**Right to food, right to the city: Household urban agriculture, and socionatural metabolism in Managua, Nicaragua**

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Abstract

The ‘right to the city’ has been understood as the right of urban inhabitants to produce urban spaces, and has generally drawn on Henri Lefevbre’s work on the social production of urban space. This paper examines the socioenvironmental aspects of the right to produce urban space. The aim of the paper is to draw on and contribute to the literatures on urban political ecology and the right to the city by exploring the concept of the right to urban metabolism through an analysis of everyday food production and consumption in homes in an informal settlement in Managua. The article argues that the ecologies of informal household urban agriculture (primarily the cultivation of fruit trees) are a key way that marginalised urban inhabitants in Managua appropriate and produce urban space, and consequently, demand their rights to urban metabolism. Through the production of home ecologies based on physiological necessities and cultural food practices, households simultaneously challenge their exclusion from urban spatial practices and address the increasing insecurity of access to food in Managua.

Highlights

\* This paper shows how domestic urban agriculture is part of the claims to the ‘right to the city’. \* It explores the concept of the right to urban metabolism. \* The paper analyses everyday food production and consumption in homes. \* It uses a case study of the cultivation of fruit trees in homes in Managua, Nicaragua.

Keywords

Urban socionatural metabolism; Rights to the city; Urban agriculture; Managua; Nicaragua

1. Introduction

From the balcony of the restaurant Intermezzzo Del Bosque, situated on a hill just south of Managua, the city’s landscape is overwhelmingly green. The urban forest seems to bury the buildings (albeit, few of the buildings in Managua are over six stories). For a city with few large parks and over 1.5 million residents, it is considered the greenest city in Central America. The rich urban forest in the city is not an accident, nor is it necessarily part of official city planning (although the environmental programme of the City of Managua includes planting trees in public spaces, especially schools). The majority of trees are found in the patios of homes throughout the city. Interestingly, many poor households in the city have more trees than wealthier homes.

The trees in the patios of many ‘marginalised’ households serve multiple purposes in the ecologies of home, providing food, shelter, comfort, and income (Shillington, 2008).1 Trees in these patios are central to the ecologies of informal household urban agricultural systems. Along with many other urban dwellers in the global south, urban agriculture in Managua plays a significant role in food security, income and home-making (Altieri et al., 1999; Companioni et al., 2002, Mougeot, 2005 and Nugent, 2001). Studies have shown that urban agriculture is also important in sustaining social networks (in Brazil see WinklerPrins and de Souza, 2005; in Namibia see Frayne, 2004); for women’s empowerment, such as through commercial ventures (in Botswana see Hovorka, 2006); and can contribute to urban sanitation systems (Lydecker and Drechsel, 2010). In Managua, informal urban agriculture is central to creating ‘home’ and assists households in dealing with environmental uncertainties, such as unreliable water supply, lack of proper sanitation and food (Shillington, 2011).

Urban agriculture has become one way through which many inhabitants claim their right to the city. Drawing on the literatures on urban political ecology and the right to the city, I use a case study of barrio San Augusto2 to analyse how the cultivation of fruit trees allows residents, especially women, to claim their right to urban metabolism. While these trees are only one component of a diverse patio ecology (which I have discussed elsewhere, see Shillington, 2008), they are the dominant species and therefore shape what else grows in patios. These home ecologies are produced through complex relations within and between home, community, city and globe. Desires and needs of/at home compete with the aspirations of urban planners, international development organisations and governments. In San Augusto, households struggle to make the homes liveable and comfortable according to their needs and wants, while at the same time governments and international development organisations attempt to improve living conditions according to measurable criteria that may or may not correspond to the desires of households. Home is an important space where such competing ideals are played out.

I focus on domestic spaces – the home patio – because ‘home’, as the most mundane and everyday space of the city, is central to the production of urban space (Lefebvre, 1991). It is through the home that our everyday lives revolve, and it is in the home (and for a home) that many struggles begin. As feminist geographers have long pointed out, everyday life and domestic social relations are important for understanding broader relations and processes ( [Domosh, 1998], [Marston, 2000], [Massey, 1994] and [McDowell, 1999]). In this sense, home has to be understood in three broad ways. First, home is a material space where social reproduction takes place. Second, the home is shaped by broader social and socionatural relations. The ways in which men and women interact with each other as well as with ‘nature’ in domestic spaces is shaped by relations produced in other socio-spatial arenas, such as the urban, nation-state or global ( [Kaika, 2005] and [Robbins, 2007]). Third, the everyday socionatural relations of home also shape broader socio-spatial organisation. Everyday domestic practices, such as eating, bathing, and planting suburban lawns for example, produce urban space(s) and accordingly, urban metabolism.

With this in mind, this article explores everyday domestic relations with food in the home and the ways in which it shapes urban metabolism and space. Food is not only implicated in the most intimate and necessary human–nature relations within the home, but also the ways in which food is accessed, produced, and consumed in cities are entangled in the socionatural production of urban space at different scales. Simultaneously social, cultural, economic, political and natural (Whatmore, 2002), food is implicated in the socionatural production of multiple spaces: body, home, city, and beyond. At the corporeal scale, the consumption of food contributes to the production of our material, emotional and cultural bodily spaces; it “plays a role in the differentiation of bodies and identities” (Mansvelt, 2005, p. 95; Valentine, 1999). Food is an important part of producing our socionatural bodies. It enables us to survive and labour, and is necessary for social reproduction and the maintenance of everyday life. Most certainly, food is an essential component of the means of existence (Katz, 1993). And as Valentine (1999: p. 338) notes “Food is one…object that is crucially implicated in [the] work of social reproduction”.

It is at the scale of the household where decisions about food are made. What food to buy, how it is prepared, and who consumes what quantities is determined for the most part at home. We also consume the majority of our food at home. In this regard, the home serves as a space through which food rituals, food cultures, and identities are continually (re)produced. In most households, women are responsible for making decisions around food – what and where to purchase, cultivating subsistence crops, and preparation. Domestic food rituals are shaped by and shape gender relations in the home. Moreover, such decisions are not made in isolation: they depend on broader socio-economic and environmental processes. The cost of food (fluctuating markets), availability, and (changing) food cultures shape food practices of home – all of which are intimately linked to processes of urbanisation and globalisation.

Along with the importance of food at the corporeal and household scales, food has been at the heart of social and ecological transformations at the scale of the city and nation. The production of food itself relies upon transforming ‘nature’. Agriculture involves the ecological transformation of so-called first nature to second nature (Smith, 1990). Moreover, food is a large part of the urbanisation of nature. Urban inhabitants are dependent on the rural areas to provide food. Cronon’s (1991) brilliant account of wheat in the Midwest shows how one food product transformed not only the countryside (from ‘wild prairie and forest’ to ‘tame’ nature), but also the material, social, political and economic landscape of Chicago and in turn, the nation. The urbanisation of Chicago was predicated on the transformation of nature in the surrounding prairies. Cities depend on a constant supply of food. Food is not only a critical part of bodily metabolism, but it is also an important part of a city’s metabolism (as I will discuss shortly).

Gandy (2004, p. 374) sees urban metabolism as the “circulatory processes that underpin the transformation of nature into essential commodities such as food, energy and potable water”. As part of the urban circulatory processes, food enters the city as either raw resource to be transformed or as already produced, ready to consume and later discarded. Food, thus, flows through economic and social process as well as the physical infrastructures (e.g. sewers) of cities.

This article focuses on the role of urban agriculture in producing liveable urban spaces in San Augusto and in challenging urban social and environmental problems, such as lack of clean water, sanitation, and garbage collection. I focus my discussion on the cultural practices of domestic urban agriculture, and the ways in which these practices are shaped in part by the imperative to meet the physiological needs of the household. Through the practice of urban agriculture, households create particular ecologies that assist in asserting their rights to the city, or more specifically, their right to urban metabolism. The informal urban agriculture in marginalised households produces particular home ecologies that allow residents, especially women, to claim their right to produce and appropriate urban space.

2. Methodologies

This paper draws on research undertaken during 2005 and 2006 in barrio San Augusto, one of Managua’s poorest barrios. The research was part of a collaborative urban agricultural project with the local Nicaraguan non-governmental organisation, Fundación Nicaragüense Pro-Desarrollo Integral Comunitario (FUNDECI). FUNDECI began working with the barrio in the mid-1990s assisting the settlement of the area. Since then they have continued to advocate for urban services (water, sewage, roads, schools, medical clinics). The objective of the urban agriculture project was twofold: first to examine the importance of urban agriculture in lower-income households, and second to identity potential areas of support for household or community urban agriculture. Participants for the current research were recruited at FUNDECI’s introductory workshops about the collaborative urban agricultural project. The workshops were advertised at community meetings, in the medical clinic, and through word of mouth. Attendees at the workshops were asked if they would be interested in participating in interviews and mapping, and over 50 agreed to participate (40 women and 10 men in total).

In this paper, the data are primarily from participatory mapping and interviews with 25 women and five men. Semi-structured interviews were used to gather basic information about the households and their patios. These interviews were then followed by mapping the participants’ patios. Participatory mapping had two aims. First, it served as a way to create an inventory of existing plants and trees in the patios. Second, and more importantly, mapping was used as a tool to provoke in-depth discussions about patios, plants, trees, and homes. The mapping exercise involved walking around the patio, letting the participant lead and decide what was put on the maps. The act of walking around the patio to observe and collect stories of the patio ecologies became, as Hitchings and Jones (2004, p. 9) suggest “… a springboard for methodological investigations”.

The participants guided the mapping, deciding which plants and trees to map on a sketch map of the house and patio. Some participants mapped and talked about almost all the plants and trees in their patios, in other cases only half of the plants and trees were mentioned and mapped. The participant plotted the plants on the map and provided its name. In addition, they were asked to explain who planted it, where the plant came from (did they buy it, was it given, did it grow naturally, etc.), why they planted it (e.g. what the plant is for and what role it serves in the patio), and who takes care of it (if it is cared for, who waters, weeds, etc.). These questions were asked informally rather than asking structured questions so that many of the details about the plants and trees emerged through conversation as we walked around the patio. All of the interviews and conversation during mapping were recorded. The recordings were then transcribed and were supplemented with my field notes. I carried out content analysis of the transcriptions and field notes, coding them using several keywords and conceptual categories. Following this, I created large visual data maps to organise information. The visual data maps consisted of large pieces of brown paper with charts outlining the different categories I created based on the interviews and mapping, the names of the participants, and their responses corresponding to the different categories. Through the visual data map, I was able to compare responses and identify commonalities, differences and create a larger, collective story about the patios. Thus, in addition to producing maps of patios and an inventory of plants and trees, the research also generated narratives about patio ecologies, and their relationship to the household, barrio, and city.

3. Rights to the city

Mobilisation around ‘the right to the city’ has proliferated since the mid to late 1990s in both academia and activist circles (Mayer, 2009). Lefebvre first proposed the right to the city in response to the negative impacts of the capitalist economy during the 1960s. Yet, in the current era of globalised neoliberalism and rapid urbanisation, an increasing proportion of urban inhabitants are marginalised from city spaces and processes. Given that the more than half the world’s population lives in cities, demands for the right to the city are more necessary. Drawing on Lefebvre’s original call for the right to the city, radical academics and activists alike have worked towards adapting the concept for contemporary urban challenges (c.f. [HIC, 2010], [Marcuse, 2009] and [Mayer, 2009]).

The right to the city has mainly been framed around the social production of urban space, drawing primarily on Lefebvre’s theorisation of the production of space and his call for the right to the city – the rights to urban citizenship, participation and appropriation of urban space. In recent years, geographers within the human-environment tradition have argued for the socionatural production of space. In particular, the most recent work in urban political ecology has insisted that cities be understood as continual processes of socio-environmental change. This work has employed Marx’s notion of metabolism to describe the social and natural processes that produce urban natures, and therefore urban spaces (see especially Heynen et al., 2006).

For Lefebvre, the right to the city was “formulated as a transformed and renewed right to urban life” (Lefebvre, 1996, p. 158). Harvey (2009) elaborates that it is not the right to the existing city but rights to create, participate and live in a new city: the future city. Mobilizations around the right to the city have pursued, alternatively, legal rights claims and more normative rights claims (Staeheli et al., 2002). Both are linked to, and in many ways necessary for, the other (Mitchell, 2003). Marcuse (2010) distinguishes these two avenues as the ‘rights in cities’ and the ‘right to the city’ - the former referring to legal rights claims and the latter to a broader right to produce a different urban form, a different society (87). In this regard, the right to the city relies on seeing the city as Lefebvre did: an oeuvre – a ‘monument‘ created collectively by “social groups and the whole society” through struggles (Lefebvre, 2003, p. 89). Thus for Lefebvre, the right to the city demands the right to create an oeuvre that reflects the struggles of ordinary citizens in their everyday lives and not the machinations of capital.

However, many groups work towards rights in cities and view such rights as a productive starting point for the right to the city (e.g. HIC, 2010). Indeed, as Mitchell points out, “‘rights’ are one means by which progressive social policies can be instituted” (2003, p. 26). In cities of the global south, demands for the rights to the city include equal access to basic urban services such as water, sanitation, housing, education, and healthcare as well as employment, affordable energy and public transit. Demands by social movements to define basic services as human rights have in some cases resulted in their institutionalisation. While the institutionalisation of rights does not necessarily mean their implementation, it provides leverage for social struggle (Mitchell, 2003). For many groups, rights in cities make possible the right to the city. Without certain basic rights, many urban inhabitants are limited in their ability to claim their right to the city.

Lefebvre’s conceptions of citizenship, participation and appropriation are central for both ‘rights in cities’ and the ‘right to the city’. Citizenship for him included all inhabitants in the city; it was not linked to any legal framework differentiating between those who were deemed ‘legitimate’ urban residents (with formal citizenship status) and those who were not. As Purcell (2002) explains, the term citizenship in the twentieth century is associated with formal membership in a national political community. In contrast, in Lefebvre’s conception of the right to the city, urban citizenship is “earned by living out the routines of everyday life in the space of the city” (Purcell, 2002, p. 102). Indeed, Lefebvre insisted that it is through mundane routines and relations that urban space is produced.

Participation involves urban inhabitants playing a central role in the decision-making processes. Urban inhabitants do not just live in the city, they have the right to make decisions that contribute to the production of urban space, for example decisions about service provisioning (such was water, sewage, and social services), urban design (parks, roadways, public transit) and zoning (Purcell, 2002). McCann (2002: 78) explains that participation is “the right not to be marginalised in decision-making, nor to be channelled into certain political discussions or decision-making processes and not into others on the basis of one’s similarity to or difference from other individuals or groups”. In this respect, there are two aspects of participating in decision-making. First, the decision-making process itself must be established in collaboration with inhabitants; urban dwellers must be able to define decision-making processes and then how they choose to participate. Thus the second aspect is the ability to participate equally in the decision-making process. Through their ability to engage in decision-making, urban dwellers have a direct role in defining the sorts of spaces that are produced in cities.

Similarly, appropriation entails both the right to occupy and use already-produced urban space and the right to produce urban space (Purcell, 2002). Social movements have concentrated to a large extent on first aspect of appropriation, or claiming ‘rights in cities’. In Latin America, for example, right to the city movements, such as Coalición Internacional para el Hábitat, direct efforts towards promoting the right to live in the city and to access urban services including clean water, food, housing, proper sanitation, green spaces and sustainable livelihoods. The diversity of these demands reflects how the right to city is both a social and ecological issue, which I expand on below.

The second element of appropriation is the right to produce urban spaces which satisfy the needs of all inhabitants. Lefebvre insisted that appropriation of urban space bestows upon inhabitants the right “to urban life, to renewed centrality, to places of encounter and exchange, to life rhythms and time uses, enabling the full and complete usage of these [everyday] moments and places” (1996, p. 179). He argued that the right to produce urban spaces was key to the right to the city because the sorts of urban spaces created and the way in which they are produced determines whether full usage is possible. The right to produce urban space allows inhabitants to transform cities into equitable and liveable habitats.

As I suggest above, the transformation of cities through participation and appropriation involves both social and ecological relations and processes. Furthermore, appeals for clean water, sanitation, food, etc. are not just claims for the right to the city, but also for the rights to urban metabolism. Heynen et al. (2006) argue that the right to metabolism is implicit in the right to the city since the city is the outcome of multiple, continuous, intertwined social and environmental processes and change. Urban metabolism as conceptualised in current urban political ecology is more than just the flow or circulation of ‘things’ through the city (inputs and outputs) ( [Gandy, 2004] and [Heynen et al., 2006]). Rather, urban metabolism refers to the co-transformation of social and ‘natural’ elements into particular social and ‘natural’ urban forms and relations (Heynen et al., 2006). This transformation always involves diverse understandings, competing discourses, and ideologies about nature and the city (Marvin and Medd, 2006), which resonate within and beyond the city itself (Cronon, 1991).

Living in the city, then, necessarily involves being part of an urban metabolism. However, as both Gandy (2004) and Heynen et al. (2006) emphasise, urban socionatural metabolic processes are uneven, creating urban socio-environmental conditions that are beneficial to some and detrimental to others. Therefore, the right to urban metabolism is about the ability of individuals and groups to produce socioenvironmental conditions which create socially and ecologically just living conditions for themselves while at the same time not violating others’ ability to do the same (Swyngedouw et al., 2002).

Marginalised urban populations attempt in many ways to challenge the uneven socio-environmental conditions they encounter on a daily basis. In Managua, as in many cities of the global south, a large proportion of urban residents are excluded from essential socionatural networks such as water and sanitation and affordable, habitable housing (Rodgers, 2008). At present, the lack of affordable state-funded housing and inability of many households to purchase ‘legal’ housing has meant that poorer households buy land informally and construct their own, basic housing. Such land is normally not serviced by the city’s water and sanitation networks, and few of these informal (illegal) settlements have the resources to demand inclusion. Furthermore, the city does not always recognise such settlements as legal. For barrio San Augusto, local and international nongovernmental organisations (NGOs) have been critical in assisting them challenge such exclusions. At the household level, the everyday practice of urban agriculture assists in confronting the imposition of limiting socionatural conditions and in producing more liveable urban spaces.

4. Urban agriculture, rights to metabolism and urban space

4.1. Barrio San Augusto

Demands for the right to urban metabolism in barrio San Augusto have materialised in both explicit and implicit everyday actions. The barrio itself is a result of the collective efforts of several individuals and NGOs; it represents direct appropriation of (pre-existing) urban space as well as demands to participate in the production of urban space. San Augusto is an asentamiento progresivo (progressive settlement) that was settled in the early 1990s following the defeat of the Sandinistas to Violeta Chamorro (see [Morales Ortega, 1992] and [Morales Ortega, 2006]). Prior to leaving office, the Sandinista government transferred 100 manzanas3 of land in the southern area of Managua to the newly created NGO Asociación Centro Sandino (Sandino Association Centre, ACS). Using the Sandinista programme of progressive settlements4 as guidelines, a second local NGO, Fundación Nicaragüense Pro-Desarrollo Integral Comunitario (FUNDECI), began collaborating in 1993 with several individuals to divide the land into lots. Since then the barrio has been settled in stages, and at present comprises seven sections (etapas). The barrio now extends well beyond the original 100 manzanas as other organisations and individuals have donated land to the San Augusto community organisation. In addition, vacant lands surrounding the original 100 manzanas have been appropriated by the community and opened up for settlement (although no longer organised through FUNDECI).

In these latter cases, individuals have at times been forcefully removed by the police on behalf of individuals or groups claiming to own the land (Carrillo, 2005; Flores Valle and Cruz Sánchez, 2005). Neither the households on the original 100 manzanas nor the additional areas hold legal title to their land. Most households that have settled on donated land hold documents such as proof of purchase and promises of titles. In 1999 during the municipal election campaigns, the FSLN distributed pseudo titles to households in San Augusto, with the promise that if their candidate in that election (Herty Lewites) won, they would be given legal title. However, this promise has yet to be fulfilled despite four consecutive Sandinista mayors since 2001.5 Not having titles has created an environment of insecurity where many individuals fear being evicted from homes they have lived in for over a decade. While the inhabitants of San Augusto are clearly claiming their right to be present in the city by appropriating vacant urban space ( [Lefebvre, 1996] and [McCann, 2002]) – as a large number of individuals do on a daily basis in cities throughout the global south – there is a sense of disempowerment because they do not hold titles to their land. Despite arguments that the rights to the city should not hinge on property ownership, Mitchell’s (2003) assertion that legal rights provide leverage for social struggle is important for the ability of many individuals and households to make further claims for urban space. This is evident in the case of San Augusto.

Most notably, the demands of residents in San Augusto to formally access the city’s sewer and water network has not been successful. Yet, many households have informally obtained access to some basic urban services, generating similar results such as water connections in homes. The San Augusto Community Association (ACSA) has been key to such successes. It has been central in helping residents get involved actively in decisions about urban space. Because most residents are wary of the municipal and federal governments, especially given the lack of interest in awarding land titles, non-governmental organisations have been viewed as a more effective way to shape urban space in the barrio. Thus rather than attempt to influence decisions about urban space through local and federal governments, residents of San Augusto utilise their close connection with the local NGO FUNDECI in their endeavours to appropriate and make decisions about urban space, both household and community spaces. Indeed, residents are more actively able to participate in making decisions about urban space through their collaboration with NGOS. For example, in collaboration with FUNDECI and the Spanish NGO Arquitectos sin Fronteras, ACSA began a ‘self-help’ project to install water pipes throughout the barrio and taps in household patios. Installation began in 2002 and is ongoing, though not as fast as the area is being settled.

The informal water connections, viewed as illegal by the city, have assisted households in producing more habitable spaces that better meet their needs. First, few households pay for the water their receive, which many household could not afford. And second, having water taps in patios has facilitated urban agricultural efforts, allowing women to grow a greater variety of plants and trees. This, as I discuss below, enables the production of more desirable socio-environmental conditions (Swyngedouw et. al., 2002). However, because the water connections are considered illegal by the city, they are not maintained or repaired. As a result, water supply and quality is inconsistent (Shillington, 2011). Moreover, residents have not been successful in their need to connect to Managua’s sewer networks, and as such rely on self-constructed pit latrines. The unpredictable water supplies and lack of sewer connections, along with other circumstances (such as no garbage collection, unpaved roads, lack of health facilities, etc.) are largely disabling to households. Such socio-environmental conditions produce a multiplicity of ‘ecologies’ that require individuals to constantly monitor their everyday practices. This is in stark contrast to wealthier households in Managua (and in cities of the global north) who rarely think about, and indeed take for granted, their daily interactions with water, sewer, and other ecologies. In spite of the many disabling socio-environmental conditions, households – and in particular the women – are very active in contesting and altering such conditions. Urban agriculture has been an important way through which households produce alternative socio-environmental conditions, and consequently, attempt to rework urban metabolic processes to benefit themselves.

4.2. Patios, plants and politics

4.2.1. Bodies, patios and urban socionatural metabolic processes

The households in San Augusto are among the poorest in Managua; many have no stable income and struggle to meet their daily dietary needs. In response to this, most households attempt to supplement their food purchases with fruit, vegetables and herbs cultivated in their patios. The decisions of households about what to grow in their patios – and the resulting ecologies in patios – reflect Lefebvre’s conception of urban citizenship whereby urban space is produced through mundane routines and relations. The continual reproduction of patio ecologies and the relations that residents have with these ecologies form part of their spatial practices of everyday life. Such practices, Lefebvre argues are central to the production of urban spaces and consequently to making claims to the right to the city. He also suggests, however, that the way in which urban spaces are produced – in this case, how home ecologies are produced and under what conditions – determines whether “full and complete usage” is possible (Lefebvre, 1996, p. 197) and if such spaces are equitable and liveable. Home spaces in San Augusto, as described above, are produced within challenging socio-environmental conditions. But home ecologies are produced as a way to better such conditions and at the same time meet the daily needs of individuals. The appropriation of urban space involves the right to produce spaces that satisfy everyday needs. In this regard, home patios and more specifically the trees in those patios, form part of residents’ efforts to appropriate urban space.

Large trees and abundant undergrowth are a familiar sight in the small patios (yards) in San Augusto (see Fig. 1). They constitute the traditional huerto casero (home garden), an important part of the domestic landscape in both urban and rural homes in Nicaragua ( [González-García and Gómez, 2008a], [González-García and Gómez, 2008b] and [Lok, 1998]; Méndez et al., 2001). The typical huerto casero comprises fruit trees (normally mango, avocado, orange), small ornamental plants, herbs, and in rural households, vegetable plots. In rural areas, the huerto casero provides much of the daily fruit and a small portion of vegetable consumption (González-García and Gómez, 2008a; Méndez et al., 2001). In cities, where patios tend to be smaller in size, there are rarely plots of vegetables; rather, vegetables and herbs are grown in the small corners of the yard (or patio) that receive the most sun.6 The prevalence of trees in the patios in San Augusto means that much of the area is shaded and therefore, few vegetables are cultivated. As a result, the urban huerto casero is less important in daily food consumption.

[Fig. 1. Fruit tree canopy in barrio San Augusto.]

Trees and plants in patios, while contributing partially to household food security, provide other services that help produce home as a liveable material and emotional space. These home ecologies are a product of cultural practices intended to help meet physiological needs. Significantly, the home ecologies centred on fruit trees not only play a role in the production of urban spaces that at least partially meet the needs of barrio inhabitants but, as discussed below, also challenge certain dominant discursive spaces of Managua, in particular around health.

Of particular importance in the patios are fruit trees, which grow with relative ease in Managua. While the most common trees are mango, avocado and lime, each household has its own composition of other fruit trees including papaya, guayaba, banana, plantain, guanabana, passion fruit, and several varieties of orange (sweet, mandarin, and sour). The trees play a prominent role in the metabolism of the patio (ecologies) as well as the individual metabolism of household members. The fruit harvested from these trees is usually consumed in liquid form, referred to as refrescos naturales, where fruit pulp is mixed with water and sugar. Refrescos are a staple of the Nicaraguan diet, and constitute a main source of vitamins and minerals for many Nicaraguans, especially lower income populations (FAO 2001). Refrescos are considered alongside rice and beans to be a main component of the daily diet; they are seen as a vital constituent in Nicaraguan culinary culture. They are an indispensable menu item at comedores (small food stands and lunch counters), restaurants and cafes across the country. In addition, most households in San Augusto (and in Managua) make refrescos daily. Ledia, a 30 year old mother of two, makes a different refresco everyday so that her daughters receive a variety of nutrients, because as she explains, “each fruit has different nutrients, so it is important that we grow a variety”.7 This is reflected in her patio, which contains seven different fruit trees: mango, mandarin orange, sour orange, lime, guava, papaya, and tamarindo.

The consumption of refrescos is sustained by Nicaraguan cultural discourses. A wide range of ‘authorities’, in particular mothers, teachers, doctors and health officials, advocate refrescos. Like Ledia’s daughters, children are made to drink a daily refrescos and taught that they are essential for healthy, growing bodies. Indeed, in municipal school food programmes during the 1980s, teachers distributed refrescos to children as a way to improve nutrition (Garfield and Williams, 1989). Similarly, in 2000, the Consumer Defense Society of Nicaragua (Liga por la Defensa del Consumidor de Nicaragua, LIDECONIC) led a project to remove bottled sodas and packaged foods from food stands in and immediately outside of schools, and to substitute them with refresco naturales (LIDECONIC, 2003). Further, some doctors prescribe refrescos for treating for colds and diarrhoea. Through the gradual emergence of these sorts of ‘authorities’ and strategies, refrescos have become a taken-for-granted part everyday food consumption in Nicaragua. They are an integral part of daily eating habits – the practices of self and cultural identity – both within and outside of home.8 Indeed, fruit trees dominate patios because refrescos constitute such an important part of Nicaraguan diets. Refrescos, then, need to be understood as essential in the everyday routines and rhythms of daily life in San Augusto, through which “…inhabitants come both to depend on and truly to understand urban space” (Purcell, 2006, p. 1930); refrescos are involved in the spatial practices of everyday life that create home spaces and, as I highlight further on, other urban spaces.

The significance and persistence of refrescos and fruit trees is sustained by multiple socionatural metabolic processes. Both the fruit trees and the refrescos they produce, circulate, and transform individual bodies, home ecologies and urban nature, in several interconnected ways. Fruit trees and refrescos shape individual metabolisms in two main physiological ways: first, by providing nutrients and liquid, and second, by protecting the body from heat. The latter is a constant need in Managua where temperatures are regularly above 30 °C. Fruit trees provide needed shelter (shade, rain cover) in patios, which is where the majority of domestic activities take place (Shillington, 2008). The shade and shelter provided by fruit trees plays an important role in keeping bodies comfortable in Managua’s heat. Trees are especially important for women who carry out their everyday tasks in patios. Maria noted that her favourite tree was a large mango covering both her house and the adjacent outside kitchen area because it cooled the house and enabled her to cook without overheating. She commented that if the tree were not there she would have to build a structure for the kitchen because cooking in the heat is difficult. The rice, she joked, would be cooked half in sweat. Such large trees and the shade they generate enable women in households to carry out their household tasks in relative (physical) comfort. Because men’s responsibilities tend to be different than women’s, they did not associate shade-producing trees with being comfortable while performing domestic tasks. Making home spaces comfortable is necessary for meeting at least partially the needs of individuals. Trees are used to make home more comfortable.

At the same time that fruit trees are important for providing shade to make human bodies more comfortable, they also provide fruit for refrescos. The transformation of fruit into refrescos is informed, as noted above, by socio-cultural discourses and practices, and forms part of the circulation and metabolism of human body (nutrients, minerals, etc.). The fruit trees grown in patios are a response to the physiological needs of bodies for certain vitamins and minerals. Additionally, the form in which fruit is consumed, as refrescos, satisfies the physiological need to replenish water in the body. The fruit (and its nutrients) circulates through, nourishes and hence transforms individual bodies. The fruit plays a role in producing healthy and unhealthy bodies, depending on whether refrescos are viewed as detrimental or beneficial, as discussed above.

Fruit trees also transform urban landscapes, at both the household and city scale, materially by circulating nutrients in soils, absorbing excess water, and creating micro-climates. The fruit trees themselves comprise an intentional part of urban nature at the scale of the household. When San Augusto was first settled the land comprised a mix of grown-over golf course shrubs and scattered trees (some fruit, some not). New residents intentionally planted desired species of fruit trees and plants. The seeds or small plants were transferred from other urban or rural areas, or from consumed fruit purchased or given by family or neighbours. Fruit trees (and other plants) also make their way into patios spontaneously through various methods: consumption of fruit by household members (e.g. discarded seeds), wildlife (birds) (see also González-García and Gómez, 2008b), wind, rainwater as well as garbage (for more details see [Shillington, 2007] and [Shillington, 2008]). While mapping his patio, for example, Danilo (18 yrs old) pointed to a large area of the herb culantro, noting that it had not been planted: “When my mom sweeps… [the seeds] get stored in the ground and they grow by themselves”. Many herbs and fruit trees make their way into patios in similar ways. Due to a lack of garbage service in San Augusto most homes dispose of organic garbage in their patios, usually burying it. As a result, many fruit trees, herbs and sometimes vegetables will grow unintentionally. However, most participants explained that they will ‘clean’ their patio of plants and trees that they do not want. So while plants might make their way into patios spontaneously, households choose which plants and trees become permanent inhabitants. And in the majority of households, large fruit trees take precedence over vegetables and other plants that require long periods of direct sunlight. As such there is an almost continuous canopy of fruit trees over the patios.

At the scale of the city, this collective cultivation of fruit trees in San Augusto produces a green urban landscape which creates a slightly cooler micro-climate in the barrio by providing shade, reducing intensity and effects of seasonal rains, and helping to stabilise soils in patios (which rarely have ground cover, such as grass). Almost all participants commented that the climate of the barrio is one of the best in Managua, noting that because of all the large trees it is cooler and less stifling than most other barrios. As one women, Yadira, explained, “I like the climate [of the barrio], there are lots of trees that keep it fresher during day and then in the night it gets quite cool”. The expanse of trees has benefits other than food for residents, and more broadly for Managua by enhancing air quality. The large fruit trees are therefore significant in the urban socionatural metabolism of both the barrio and Managua.

The continual reproduction of fruit trees and refrescos – a transformation of ‘natures’ – has given rise to particular urban spaces (home ecologies), bodies and socionatural metabolic processes in San Augusto. The simple, mundane habit of drinking refrescos on a daily basis has had spatial repercussions. Trees planted in patios physically produce the home, especially given that patios play a more functional role in daily routines than the built house. The decisions to plant trees are decisions about urban space. Such decisions and transformations of nature help to make the city more liveable and, as I discuss next, also challenge more dominant (and powerful) discourses and understandings of urban socionatural relations in Managua.

4.2.2. Bodies, nutrition, and patio spaces

Despite the everyday importance of fruit trees in San Augusto (and other homes in Managua), competing discourses challenge the importance and benefits of refrescos and subsequently, of fruit trees in patios. These discourses, which also revolve around health and nutrition, comprise a different set of authorities and strategies, and are based on scientific measurements and indicators of bodily health. They are part of international and national discourses aimed at improving the health and nutrition of the Nicaraguan population, and entail the involvement of (global) experts in the fields of health, nutrition, development, and agricultural. These discourses, which I refer to as ‘global nutritional discourses’, compete with the above discussed popular discourse of refrescos, and as a result the household’s role in the production of urban space and metabolism, in two ways.

First, the global nutritional discourses view refrescos as an inadequate source of vitamins and minerals, and as a contributing factor to the ‘poor’ health of Nicaraguans. Drawing on statistics gathered from international organisations such as the United Nations Health Programme and the national census, these discourses aim to improve the overall health of Nicaraguans through a variety of strategies, most of which concentrate on poor populations. According to an extensive report produced on nutrition in Nicaragua by the Food and Agricultural Organisation of the United Nations (FAO, 2001), over 31% of the population is considered under nourished. Yet alongside this, they also report high rates of obesity, diabetes and cardiovascular diseases which affect poor and wealthy populations alike. International and national organisations point to the lack of vegetables and fruit in the Nicaraguan diet as a main source of these health problems, in spite of the daily consumption of refrescos. For the experts working with FAO, refrescos present health problems because they are prepared with little fruit, and large quantities of water and sugar (FAO, 2001). This, they argue, negates many of the benefits purported in popular food discourses. As a consequence of relying solely on refrescos as a daily source of vitamins and minerals, global nutritional discourses suggest, the majority of Nicaraguans suffer from deficiencies in major vitamins (in particular vitamins A and C) and iron (FAO, 2001).

The increased monitoring of health by international organisations, especially the World Health Organization (WHO) through their Global Health Observatory (GHO), has led to a greater recognition of health and nutrition problems, and subsequently the emergence of numerous health-related projects. Led primarily by multilateral organisations (either directly or through funding mechanisms) such projects concentrate on improving the health of poor populations. In the past several decades, concerns around the links between urbanisation and health have gained prominence. Projects under the themes of urbanisation and health have focused on, for example, disease (malaria, dengue), air pollution, and water and sanitation. Within their call for ‘healthy cities’, WHO has highlighted the importance of safe, healthy, accessible and affordable food. Urban agriculture is considered one way to improve human and environmental health in cities (see for example [Madaleno, 2000] and [Mougeot, 2005])).

In Managua, health projects led by national and international development organisations have proliferated, and often involve campaigns aimed at ‘educating’ poorer households on how to obtain proper quantities of vitamins and minerals by increasing their consumption of vegetables and raw fruits. In the past decade, the Instituto de Tecnología Agropecuaria (INTA, Agricultural Technology Institute) has attempted to initiate several urban agricultural projects in Managua. Most recently, in July 2010, they embarked on the first phase of a project in collaboration with Food and Agricultural Organization (FAO) and Agencia Española de Cooperación Internacional para el Desarrollo (AECID) to promote the cultivation of vegetables in patios in two barrios in Managua and Ciudad Sandino as a way to increase accessibility to and consumption of vegetables. This is not the first project of this type. Barrio San Augusto was part of a similar pilot project that attempted to diversify their patios to include more vegetables. The project was not received well by residents of San Augusto because it aimed at altering their home ecologies, which as I explain above, play a critical role in several aspects of everyday life.

Such projects reflect the second way in which international health discourses compete with popular discourses: they aim to alter home ecologies to make them more productive and assist in realising the above goal of improving nutrition. The pilot project in San Augusto was initiated by the Fondo de Inversión Social de Emergencia (FISE, Emergency Social Investment Fund) and funded in part by FAO. This project involved the distribution of tomato plants to households, in addition to capacity building workshops and technical support organised by the Instituto de Tecnología Agropecuaria (INTA, Agricultural Technology Institute) to train household members, in particular women. The overall goal was to encourage households to utilise their patios (yards) as spaces for vegetable crop production, thus simultaneously promoting the increased consumption of vegetables (to increase nutrition levels).

But as I explain above, the fruit trees are wrapped up in intentional interventions in socionatural metabolic processes that assist barrio residents to create more liveable spaces. The project, influenced by global discourses of nutrition and health monitoring, competed to control and regulate individual and patios by disregarding the multiple importance of fruit trees for individual, home and barrio socionatural metabolisms. The project aimed to improve the nutrition of individuals – or rather, to change their individual (corporeal) metabolic processes – by altering the socionatural metabolism of patios. They did this in one specific way: by insisting on a home ecology that directly competed with the current home ecologies of and created by large fruit trees. The requirements of the vegetable crops that the pilot project promoted are distinct from those of the fruit trees. Vegetable crops require at least 6 h of direct sunlight a day to successfully develop. Fruit trees, in contrast, create shade that covers the majority of the patio area for most of the day. Consequently, fruit trees and vegetable crops in patios are not necessarily compatible. Because of this, many households in San Augusto resisted the urban agricultural project of FISE and FAO. The benefits of the fruit trees as providers of shade and refrescos prevailed over those of vegetables, despite the health benefits of vegetables.

Although many households participated in the training workshops provided by FISE and attempted to grow the tomato plants in their patios, most refused to trim or cut down fruit trees to allow more direct sunlight. Through their reluctance to alter the existing socionatural metabolic of patios (and thus individuals), households, especially women, challenged the discourses of the project by modifying the project to fit their own desires and spaces. Many women adapted the tomato plants to the already existing home ecologies of patios. One way they did this was by finding small areas in their patios with the most sunlight to plant tomatoes. For example, Daría had planted several tomato plants at the edge of her patio near where her husband, a taxi driver, parked his car. The eastern edge of her patio is the only area that receives sunlight most of the day. Daría also moves the additional tomato plants and other herbs she keeps in containers to this spot when her husband is working during the day (see Fig. 2). This is the second way that participants have adapted tomato plants to their patios. Many women plant tomatoes (and other herbs requiring full sun such as basil) in containers and move them around the patio two or three times a day following the sun. While the tomato plants could (to a certain extent) be adapted to the ecologies of patios, the other crops promoted by the urban agriculture project were not as adaptable. Onions and cucumbers require more space than tomatoes and are difficult to grow successfully in containers, especially when such containers need to be moved every several hours to obtain the adequate amount of sunlight. Both Daría and Ledia had been very interested in growing onions in their patios, but the space required for the onions to develop properly meant giving up several of the numerous ornamentals scattered around their patios as well as cutting a mango tree and avocado tree. The ornamentals are considered an integral part of the patio, not only because they flourish in the shade ecologies produced by the large fruit trees, but also because they aid in producing aesthetically pleasing households (Shillington, 2008). Ledia strategically plants ornamentals to cover up the corrugated metal walls of her house; the ornamentals, she explains, help make her house look beautiful. Similarly, Teresa, an older woman that lives several houses down the Ledia, commented that ornamental plants make her house feel welcoming and homey. Removing ornamentals to make room for vegetables such as onions and cucumbers was not of interest in most women, just as most households were unwilling to cut down or trim trees to create garden plots. For these residents, the socionatural metabolism of home ecologies patios and the multiple benefits it provides prevails over improving their individual metabolisms (their nutritional intake).

[Fig. 2. Eastern, sunny edge of Daría’s patio with tomato plants and container herbs.]

The insistence of residents in San Augusto to decide on and produce their own socionatural metabolisms represents demands for the right to participation and appropriation. While residents were not part of the decision-making process of the urban agricultural project, their reluctance to fully accept the project and to assert the importance of fruit trees is one way that they are able to define and decide what for them is a liveable urban space. The homes and patio spaces they have produced are material manifestations of how inhabitants of San Augusto have attempted to transform the socionatural metabolic processes of Managua to benefit (in certain ways) their everyday lives.

5. Conclusion

The everyday patio spaces in San Augusto illustrate the multiplicity and complexity of urban socionatural metabolisms. Households attempt to transform urban natures that assist in creating more liveable home and body spaces. Fruit trees and the refrescos are a significant part of the mundane routines and relations in homes which, as Lefebvre insisted, produce urban space. The importance of fruit and fruit trees in home spaces and everyday practices highlights two interrelated aspects of claims for the right to the city, and more specifically, the right to urban metabolism. First, that the production of urban space is socionatural; it emerges as a result of particular social, economic, and ecological relations. Households and individuals constantly reproduce these relations, as well as challenge and alter them in the efforts to survive and live in cities.

Second, the continual reproduction of fruit trees and consumption of refrescos has produced particular socionatural metabolic processes for individuals, homes, and the larger urban landscape that both work with and challenge dominant socionatural metabolisms. The example of San Augusto clearly illustrates that the right to the city, as Heynen et al. (2006) contend, is also the right to urban metabolism. For individuals, the refrescos have contradictory nutritional repercussions; they provide, on a daily basis, nutrients for the body. Yet at the same time, they have become part of a detrimental metabolism by providing insufficient nutrients and unnecessary sugar. This individual metabolism is bound up with broader cultural practices which espouse the importance of refrescos. Moreover, individual metabolism is also linked to the production of the urban nature in patios – the home ecologies of fruit trees and ornamental plants – which is also shaped by broader cultural discourses and practices. The comfort and nutrition that patio ecologies generate (and maintain) can therefore be seen as part of claims for the right to the city and the right to metabolism. For residents of San Augusto the body, patio and urban metabolisms they produce work together to resist and alter other less beneficial socionatural metabolisms. While they remain excluded from larger urban socionatural metabolic processes, such as water and sanitation networks, that would most certainly benefit their everyday lives, they are nonetheless active in participating in, appropriating and producing urban space.

Because the maintenance of fruit trees and their use in the continual daily consumption of refrescos are integral to everyday routines of inhabitants in San Augusto, they comprise an act of citizenship – or rather, part of earning their citizenship in Managua, as Lefebvre has insisted. In this sense, the (re)production of (everyday) urban natures and the ways in which they challenge and alter other urban ‘natures’ is not only integral to the right to the city demands – and therefore, the right to metabolism – but also critical in the creation of the city as an oeuvre which reflects the struggles of ordinary citizens in their everyday lives. The green landscape of Managua, as a collective representation of fruit trees in patios, reflects the struggle of marginalised populations to produce urban spaces that are more inclusive and liveable than the spaces from which they are excluded.

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Endnotes

1 I use marginalised to refer to inhabitants who are excluded from many basic urban services such as water supply and sanitation, lack secure employment, have limited or no access to education and health care, and live in precarious housing conditions.

2 Name of barrio has been changed.

3 One manzana in Nicaragua is equivalent to 1.73 acres.

4 There are several settlement types that characterise poorer barrios in Managua: asentamientos espontaneos (spontaneous settlements), asentamientos populares (‘popular’ settlements), asentamientos progresivos (progressive settlements) and viviendas populares (‘popular’ housing). Spontaneous settlements are illegal occupation and settlement of urban land. ‘Popular’ and progressive settlements are organised and can be either legal or illegal. In the 1980s, a federal government programme of progressive urbanisations gave land (usually fully serviced) and titles to lower-income households. In the 1990s, such urbanizations were no longer part of government programmes and many non-governmental organisation began organising informal settlements – dividing lots and arranging services (see [Morales Ortega, 1992] and [Morales Ortega, 2006]).

5 Sandinista Mayors: Herty Lewites 2001–2004; Dionisio Marenco 2004–2008; Alexis Argüello 2008–2009; Daisy Torres 2009-current.

6 Many homes in informal settlements in Managua have patios considerably larger than other urban areas. In San Augusto, the lots averaged 200 m squared and held at least three large trees In addition, the house itself is normally quite small, creating large patio spaces (Shillington, 2008).

7 All quotes are my translations.

8 Nicaraguan poet, playwright and cultural icon, José Coronel Urtecho wrote an essay “In Praise of Nicaraguan Cuisine”, which he concludes by celebrating the refresco natural (Coronel Urtecho, 1998).