization in slum communities because residents often do not have legal tenure nor, therefore, financial control over their dwellings units, and so there is no place for the market to gain benefit or find "value." The logic of neo-liberalism brushes over the humanity necessary to provide ameliorative measures to slum communities. The neo-liberal model, in contrast to a social market economy, posits a laissez-faire doctrine of governmental control over economic activities. In the context of slum dwellers in developing nations, this economic strategy encourages a reduction in low-income aid schemes from local governments and an increase in free-trade arrangements on the global sphere that often result in the exploitation of poverty stricken workers.

This concept hinges on neo-Malthusian arguments and, similarly, on the classic writing by Hardin entitled *The Tragedy of the Commons* (1968). The former typically argues for a technocratic or managerial approach to population of the urban poor while the latter argues for private property rights and population control. Both of these theories do not challenge the overall political economic system that persists and offer simply band-aid solutions to the underlying problem. In Hardin's often-cited metaphor of grazing cows

in a common pasture, the argument is as follows: the farmers in the common pasture have an incentive to produce more cows, which results in over-grazing the field to the detriment of all farmers; thus, private property, or some form of regulation, is a solution to the overgrazing. The farmers will now have individualised incentives to ensure that overgrazing does not occur on their land. This overlooks a simple alternative solution that does not involve the construction of private property—the negotiation of a shared-use agreement between all of the farmers.

A neo-liberal perspective may encourage the promotion of land ownership in slum communities in order to push residents out of the poverty trap. However, according to Patel, "[l]and titling turns dead capital into live capital, but because the rules under which it is managed were written by the powerful, the poor often find themselves divested of their assets far sooner than [t]they'd hoped" (2009, p.138). Furthermore, Patel states that;

> There's nothing natural about ownership - it's the result of a negotiation, and modern social change has always questioned the boundaries of public and private ownership. The Lockean idea that working on something confers ownership is just another social expectation - but it's one that is malleable. (2009, p. 155)

Similarly, prominent Marxist scholar and geographer David Harvey views this discrepancy from an anti-capitalistic perspective. According to Harvey,

> The existence of a dominant belief within the capitalist class and the social order more generally that there is a technological fix for every problem and a pill for every ailment produces all sorts of consequences. The 'fetish of technology' there does have an unduly prominent role in driving bourgeois history, defining both its astonishing achievements and its self-inflicted catastrophes. (2010, p.129)

It is not only the 'fetish of technology' that Harvey denounces. The neo-liberal rhetoric has been revised in order to fit comfortably within the political dialogue with a new form of ecoliberalism. For instance, Di Chiro argues that:

> The local, in terms of local environments and local communities, becomes expunged from this universalizing discourse focusing on global ecology, and the real needs of people and land becomes subordinated to the imperatives of global capitalism, now dressed under the mantle of 'sustainable development'. This new global green regime represents ecoliberalism at its finest. (2003, p.210).

Also known as green capitalism, ecoliberalism is "a set of responses to environmental change and environmentalism that relies on harnessing capital investment, individual choice, and entrepreneurial innovation to the green cause" (Prudham, 2009, p.1595). In reality, ecoliberalism is an attempt by the corporate and political elite to maintain the status quo of market neo-liberalism. Prudham pointedly articulates that for ecoliberalism to be accepted as legitimate, "the entrepreneur must be seen - in political and cultural terms - to be an architect of, rather than an obstacle to, a greener future" (2009, p.1605).

The Middle Class Suburb

Suburbs are often regarded as the haven for the middle class, and it is a politically hot topic to challenge the notion of middle class suburban development. The intent of this section is to do exactly that.

Similar to many slums in the developing world, the modern middle class suburb is an area located on the inside periphery of the city centre but in close enough proximity that daily commute to and from the city is possible. Suburbs typically house working class residents who often require access to the urban amenities for employment or otherwise. In stark contrast to slums, suburbs have established infrastructure and owners have legal tenure over their dwelling units.

Not many years ago, cities were laid out such that everyday amenities and needs could be accessed by walking. Since the advent of the automobile as the main form of modern transportation, the urban layout has dramatically changed. The automobile led the way to a new level of intensity of personal mobility. As such, many cities, particularly in North America, changed their layout such that all could be accessed by way of the automobile.
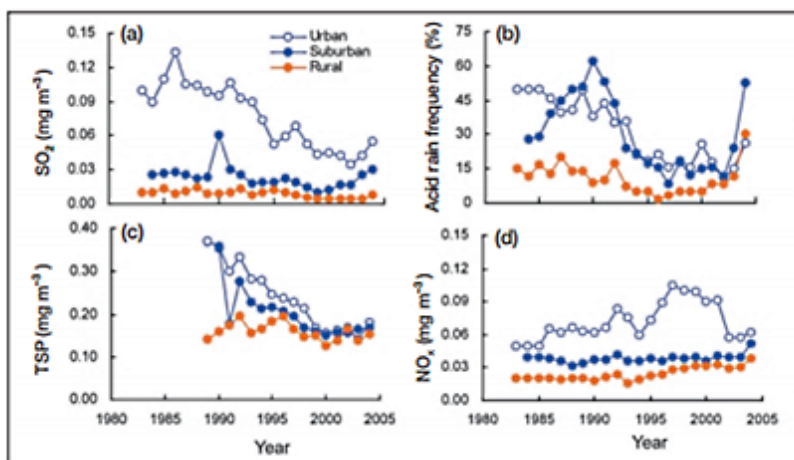
Where a slum often grows organically out of a need and desire for necessary residence, a suburb is often a highly planned and

organized development. Its low-density layout allows for only one type of movement throughout the physical environment - the car. The typical suburb layout segments the main portions of human everyday life. There is one location for living, one location for shopping, and yet another location of working, all of which have to be accessed via a car. There is a direct correlation between the prevalence of the automobile and the suburb. From a sustainability perspective, the suburb is the worst form of development in terms of environmental sustainability as it is car-centric and highly consumerist based.

Present throughout history and first recorded as a term in 1380, the suburb has become a template for middle class development around the world. Even in localities with already high levels of human density, the suburb has taken root. From a sustainability perspective, the sprawl that is the suburb has become an environmental catastrophe. The most obvious example of this, as noted above, is the car-centric nature of suburban development. In addition, there are environmental concerns related to sewage, energy use, carbon intensity of construction materials, and air pollution.

For instance Shanghai, China's largest and most modern city, has experienced significant growing pains with regards to its effects of the environment. From as early as the 1980s a mere 18% of the population of China lived in cities. By 2003 that number increased to 39% (Zhao, Da, Tang, Fang, Song, & Fang, 2006, p.341). In that same approximate time period Shanghai has demonstrated a significant deterioration in air quality in suburban localities. Figure 3 illustrates the prevalence of various air pollutants in urban, suburban, and rural environments.

Figure 3: Changes in majors components of air quality between 1983 and 2004 in the different areas of Shanghai

Legend: (a) sulfur dioxide; (b) acid rain frequency; (c) total suspended particles (TSP); and (d) nitrous oxides. Source: Zhao et al, 2006, p. 344

Noteworthy in Figure 3 is the illustration of the trend for air pollution in suburban localities to begin to become equivalent to or surpass air pollution levels in urban areas. The concept of urban density and its relation to environmental sustainability will be discussed in further detail in the section below. For now, it is important to understand that low-density suburban sprawl tends to have enormous deleterious impact on the surrounding localized environment - not to mention the increased CO2 immersions typical of a car dependent lifestyle.

Interestingly, while China and many other nations are creating new suburban development, North America is beginning to retract on its fringe suburbs (Leinberger, 2011). Seen with the decline in real estate values of outer-ring suburbs across United States and Canada, the realities of the suburban development are beginning to shift. As Leinberger puts it, "[i]t was predominately the collapse of the car-dependent suburban fringe that caused the mortgage collapse" (2011, p.1).

The existing political and economic structures that encouraged this form of short-sighted development are rooted in easy mortgage credit in the housing market. The growth of the suburb reached its peak just before the financial crises of 2008. Predatory lenders were providing loans - known as sub-prime mortgages - to families who had no means of paying. This predominately involved the

outer-ring suburbs of the United States. These mortgages were then repackaged into Collateralized Debt Obligations (CDO) and sold to investors around the world (Harvey, 2012).

As Harvey states,

> The production of space in general and of urbanization in particular has become big business under capitalism. It is one of the key ways in which capital surplus is absorbed. A significant proportion of the total global labour force is employed in building and maintaining the built environment. (2010, p.166)

It was the suburban fringe to which surplus capital made its way and caused its havoc. The logic of capitalism follows the path of surplus capital absorption. This is because in order to have limitless growth—the cornerstone of capitalism—the capitalist class must find a source of surplus capital absorption. As Harvey further states, "[t]he survival of capitalism, in short, depends upon the organization and financing of material infrastructural investments appropriate to a compounding rate of growth" (2010, p.85).

Sustainable construction, for instance, is fundamentally at odds with the economic and political structure that is in place. There are localities and nations which have made significant progress, Germany in particular. Generally, however, there is a disconnect between the goal of sustainable construction and the micro and macro economic reality that is in place (Bon & Hutchison 2000, p.311). Houses are made with minimal foresight into sustainability. Governments have offered eco-initiatives to encourage homeowners to retrofit their homes with energy saving materials and technology. Under the veneer of making a "green" choice, the consumer is encouraged to believe the utility of this decision. In Canada, for example, the federal government created the Eco-retrofit Homes Program and offered incentives to homeowners to retrofit their homes with various products such as: insulation, inert gas filled windows, energy efficient mechanical and electrical equipment, solar photovoltaics, and geothermal heating. The underlying concept is that these will promote jobs and reduce carbon emissions. However the reality is starkly different. Instead of promoting smaller and denser living arrangements, which reduce emissions and overall resource use to a significantly higher degree than a retrofitting regime, the program instead promoted the status quo of suburban home ownership centered on a car centric lifestyle. Thus the program perpetuates the logic of eco(neo)liberalism. This disingenuous form of environmental sustainability has the danger of providing a false sense of validation to what is in reality consumerist behaviour that hinders the goal towards sustainable urbanization. This is one of many similar initiatives that pretend to promote sustainability but in reality encourage consumerist behaviours that are in turn deeply connected to neoliberal ideals.

The Metropolitan Megacity

Raban states that the "city has always been an embodiment of hope and a source of festering guilt: a dream pursued, and found vain, wanting, and destructive" (1988, p.17). Vain dream or not, cities are growing to unprecedented sizes and have begun to have unparalleled complexity. The average size of the world's 100 largest cities has grown from under 200,000 in 1800 to over 5 million in 1990 (Hardoy Mitlan, & Satterthwaite, 2001). The endless interactions between the economies, the ecosystem, and the political realm that encompass the realities of a modern day megacity make the study of this topic a challenge. How does one actually compare two immensely different cities the likes of Jakarta and New York? This section will restrict itself to attempting to capture in brief the overall trend towards megacities from a global perspective. It will be important for the reader to understand that due to brevity, the below is a cursory overview and a comparative analysis of a deeply complex field of study.

With regards to environmental sustainability, the megacity presents humanity with both its greatest challenge and its greatest opportunity. The challenge is related to the sheer complexity, as noted above, and the difficulty that comes with navigating the terrain in a way that promotes sustainable urbanization. In an era where megacities were just establishing themselves, Frederick Engels, in an 1872 essay entitled "The Housing Question," stated that:
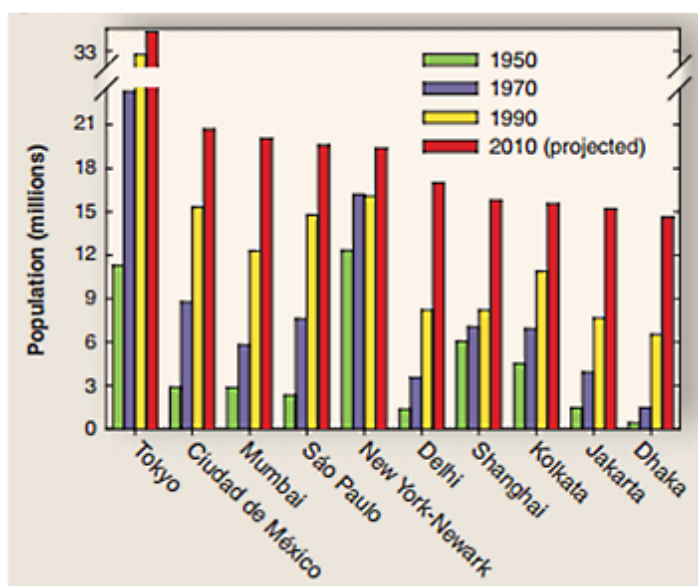
> The growth of the big modern cities gives the land in certain areas, particularly in those areas which are centrally situated, an artificially and colossally increasing value; the buildings erected on these areas depress this value instead of increasing it, because they no longer belong to the changed circumstances. They are pulled down and replaced by others. This takes place above all with workers' houses which are situated centrally and whose rents, even with the greatest overcrowding, can never, or only very slowly, increase above a certain maximum. They are pulled down and in their stead shops,

warehouses and public buildings are erected. (as cited in Harvey, 2010, p.178)

This dynamism and ever-changing nature of cities still persists today. However, cities are also an opportunity because human density, if dealt with in a well-planned and intelligent manner can potentially result in a significant reduction in the overall impact of human settlement on the now fragile environmental systems of this planet. According to the UN Human Settlement Program executive director Joan Clos, "Urbanization affects sustainability and when done properly, it could generate massive economic opportunities for the population. Urbanization should therefore be addressed as an opportunity for shared prosperity, inclusion and renewal" (as cited in Sina English, 2013, para. 3). Unlike slums and suburbs, cities are the way forward to a sustainable future.

To begin, it is important to understand where the trend-setting pace of the immense growth of cities is occurring. Figure 4 illustrates the growth of the 10 largest agglomerations from 1950 to 2012.

Change in population of the 10 largest urban agglomerations from 1950 to 2010

Source: Grimm et al., 2008.

As illustrated in Figure 4, it is clear that the megacities of the future will be located in the developing world. From the 1950s to the 1970s the largest growth areas were in developed nations however from 1990 on this shifted towards developing nations (Grimm et al., 2008). Although the more developed nations of the world have in large part initiated the negative effects associated with anthropogenic environmental degradation, it will be the megacities in the developing world that will need to take decisive action to ameliorate damage to the environment. Within the logic of free-market capitalism it can often put one at a competitive disadvantage to reduce ones emissions levels and construct progressive sustainability initiatives. These cities will face significant political and economic challenges.

In addition to the above, the future growth of the cities of the world will be concentrated in the smaller cities of the developing world. According to Cohen, "[a]s the scale of the city increases, the population growth rate of a city's population typically declines and in fact, the growth of most of the world's mega-cities had slowed down recently, reflecting slower national population growth rates" (2006, p.72). Although currently it is the urban areas in the developed nations that are the main culprits of environmental degradation, future problems will be concentrated in the developing world. This may hold the key to achieving sustainable urbanization on a global level while at the same time presenting a significant challenge. For instance, "[d]emographic theory extrapolates from the Western experience a pattern of demographic transition whereby birthrates decline significantly as economic growth proceeds. The threshold is the shift from preindustrial to industrial society, in which education and health technologies spread" (McMichael 2008, p.256). In other words, the sustainable growth of new cities will not be hinged solely on the physical environment but also the socio-economic progress that occurs. As discussed in the section on "The Slums of the Developing World," wealth

disparity in many major cities in the developing world is becoming more pronounced. With this in mind, population control, or lack thereof, has the potential to occur naturally as cities and nations pull themselves out of poverty in a sustainable manner.

In terms of the built environment itself, the above two forms of urbanization, slum and suburban, are examples of low to mid density living arrangements. Of all three forms of urban living, the metropolitan megacity presents itself as an enigma. Its high density would lead to the logical conclusion that higher sustainability would be the result. However that is not always the case. Cohen argues that, "[h]igh population density may also be good for minimizing the effect of man on living ecosystems. High population density typically implies lower per capita cost of providing infrastructure and basic services" (2006, p.64).

Notwithstanding the above-noted economic and social complexities related to sustainable urban growth of cities, there are also physical factors. Shared infrastructure and resources lead to the potential for a sustainable reshaping of the urban environment and human settlement in general. Tables 1 and 2, below each from different sources, depict average travel distances at varying urban density levels. Note that there will be discrepancies of these averages from city to city and that the below is not a representation of a global average.

Table 1: Urban Density and Travel

Density (Persons per hectare)	All Modes	Car	Local Bus	Rail	Walk	Other
Under 1	206.3	159.3	5.2	8.9	4.0	28.8
1-4.99	109.5	146.7	7.7	9.1	4.9	21.9
5-14.99	176.2	131.7	8.6	12.3	4.3	18.2
15-29.99	152.6	105.4	9.6	10.2	6.6	20.6
30-49.99	143.2	100.4	9.9	10.8	6.4	15.5
50 and +	129.2	79.9	11.9	15.2	6.7	15.4
All Areas	159.6	113.8	9.3	11.3	5.9	19.1

Data excludes trips less than 1.6 km and only refer to main mode used for trip. Source: Breheny 1996, p.11

Table 2: Urban Density and Travel

Urban Density	Average Personal Transport Energy Use (MJ/day)
Very Strongly Urbanized	50.9
Strongly Urbanized	54.5
Urbanized	54.5
Weakly Urbanized	48.4
Rural	51.0

Source: Bouwman 2000, p.235

Tables 1 and 2 illustrate that it is not necessarily the density of urban development that reduces energy related to transportation. There are external factors that also have to be considered. Tables 1 and 2 illustrate the difficulty with attempting to understand urban sustainability only using a single metric. Obviously an important factor in reducing CO_2 emissions is the level of transport emissions. What both data sets do illustrate is that very low density carries significant energy use costs. As such, the trend towards urbanization—by the increased density it represents—could be a potential positive for the future.

There are examples of sustainable urbanization, from the community to the city level, beginning to appear all around the world. In Hackbridge, London, England, the Bedzed project created an 82-home integrated sustainable living development (Turner, 2012). Through water efficiency, energy efficiency, solar photovoltaic electricity generation, public transport, waste recycling, and much more this development reduced energy use, water use, and car mileage to a significant extent. The sustainable model district of Vauban, Freiburg, Germany shows the potential of retrofitting the old to create new sustainable urban spaces (Turner, 2012). A former French military base, it has quickly become a model for sustainable reconfiguration in the urban context. A more well-known example would be that of Copenhagen, Denmark, which has shown that through creating metrics for success in urban planning—namely designating pedestrian friendly urban spaces—a paradigm shift towards sustainable urbanization can occur (Economist Intelligence Unit, 2012; Gehl, 2010). In Porto Alegre, Brazil, the use of self-management practices, such as participatory budgeting, has illustrated the potential of a democratic approach to urbanization that can better ensure urban policies which bring to the fore the importance of social equality in the planning process (Castells, 2010) As the above examples illustrate, there is a sustainable urban future potential that is waiting to be harnessed by the cities of the world.

Conclusion

Future research into urban sustainability will need to incorporate both the social and scientific implications of urban development. These perspectives, often dealt with in isolation, will need to be addressed as a singular topic. Traditional metrics of evaluating urban development will need to be reconfigured to include parameters that can promote sustainable urban growth from an interdisciplinary perspective.

From the research conducted in this paper, it was determined that a more comprehensive meta-synthesis of political science, economics, global studies, urban planning, civil/environmental engineering, environmental studies, and sustainability studies as it pertains to sustainable urbanization should be conducted. These limitations notwithstanding, the following can be summarized from the survey conducted in this paper.

Half of the world population now lives in urban centres around the world. Historically this is a very significant phenomenon and has ramifications, both positive and negative, for communities and individuals of all social strata. This era, known as the Anthropocene

era, marks a point at which humanity must envision and realize its relationship with the physical limits of the environment and the structures, both physical and social, of human settlements.

The scope of concerns related to urban sustainability is global. Climate change and environmental destruction from human settlements impact all communities around the world. However the political and economic structures in place on the global sphere have demonstrated their inadequacies to provide the positive change necessary to achieve sustainable urbanization. Paradoxically, this most global of problems might be best addressed at the local level. Communities and urban localities are significantly more adaptable to change and are well poised to become engines for a sustainable urban reconfiguration.

There are significant issues related to the ways in which human settlement is occurring. The sustainable existence of humanity depends, and is hinged upon, our interaction with nature and the built environment. The realities of the slums of the developing world, the middle class suburbs, and the metropolitan megacities are becoming increasingly interconnected and relevant with regards to sustainable urbanization. The political economy of sustainable urbanization envisions this interconnectedness as a point of focus moving forward.

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