

The Sprawling Global Lawns of the Emerald Isle: A Dialectical Unfolding.

Eamonn Slater (National University of Ireland Maynooth)¹

Abstract

This article explores how the suburban front lawn is a special type of space, where society engages intensely with nature. Involved in this exchange are complex relationships between diverse networks of metabolizing processes. These processes include the natural process of grass growth, the labour process of 'improving upon nature', the process of harnessing nature for aesthetic designs and the commoditization process, in which 'natural' inputs are bought and brought into the front lawn. It is Marx's concept of socio-ecological metabolism that allows the analysis to avoid both naturalism and social constructionism as the sole determinants of the grass lawn. Its actual determinant is how these contrasting processes metabolize with each other within the labour process of gardening. Consequently as much as we attempt to dominate nature in our lawn endeavours, all we achieve is to thwart some of the natural tendencies of the grass ecosystem, but its essential natural laws continue to exist. Thus thwarting is merely concerned with imposing an aesthetic form on this particular type of grass ecosystem we call the suburban lawn. To uncover these complex relationships it is necessary to engage in a dialectical analysis.

During the 'heady' days of the Celtic Tiger, Ireland globalized. As part of this globalization, Ireland exported its Riverdances, its 'traditional' Irish pubs and images of a fun-loving people. These global media icons gave a new identity to the Irish people. And back in Ireland there were also other changes occurring, which were less obvious but more fundamental to the everyday lives of ordinary people. Nearly by stealth, and certainly piecemeal, Ireland suburbanised. Fuelled by an astounding increase in car usage, the increase in car dependency allowed the majority to travel greater distances to achieve their daily tasks. With this intensified mobility, our suburbs, like a slow moving tsunami, began to 'sprawl' into rural Ireland. In its wake, the 'natural' agro-ecosystems of the rural countryside were being replaced by the more aesthetically refined ecosystems of the suburban world. And these newly established ecosystems were not an afterthought to the necessary construction of the suburban housing estates, but were fundamental to why those estates were established there in the first place.

¹ Eamonn Slater (eamonn.slater@nuim.ie) is a Senior Lecturer in the Department of Sociology at NUI Maynooth

Lured by the possibility of living in a rural idyll, the iconic symbolism of the rural countryside – the plant ecosystems are retained if not intensified by their ornamentalism, while the crushing reality of the actual working environment (the economic and ecological processes) of rural life are smothered by asphalt and ‘pretty little’ box houses. In this article, I want to unfold an analysis of one aspect of this suburban ecosystem: the front lawn. The front lawns of suburbia are easily identified by their clear visible presence, but, as I argue, their very mundaneness conceals a complexity of how natural processes metabolize with social processes. It would appear to be obvious that any investigation into grass should use Ireland as its empirical case study, as Britain was for understanding capitalism in the nineteenth century, which Marx did. The reason to choose Ireland is that grass apparently grows so naturally and abundantly in Ireland, that it has created its own iconic representation of Ireland – Ireland of the ‘forty shades of green’.

In a preface to a book entitled *The Grasses of Ireland*, the authors begin:

We owe our international designation of ‘Emerald Isle’ to our grasslands. The Gulf Stream delivers a mildness of climate that is expressed in the greenness of the countryside and the absence of temperature extremes.[...] Our climate is summarised as mild, moist and variable. This gives us the longest season of grass growth in Europe. (Feehan, Sheridan and Egan vi).

As a consequence of its geographical location on the westerly perimeter of Europe, Ireland bears the full brunt of ‘the first powerful downpour of the heavy Atlantic rain clouds’ (Engels 184). This excessive rainfall is counteracted by the stony limestone substructure which lets the rain-water drain through the soil without water-logging the ground, and as a consequence these conditions produce the ‘softest and most beautiful (grass) turf imaginable’ (Young 3-4).

Marx, however, argues that the productiveness of Irish agriculture, including grass production, is not determined by these natural conditions (soil and climate) alone but by how they are embedded in social forms. This crucial formulation is summarized in Marx’s famous statement on natural laws:

No natural laws can be done away with. What can change, in historical circumstances, is the form in which these laws operate (Marx, 1868).

In the particular historical period of the nineteenth century, Marx and Engels identified British colonialism as the determining social form of Irish agriculture, as Engels suggests in the following:

Today England needs grain quickly and dependably – Ireland is just perfect for wheat-growing. Tomorrow England needs meat – Ireland is only fit for cattle pastures. (Engels 190/1).

Marx in *Capital* reproduces a similar argument as the one made by Engels above:

Having praised the fruitfulness of the Irish soil between 1815 and 1846, and proclaimed it loudly as destined for the cultivation of wheat by nature alone, English agronomists, economists and politicians suddenly discovered that it was good for nothing but to produce forage (grass pasture) (Marx 1971, 115)

Therefore, in order to uncover the determination of an agro-ecosystem, which is apparently under human control, we do not begin with the actual natural contents of the ecosystem itself (which is the epistemological trap set by naturalism) but by explicating the social form in which the ecosystem operates through. Therefore, what Marx is suggesting here is that the 'contents' of nature is provided by nature itself but its form is determined by how society interacts with nature. And crucially this does not imply that society is dominant in having absolute control over natural contents; it merely provides a form in which the laws of nature operate through. If this was true for the Irish grass ecosystems of the nineteenth century, it is still true for the twentieth first century and the grass lawns of suburbia. Accordingly, what is now necessary to unfold is a conceptual procedure that articulates the relationships between the social and natural processes without collapsing one side of this dichotomy into the other.

In my method of exposition I have attempted to provide a definite logical structure to this paper as I explicate how the natural processes have metabolized with the social processes in complex ways. I follow an explicit logical procedure of progressing from one level of analysis to another. As is the way with dialectical analysis, the unfolding of categories at one level establishes a form, which becomes the necessary precondition for the succeeding level of analysis. So I begin with surveying how the various types of anthropological and sociological investigations of the front lawn have constructed one-sided insights into this entity. In critically evaluating these insights, I reveal that their common conceptual weakness has been to overemphasize the cultural and social aspects of the lawn, while ignoring the natural characteristics of the grass content as a living plant ecosystem. Therefore, the lawn has become reified in these 'vulgar' frameworks where these conceptual endeavors have remained not only at the surface level of its social characteristics but also they have failed to investigate how these characteristics uncovered are essentially moments within social processes generally associated with identity formations. But even more significantly they have constantly failed to perceive the other side of the lawn entity and its living ecological dimensions. In order to overcome the one-sidedness of both the natural and social approaches to investigating these lawn processes it is necessary to engage in a dialectical analysis, firstly, by positing the empirical entity of the lawn as an organic totality and secondly to engage in dialectical procedures of analysis and synthesis. Meaney provides a succinct summary of Marx's dialectical investigative procedures into an organic totality:

Marx states in the "Introduction" that scientific method includes both analysis and synthesis. One naturally begins with what is given in experience. But what is given in experience are complicated ("concrete") things. Because any concrete thing is a "concentration of many determinations," an investigator's initial conception of it is chaotic. Investigation consists in moving analytically from the chaotic conception of the whole to the simple determinations that are constitutive of it. Once having arrived at the simplest determinations of the

whole, the investigator then proceeds to order these determinations in reconstructing in the mind precisely what the whole is. (Meaney 3)

What we take from these complex analytical and methodological assertions is that there appear to be two diametrically opposing trajectories involved in conceptualizing an 'organic totality'. The 'initial ascent from the concrete to the abstract' is about uncovering 'a small number of determinant general relations' (Marx 1973, 100) and thus explicating 'the inner connexion' of the totality. The trajectory of conceptualizing is now reversed and 'then begins the second "path" (Marx 1973, 100) 'of rising from the abstract to the concrete' (Marx 1973, 101). This final path has been described by Marx as his method of exposition (presentation) where the 'active middle' of the totality is a process in which its abstract determinations reproduce of the concrete.

Therefore, I begin by critically evaluating the diverse and differing conceptualizations of the front lawn and, from this apparent chaotic whole of contradictory assertions, I locate the active middle process of this particular organic totality, where the lawn is unfolded as an aesthetic ecosystem in which two abstract social forms of exhibition value (Benjamin's concept) embeds the natural contents of the grass ecosystem.

The chaotic and the often contradictory empirical conceptualizations of the suburban front lawn

The ontological premise of this article is based upon the following assertion of Marx: "The concrete is concrete because it is the concentration of many determinations, hence unity of the diverse" (Marx 1973, 101). Accordingly, what I want to propose is that the suburban front garden is a complex entity determined by a unity of diverse processes, which originate from both the natural and social realms. The latter point is crucial as I attempt to move away from the inherent trend of sociologism (Murphy, 1995) within which the vast majority of social and cultural accounts of this particular spatial entity are trapped in. In examining several discrete areas of research, much of it seemingly unconnected, it can be revealed that the front lawn is one of the most "fundamental and function-filled components of suburban landscape and that social and environmental implications of the lawn are exceptionally important to suburban studies" (Messia 69). Also, as a determinant spatial entity, it can provide us with a crucial insight on how certain social relationships within modern society, especially with regard to identity, have become 'spatialized'. Equally, it can also throw light on how we, as suburban dwellers, attempt to idealize nature while at the same time degrading the immediate environment by applying a vast range of chemicals to a natural ecosystem.

The appearance of the suburban front lawn has been conceptualized in many ways: as a consequence of the desire to escape urban congestion and the desire for healthier living in more 'rural' settings with cleaner air. In creating this 'natural' space, by replacing the concrete of an urban setting with natural vegetation of suburbia it appears that it is the grass plant which provides the 'natural' to this new spatial configuration as Ewen suggests in the following: "If the metropolis was an overwhelming realm of rock and steel megaliths, the suburbs were defined by small-scale, single family housing, and by grass and land" (Ewen 224). Many sociologists have seen gardens as cultural objects which represent a wide range of meanings about ourselves (Bhatti and Church 2001). Throughout history, gardens have presented opportunities for

developing connections to nature (Wilson 1991), for expressing power relations and creating aesthetic representations of nature (Verdi 360). Domestic front gardens (and gardening within) have been presented as a haven and retreat from public life (Kaplan and Kaplan 1989), but, as others have pointed out, it is carried out in a semi-public space (Constantine 1981; Ravetz and Turkington 1995). According to Veblen, the new suburban classes were also replicating the tendencies of the various types of leisure classes to engage in “conspicuous consumption.” Here the lawn became a manifestation of the lower classes attempt to emulate the cultural tastes of an elite class and in particular to show “the passer-by that the homeowner was well-to-do and aesthetically advanced” (Jenkins 32). Therefore, front lawn gardens appear to “have popped a new social soul into its body” (Marx 1976) where they function to reflect the character of the house occupiers.

In ‘constructing’ a status for the inhabitants of the household, the lawn becomes invested with moral as well as aesthetic values. A well-kept lawn reflects positively on the character of the inhabitants and conversely a poor lawn is seen to degrade not only the household but also the neighborhood. In a 1999 survey conducted by Robert Feagan and Michael Ripmeester discovered that front lawns are symbols of individual and community identities. As one of their respondents stated, ‘people who have nice lawns are nice people, hardworking. They care for their property and for themselves’ (Feagan and Ripmeester 629). But as another resident exclaimed, ‘If even one person lets their lawn go, it makes the neighborhood look disgraceful’ and ‘an untended lawn shows that people are selfish and don’t care about others in the neighborhood’ (Feagan and Ripmeester 629). Here a new physical dimension is achieved where the ‘well-kept’ and ‘tended’ lawn is constantly mowed to such an extent that a horizontal form emerges over the grass lawn. But, the process of aestheticization can go beyond this particular smooth form to include the actual content that makes up the horizontal plane. This potential emerging form is concerned with the tonal consistency of the grass, which produces a monotonal effect, especially with regard to color and texture. But this particular aesthetic form can be challenged by the ‘popping up’ of the demon weed within the lawn structure.

This appearance of the lawn weed can cause moral outrage among neighborhood residents, as Fulford comically purports in the following:

As the death of a canary announces the presence of gas in a mine, so a dandelion’s appearance on a lawn indicates that Sloth has taken up residence in paradise and is about to spread its evil in every direction. And when a whole lawn comes alive with dandelions – it can happen overnight, as many know to our sorrow – then that property instantly becomes an affront to the street and to the middle-class world of which the street is a part. (Fulford 1)

But the potential invasion of the front lawn is not entirely restricted to uninvited plant species but can also include human beings. This is where the front garden and especially the lawn, encapsulates the social contradiction between being simultaneously a private and public social spaces. According to Messia, this aspect of the front lawn “presents an interesting mix of public and private space”: “The lawn in and of itself is a piece of land, privately owned and maintained yet is in another way considered communal property whose beauty is to be enjoyed by those who live around the domicile and adds to the social and physical environment that is the neighborhood” (Messia 74). When there is no fence, wall or hedge between the garden and the

public pavements, which is especially a common aspect of American front gardens, this sweep of lawnscape creates a visual sense of openness and unhindered mobility on the spatial dimension. But at the same time it actually hides the continuing presence of social relations associated with private property. Therefore, in a very real sense the immediate appearance of the spatial relationships between the differing private spaces of the individual lawns, which constructs a park-like effect, conceals the actual social relations - private and individualized labor performing on their own respective frontal lots. But the aesthetic of the park-like lawnscape merely operates at the level of the visual - any physical movement onto the actual surface of this apparent 'collective' lawn may evoke the social and legal strictures associated with private property. Here we have an example of the dialectical relationship between the spatial and social (Goonewardena 66) as the lawn aesthetic takes on a moral dimension of collective commitment, where the lawn visually indicates the commitment that a household has for the neighborhood. But also, the social mediates the spatial as in the existence of private property within the lawnscape. These differing social functions of the lawn, creates not only a distinction between the bodily movements of the feet and eyes (Crandell 125), but also the contradictory roles they play in the suburban lawn. The eyes can wander through the lawnscape but the feet are constrained by the lawn acting as a physical boundary between private property and public pavements. This ambiguous blurring of the realms of private and public space within the 'lawnscape' of a neighborhood community and the status giving function of the front lawn indicates how spatial relations increasingly play a significant social role in modern suburbia.

In unfolding of these diverse social forms in which the front lawn has become immersed in, which as we have uncovered are often contradictory, we arrive at the essential determining structure, where the lawn is simultaneously a societal object engulfed by diverse and contrasting social processes and a naturally growing ecosystem. Fulford captures these essential opposing tendencies of the front lawn:

Lawn-making is the art that conceals art; it is, in fact, the only aspect of gardening that hides both the work done and the nature of the plant life itself. A lawn that achieves perfection ceases to look like plant matter and resembles a fake version of itself. It has no bumps, no weeds, and no variations in colour; from a distance, the perfect close-mown is indistinguishable from Astroturf (Fulford 1).

It is this essential determining contradiction that we need to uncover analytically.

The aesthetic lawn and its 'coming into being'

The emergence of this 'aesthetic lawn' goes back to the picturesque parks and landscape gardens of Britain in the eighteenth and nineteenth centuries. These gardens were designed to look like painted pictures and were subsequently called the gardens of the picturesque. The best known exponent of this informal English style of gardening was Capability Brown. And although the picturesque garden had an ideology of appreciating nature as a 'soothing retreat from modern urbanism' (Helmreich 84), it was a highly artificial creation, relying on horticultural manipulation and technology. As the lawn was dominant spatial entity of the picturesque, its

aesthetic 'look' was initially maintained by animal power. Livestock grazing was the 'technology' of lawn production prior to the invention of the lawnmower in 1830 (Lowen 50).

But behind the pictorial appearance of the garden there was the ideology of the rural idyllic and an inherent anti-urbanism (Slater 2007). According to this view, the desired spatial location for human habitation was to be the 'gardened' landscapes of the rural countryside rather than urban cities and towns. In consequence, living this ideal meant moving towards the countryside and constructing as much as possible the Brownian landscape, including the essential feature of the grass lawn. As a consequence, the pastoral ideal fuelled an urban exodus, beginning with society's elite and their landed estates in the eighteenth century, and then moving down to the upper middle classes and the emergence of suburbia in America and Britain in the nineteenth century (Bormann et al. 1993; Jackson 1985). The spatial expansion of the picturesque aesthetic and subsequent suburbanisation of many Western cities brought about the diffusion and 'mainstreaming' of Brownian design conventions. This trend is reflected in varying attempts to incorporate the essential physical characteristics of the Brownian landscape with decreasing housing lot sizes in an expanding suburbia. Water features tended to be eliminated, while the lawn, and to a lesser extent the trees were retained. The pure Brownian landscape was being diluted as it shrunk in physical size, leaving fewer physical icons to represent the romantic rural idyllic. It is from these historical trends in western culture that the garden aesthetic comes into being in suburbia (Fishman 1987). But the emergence of the frontal aspect to the suburban garden has different historical origins.

The emergence of frontal aspect of the suburban garden

The main reason for the emergence of the 'natural' space in front of the house was the desire to construct a buffer zone between the house and the street (Ravetz and Turkington 180) - a kind of verdant moat (Jackson 58):

There are several reasons for the 'need' of the suburban lawn. One reason is a desire to remove one's family away from the rest of the population. This is exemplified in the fact that the middle class deliberately reshaped the landscape by surrounding single-family homes with yards in their new communities to strengthen the power of the family. (Clarke 238)

This was achieved by spatially reconfiguring the relationship of the domestic house to the public street by constructing a front garden between them:

Lawns, fences and distance from the urban core minimised intrusions, allowing the middle-class housewife to exercise control over her domain, safe from threats posed by outsiders. Instead of being situated directly on the street, suburban homes had a front garden and a large strip of lawn as green insulation from the threatening outside world. (Kleinberg 148)

The attempted insulation of the residents from the street's 'passers-by,' by creating a buffer zone, was only a determinant of the spatial distancing: it did not follow that the ground cover would necessarily be grass. However, when we bring in the mass production techniques of suburban house building, the grass lawn becomes the ideal solution to both the cultural desire of privacy on behalf of the residents and the Fordist producers of suburban house construction and their continual need for uniformity. The greatest exponent and originator of this approach was William Levitt, who built more than 140,000 houses around the world, but gets his name as the founding father of suburbia with his building of Levittown on New York's Long Island begun in 1947. Levitt described his enterprise as industrial and Fordist:

We are not builders, we are manufacturers. The only difference between Levitt and Sons and General Motors is that we channel labor and materials to a stationary outdoor assembly line instead of bringing them together inside a factory on a mobile line. Just like a factory, we turn out a new house every twenty -four minutes at peak production (Bernard 105).

However no one had discovered how to prefabricate the land (Baxandall and Ewen 121). But that does not necessarily imply that the land structure could not be changed to accept more easily the mass building techniques of house construction. Mass building techniques require and promote uniformity in all aspects of its operations including its land base. According to Sennett, this uniformity was achieved by the application of the abstract grid structure to physical space:

The grid can be understood, in these terms, as a weapon to be used against environmental character – beginning with the character of geography. In cities like Chicago the grids were laid over irregular terrain: the rectangular blocks obliterated the natural environment, spreading out relentlessly no matter that hills, rivers, or forest knolls stood in the way. (Sennett 52)

To build on land it is necessary to clear it and level it. Natural features of the landscape, such as small hillocks, ravines and even small waterways, are eliminated in order to create a uniform base to 'run' the assembly type production efficiently. The consequence of this need for land base uniformity was that topsoil and even subsoil at times were removed at the initial stage of site construction. After construction, some of the topsoil made its way back into the landscape, not as it existed in its natural habitat before house production, but into the right-angled plots and on the leveled surfaces surrounding the newly erected houses. In this sense, it is impossible for building contractors to restore the land to its former appearance. The natural curves of former landscape are eternally blighted by the spatial uniformity of the standing house and the necessary leveling of the terrain for the production process. What bits of the natural landscape that make it back into the newly reconstructed land (street)-scape are a few trees and some of the original topsoil. The topsoil is now generally retained and contained in the right-angled plots of suburban homes. The newly and evenly spread top soil becomes the material base for the emergence of the front lawn. Because grass is probably the quickest and cheapest ground cover to plant in comparison to other plant ecosystems, coupled with the desire to have the buffer zone, it is not surprising that a grassed front lawn becomes the physical form for the suburban household to engage in diverse social activities by using the front lawn as a mediating entity between the residents and the wider world beyond.

Socio-ecological metabolism, metabolic rift and exhibition value

In order to unfold these complex relations of nature and society operating in this space we call the front lawn, we need to have a theoretical framework that can transgress that divide without collapsing it. Marx developed such a concept in his socio-ecological metabolism. The concept of metabolism was initially established in chemistry as a way of studying chemical processes. Marx incorporated it to analyze the dialectical relationship between nature and society. Metabolism therefore includes both the natural and social forms of exchange and this relationship is crucially located at the level of the labor process. Marx states this in the following with regard to how man engages with nature through a process of metabolism:

Labour process ...regulates and controls the metabolism between himself and nature. He confronts the materials of nature as a force of nature. He sets in motion the natural forces ...in order to appropriate the materials of nature in a form adapted to his needs. (Marx 1976, 283)

This dialectical relationship between society and nature is best expressed in the concept of the socio-ecological metabolism. However, with the ever expanding demands of capitalist agriculture on the soil, a rift appears in the socio-ecological mechanism as Marx suggests that capitalist agriculture:

...disturbs the metabolic interaction between man and earth, i.e. it prevents the return to the soil of its constituent elements consumed by man in the form of food and clothing; hence it hinders the operation of the eternal natural condition for the lasting fertility of the soil. (Marx 1976, 637)

A rift occurs when the social of the 'socio-ecological metabolism' damages or interrupts the ecological process, which manifests in the declining ability of the natural processes of the ecosystem to sustain itself. The decline in the natural fertility of the soil was/is due to the disruption of the soil nutrient cycle. As crops and animal products were being produced in agricultural fields, nutrients such as nitrogen, phosphorous and potassium were being removed from these fields and shipped to locations far removed from their points of origin, especially to urban centers. As a consequence, the constituent elements of the soil that made up the products/commodities were also removed and not replaced naturally. The transportation of these nutrients in the form of agricultural commodities had two important consequences. Firstly, they created a rift in the natural soil cycle, which had to be replaced by human intervention or the conditions of reproduction in the soil structure were permanently undermined. Secondly, the excretion of these nutrients in the urban environment tended to cause pollution in the local waterways, e.g. the river Thames in London in the nineteenth century.

However, this conceptualization of the metabolic rift by Marx was developed to deal with ecological crisis condition at a macro level, between spatial areas such as town and country, between periphery and core regions, and between colonizing and colonized countries. But, I want to use this theoretical insight of the metabolic rift at a more micro level, - the front garden, and more specifically the lawn area of the front garden. These concepts give us the

methodology to deal with the complex interrelationships between the natural processes of an ecosystem and the social processes that have apparently metabolized in the front lawn garden.

However, the front lawn as a natural entity is not directly embedded in a capitalist labor process (as a commodity with its own exchange value), but it is certainly a social entity, which has a tendency to be an aesthetic object. As an aesthetic object, according to Walter Benjamin, it has an exhibition value. Exhibition value is about creating an object so that it can be put “on view” and thereby available to be visually appropriated by others than the producers. Accordingly, it is not only on public view, it is also an aesthetic object. In ‘designing the garden’, the gardener(s) are composing an aesthetic entity which is determined by cultural conventions of composition and production. Benjamin’s concept of exhibition value captures simultaneously the public aspect of the front lawn as well as its determination as an object of artistic production. J.S. Stein has argued that the ‘perfect lawn’ is actually a perfect antithesis of an ecological system. A perfect lawn is ‘still’ and ‘silent’ whereas a prairie or meadow is humming with life (138). The ‘stillness’ of the lawn as an aesthetic object is counterpoised by it being a natural living ecosystem (modified). It is this contradiction, which is the essential determining feature of the front lawn. And in order to explore how the social forms create these conditions for the emergence of this contradiction it is necessary to look at a grass ecosystem, with its own the natural laws and tendencies (without human interference).

The natural meadow: grass without a labor process, content without form

The natural process of grass growing is to do so in a naturally occurring ecosystem. An ecosystem is a group of living and nonliving parts within an environment that interact with each other. Since we have been discussing grass, I want to concentrate here on one particular environment, - the natural meadow. Here, every element of nature – animals, insects, plants and soil – all work together to create a natural cycle of events in the meadow. In essence, an ecosystem is a cycle or process, where every part or element, perform different roles in the reproduction of the cycle. Plants feed the animals, the animals manure the land, the manure feed the soil and the soil feed the plants. And since an ecosystem is in a constantly rotating orbit, every point is simultaneously a starting – point and a point of return (Marald, 2002) - the soil structure.

The basic structure of the soil consists of rock particles broken down by frost and thaw action, wind and water flow to produce different textures that produce soil types. Part of the soil make-up is organic matter, - about 5% in mineral agricultural soils, which consists of vegetable and animals remains in various stages of decay – along with water and air. The organic matter provides the home for soil animals, such as insects and earthworms who are crucial in the process of soil functioning. Earthworms in particular mix and restructure soils. Their deep borrows drain the soil and bring air to the recycling bacteria; it pulls down leaves from the surface, macerating and mixing them with earth in its gizzard and the casting them forth as the fine, crumbly particles that best suits the penetration of roots. In an old pasture, earthworms in one hectare can pass about 90,000 kilos of soil through their guts in a year; in an orchard, they can, over the winter, remove 90 per cent of the fallen leaves (Viney, 2002). By comminuting litter, soil animals play a catalytic role to the dominant decomposers, - the soil microbes. Agricultural soils commonly contain about 300 million microbe individuals per gram. Some of these microbes use inorganic compounds as energy sources. Several take nitrogen from the air

and bind it into molecules so that it becomes available to the plants. However, the vast majority of soil microbes get their energy by breaking down organic matter to release it. In doing this, they also release inorganic nutrients from the organic matter to the plant roots, and so control plant growth. The microbes work to provide just the right conditions for healthy plant growth. The plants in turn feed the animals and the insects, who when they die manure the land and the cycle begins again.

However, unlike the lawn, the natural ecosystem of the meadow is not a monoculture of grass species. It is a fine balance of differing species, which co-exist without any one species gaining dominance. Because of plant diversity within the ecosystem, nature on its own cannot produce a very abundant harvest of any one particular species, either in terms of quantity or of quality. In the natural ecosystem, many seeds produced would never germinate, due to adverse conditions caused by competition from other plant species or animal predators. Competition and its inherent dictum of 'the survival of the fittest' within nature eliminate the possibility of a plant monoculture. Consequently, plant monoculture is not a naturally occurring event in nature; it is a product of human intervention into nature. The lawn is a monoculture of grass growth, determined by human labor.

Constructing the 'rift canopy'

Lawn grass production is a result of human interference in the natural cycle of an ecosystem. Labor intervention is determined by the need to allow grass growth to dominate other plant species. Consequently, the natural forces of the ecosystem are now determined by the social forces of the intervening labor process. For example, in order to allow the desired grass monoculture to emerge at its initial stage, it is necessary to eliminate the other plant species as early as possible. This is usually achieved by digging up the existing plants and cleaning the topsoil of non-grass species. And by sowing the grass seeds exclusively on the newly cleared ground, the conditions of grass dominance is created within the reproduction cycle of the newly established ecosystem. Subsequently, the various stages of growth of this particular plant species become crucial opportunities for the laborer to intervene in the cycle to provide continual protection for the 'chosen' specie against all the other potential competing species. For example, in the next stage, - of germination, the seed can be protected from seed eating predators by a number of processes, such as, machine sowing, use of netting and top-dressing. These processes allow the grass seed to geminate and take root. Watering may also be needed in establishing turf grass from seed. This is a delicate balancing act as the soil must be kept moist but not excessively wet until the seeds germinate (McCarty et al. 26). In certain locations, the new seedlings will need to be fertilized after seeding.

In the initial construction of the lawn, the laborer sets in motion the natural forces of grass growth to respond to the desire to obtain grass dominance over potential competing other plant species. In doing so the ecosystem has been modified. Modification has been achieved through human intervention. This intervention has merely operated along the horizontal plane in eliminating competition from other plants. It has not yet impacted on the vertical movement of the grass growth. Therefore, the process of modification is not initially concerned with the natural forces operating within the plant structure itself; it is merely establishing a species monoculture. Each type of turf grass grows at a different rate with differing levels of vigor, which does not bother the gardener as long as grass dominance is created. This stage of

intervention ends with the first cutting of the grass, as the intervention process moves into the actual physical structure of the grass plant itself.

Mowing is the critical intervention into the grass monoculture because it creates the conditions for the emergence of the metabolic rift within this modified ecosystem. As the mowing of the grass occurs, its clippings are accumulated to be disposed of. It is estimated that a half-acre lawn would yield nearly three tons of grass clippings a year (Jenkins 173). The most immediate effect of the disposal of these grass clippings is the removal of these nutrients in the clippings from the cycle of the ecosystem, as predicted by Marx in his conceptualization of the metabolic rift. However, not only are nutrients removed in the clippings but also the physical structures of the grass above the cut line. Cutting the grass removes not only the upper parts of the plant but also those activities, which occur in those upper parts of a natural ecosystem, such as flowering and wildlife movements. This is the second stage in the modification of the grass ecosystem, where grass maintenance strategies are developed to create an aesthetically pleasing lawn. Accordingly, the cut line of the grass becomes the most visible sign of the presence of the metabolic rift in this newly modified ecosystem. The grass height line is therefore best conceptualized as the rift canopy, where its presence acts as an artificially created barrier which sheers through the natural cycle of this ecosystem. All above this rift canopy, the natural features of the ecosystem are removed by the action of mowing, all below remain but remain stunted in their development by the lack of flow from above the rift canopy. Without the tall grass, animal and bird life is restricted and thereby removing their functions from the ecosystem. Therefore, the rift line/canopy has a chain reaction on the entire ecosystem and its remaining elements. In its essence, the rift canopy is a labor activity, which attempts to 'reify' the natural processes of plant growth.

The most dramatic feature of this process of plant life reification is the attempt to transgress the vertical tendencies of grass plant growth by sheering into the plant stems to create the appearance of a flat horizontal surface, through the activity of mowing. And in doing so human labor is constructing a two dimensional representation from naturally occurring three dimensional characteristics of plant growth. The reification of rift canopy is further maintained by the attempt to preserve the physical integrity of the canopy surface. Anything that penetrates the canopy from above (fallen leaves and other plant debris) or below (worm casts or weeds) are removed. Accordingly, the metabolic rift and its most visible indication of its presence, - the canopy require a huge amount of labor input to continually maintain the grass lawn monoculture. However, this labor input can be lowered somewhat by the use of technology, especially chemical technology.

Introducing the 'chemical' moments as an attempt to curb the metabolic rift

According to environmental scientists and landscape designers an 'industrial' lawn rests on four basic principles of design and management: composed of grass species only; free from weeds and pests; continuously green; and kept at a low, even height (Borman et al. 62) However, this definition of the 'industrial' lawn is essentially confined to its aesthetic appearance rather than on how it came about through a production process. Defined as a production process, it would be determined by a combination of a 'natural' ecosystem, a labor process and a technological

process. The latter two processes should be seen as an attempt by the gardener to overcome the problems, which have emerged with the presence of the metabolic rift in the growth cycle of the grass ecosystem. But 'righting' the rift has been achieved within the confines of the aestheticization framework, as the strategies adopted need to, at least, maintain the aesthetic appearance of the lawnscape if not to enhance it. But getting the 'balance right' has proven to be difficult with a number of unforeseeable consequences, not only for the immediate lawn ecosystem, but also for surrounding and wider ecosystems. The gardener has been 'helped' by capital, in providing labor saving devices in the forms of lawn machinery and lawn chemicals.

The chemicals provided by industrial capital intervene in the lawn ecosystem in varying ways and at differing stages of the growth cycle. Even before the grass is sown, knock-down chemicals, in the form of herbicides, can eliminate all vegetation in the soil. After clearing the soil, pre-emergence treatment of chemicals can prevent weed seeds germinating and finally post emergence treatment will kill all weed plants (Jenkins 162). In eliminating the competition from other non-grass species, the application of these chemicals, encourage not only the initial establishment of grass growth but also lower the amount of labor input needed to construct the lawn. However, chemical applications continue beyond the construction stage to become increasingly part of the maintenance strategies of the lawn itself. This occurs to such an extent that the lawn becomes dependent upon the application of chemicals to reproduce itself as a single species of grass ecosystem. Along with herbicides, pesticides and fertilizers can be added to the 'natural' process of grass production, with each application performing a particular function in the overall reproduction of this enhanced ecosystem. But the crucial consequence, is that these chemicals become a near determining factor in the life cycle of the lawn, - the aesthetic lawn, as they become increasingly part of the production process, their use may be initially seen as a labor saving device, but in the long run they can actually have the opposite effect. 'Saving labor' and keeping the grass short can create further dependency on chemical intervention by increasing the amount of interventions required to keep up the appearance of the 'perfect' lawn as Weigert states in the following:

The shorter the lawn, the faster it dries and the quicker it changes color, thus the more it needs to be watered; the shortness allows more water to run off; if clippings are removed, the more it must be fertilized to keep it healthy enough to resist the range of threats from pests or weeds. Because they must be watered and fertilized frequently, short lawns grow more rapidly and thus require more mowing. They do not provide cover for a variety of insect life that may keep each other in check. Shortness makes any 'illness' immediately visible. Threatening invasions require rapid intervention, typically some kind of 'cide', i.e., the suffix from the Latin word 'to kill' is used to refer to toxics, such as pesticides. Finally, short grasses never go to flower or seed. Needed seeds must be purchased and spread. (Weigert 86).

However, the chemical impact on the overall health of the immediate grass ecosystem may have a number of unforeseen consequences. For example, quick release fertilizers (water soluble) become available to plants almost as soon as they are applied to the lawn. However, the overall effects are short-lived and sometimes even harmful to the lawn's long-term health. Because a quick release fertilizer will produce rapid leaf and shoot growth, it can in certain cases cause excessive growth in leaf and shoots and thereby reduce root growth and can cause leaf

burn. This makes the grass plants more susceptible to draught and disease. However, even beyond the immediate ecosystem, more damage can occur through the medium of run-off. Soluble fertilizers can easily be washed away by rain. This run-off can enter other ecosystems beyond the physical confines of the lawn. Therefore, through run-off the lawn chemicals create unknown biochemical links to other organisms in the soil, to birds, to animals and to ourselves. These links may be damaging the health of these other organisms. Having created the problem, the chemical industry has attempted to cure it by producing slow release fertilizers. Slow release fertilizers are an alternative to the soluble fertilizers because nutrients are released at a slower rate throughout the season. This allows the plants to take up most of the nutrients without wasting them through leaching. However, there are some drawbacks associated with their use. Because the rate of release is dependent upon soil moisture and temperature, the availability of nutrients to the plants may not be constant or predictable. In short, nutrients released slowly may not be available when the plants need them. Again, capital comes to the rescue, by providing a new product, - the blended fertilizer - one that mixes slow-release with soluble fertilizer. In this range of new products, each new product was an attempt to overcome the difficulties created by its predecessors, as they intervened in the natural cycle of the lawn ecosystem. In this way, capital is responding to problems it itself had created in its intervention strategies in the 'natural' lawn ecosystem.

However, if capital was unable to overcome the difficulties associated with the rift, it did not stop it trying to solve other problems in the life cycle of the lawn. For example, the problem of thatch is another attempt of chemical penetration into this grass monoculture. Thatch is a layer of dead roots and grass blades that build up just under the lawn surface. It can block water, grass seed and chemicals from reaching the soil. Initially, the problem arose in the early Eighties; lawn owners in the U.S.A. were told that thatch increased the susceptibility of the lawn grass to insect and disease problems. Capital immediately set about 'solving' this problem for the gardener. However, it was soon realized by the scientific community that the problem of thatch was in fact a problem caused by capital itself rather than the natural processes of the lawn. The increase in thatch in lawns was directly linked to the increase in chemical applications to the lawn. Micro-organisms and earthworms that naturally break down the thatch layer in the lawn were being killed by the chemical fertilizers and pesticides. The solution was simple but not profitable. Stopping the use of chemicals allowed the lawn to recover, but it took a minimum of three years to restore the biological health of the soil (Jenkins 168). However, the use of chemicals as a form of intervention in the grass monoculture is ideally suited to its task. Chemical intervention has a near magical quality about it as they pass through the rift canopy without damaging its aesthetic appearance. It is at this material intersection that the technological process of chemical application directly interacts with the aestheticization process without seemingly having any detrimental effect on each other. And it is also at this same metabolizing intersection that the rift canopy can take on another social form: the aesthetic veneer.

The labor processes under the lawn aesthetic: maintaining the aesthetic veneer

The material structure of the rift canopy is determined by the human activity of mowing the grass. On this rift canopy emerges the aesthetic veneer, which establishes the lawn as an

aesthetic object. The veneer impregnates the rift canopy with aesthetic qualities made up of a number of characteristics. With regard to the lawn color, green is sought in preference to brown or yellow. Its desired texture is smooth rather than rough and its density should be thick rather than thin. Its tonality should be monotone rather than mottled and its tactility should be soft rather than harsh. And finally, its height ought to be low rather than high. These qualities and their relationships to each other determine the structure of the aesthetic veneer. And as an aesthetic veneer, it can perform many differing functions in the composition of the garden as a whole, as a foil for the more dramatic planted beds, a green foreground to the dwelling, and creating the illusion of space.

A 'poor' lawn occurs when the natural ecosystem breaks out of its aesthetic straitjacket, destroys the 'order' of the canopy with the 'chaotic' movement of nature. The immediate effect is that the rift canopy breaks up as the grass naturally grows into clumps and dykes of differing heights. As a consequence the aesthetic qualities of smooth texture, of thick density and of low height disappear from the now shattered aesthetic veneer. If this situation is allowed to continue, the natural ecosystem re-emerges from its 'iron cage' of human intervention. It is a certainty that the grass monoculture will be invaded by native weeds, which will destroy the remaining aesthetic qualities of the aesthetic veneer, of green color and its monotone characteristics. Therefore, the rift canopy and the aesthetic veneer resting on it, need to be constantly maintained through human intervention. The degree and intensity of human intervention may vary from household to household depending on the subjective desires of the direct laborer(s) and their ability to fulfill their gardening dreams for their lawnscapes. For example, a croquet lawn in England needs to be mowed every second day for about forty-five minutes. It may also need to be scarified, - removing the dead grass and moss during the growing season. Watering may also need to be done during a dry period. Weed removal is a constant task and in some seasons aeration is required by solid and hollow tyning. On lawns that are cut very low, worm casts have to be removed in order to discourage weed growth and prevent the blades of the lawn mower being blunted.

However, it is possible to maintain the rift canopy and yet abandon the aesthetic veneer, by just cutting the grass/weeds and abandoning the grass monoculture. If any traces of the aesthetic veneer remain, they can only be appreciated from a distance, where the aesthetic qualities of color and smooth texture are perceived to be maintained but the other qualities are lost. The conclusion to be reached here is that the rift canopy and the aesthetic veneer are the result of two distinct labor processes. The rift canopy can be maintained by mowing alone, while the veneer is composed of many types of labor interventions beyond the mere cutting of the grass. For example, the aesthetic qualities of green color, monotone appearance, thick density and smooth texture require a variety of labor activities such as weeding, scarification, and aeration. Worm killing, top dressing, over-seeding and water irrigation may also be required to maintain the aesthetic veneer. These labor and technological interventions into the natural cycle of grass development are determined by the demands of maintaining the lawn aesthetic. Some of interventions will be needed on a constant basis during the growing season, while others will only be required when the need occurs. In drought weather conditions for example, the amount of watering will have to be increased in order to maintain the grass growth and preserve the aesthetic veneer.

However, unlike the mere preservation of the rift canopy, the presence of the aesthetic veneer invites a close inspection of its compositional qualities and thereby creating the conditions for a

gaze of long duration. This is so because the aesthetic veneer has a greater propensity to exude the properties of exhibition value than the rift canopy. Therefore, the aesthetic veneer of the front lawn, like any artistic object, encourages contemplation of itself with a connoisseur eye, while the lawn with just a rift canopy attempt to get away with a glance (Slater 2009, 100). In short, a lawn canopy needs only to be accepted as adequate, while the lawn veneer needs to be extolled as it seeks status for itself and its author: the gardener.

The estranged labor of the lawn maintainer: 'betwixt and between' the forces of nature and society

The lawn, as we have conceptualized it, is in a similar situation to Marx's 'freshwater fish':

The 'essence' of the freshwater fish is the water of the river. But the latter ceases to be the 'essence' of the fish and is no longer a suitable medium of existence as soon as the river is made to serve industry, as soon as it is polluted by dyes and other waste products and navigated by steamboats, as soon as its water is diverted into canals where simple drainage can deprive the fish of its medium of existence. (1964, 58-59)

Both the natural forces within the 'medium of existence' of the fish and the lawn have been modified by society. The process of modification in the case of the freshwater fish has been determined by industry and with regard to the lawn by the aesthetic forces that are imposed upon the grass lawn ecosystem. As we have discovered the process of modification that has occurred in the production of the front lawn has two stages in its development. The first stage is the construction of the lawn as the laborer sets in motion the forces of nature under his/her direction. Here, the social forces of intervention into the natural cycle of the grass ecosystem are dominant as the natural forces are curved to the designs of creating a grass monoculture, constructing the physical 'form', in which the 'contents' of the grass ecosystem has to operate within. In the second stage of modification, the maintenance strategies stage, the natural forces come to the fore as they determine when the laborer can intervene to retain the lawn canopy or/and lawn aesthetic veneer. Although, the natural forces are modified in the 'medium of existence' of a monoculture, they crucially maintain the propensity to develop and grow, especially vertically, on a continuous basis. Subsequently, this natural tendency of the grass plant to break up the smooth lawn canopy, determines the timing of the social interventions. In this situation, the laborer responds to the growing demands of the lawn ecosystem. The laborer must curb these natural forces in order to maintain the lawn canopy. But in doing so, these modified natural forces and their relationship to the social forces of intervention, become the basis for the 'externalization' of the laborer's activity in the production of the lawn aesthetic. Marx outlines the nature of externalization in the following:

The externalization of the worker in his product means not only that his labour becomes an object, an *external* existence, but that it exists *outside him*, independently of him and alien to him, and begins to confront him as an autonomous power; that the life he has bestowed on the object confronts him as hostile and alien. (Marx 1975, 324)

In the context of the timing of social interventions, the externalization of the lawn producer is determined by the natural growing rate of the grass plant. Although, he/she has 'bestowed' life to the lawn in creating it, the gardener now has to live with and work with that creation, which with regard to the timing of its growth development does seem to have a life of its own. The externalization of this labor is determined by the constant need of the laborer to respond to the growth patterns of the grass plant and maintain its aesthetic veneer. Therefore, the estranged labor of the gardener is initially determined by the natural tendency of the forces of nature to move away from not only being a monoculture but also away from being 'strait-jacketed' into being a reified object of canopy with an aesthetic veneer. However, there are wider social forces affecting the grass maintainer beyond merely responding to natural time of grass growth, which further heighten this estrangement, and they are determined by the changing nature of society itself.

These wider social forces that impact on the production of the aesthetic lawn revolve around the issue of time. Specifically this is concerned with finding the time to 'do the lawn'. It is estimated that to maintain a modest home lawn involves 150 hours of labor in a year (Jenkins 19). And this time element has to be found within the work-leisure patterns of the gardeners. This relationship is itself determined by the householders position in the labor market. With regard to the USA, work patterns have dramatically changed over the last two decades or so. Juliet Schor in her work, *The Overworked American* (1991) estimated that the typical American worked approximately 160 hours more per year than she or he did twenty years ago. This is equivalent of working 13 months every year. As the amount of time increased at work, less time can be allocated to leisure pursuits such as gardening. But mowing the front lawn has still to be done. With increasing time demands being imposed on the occupiers of the household, the front lawn may become a troublesome burden rather than as an 'escape' from the constraints of everyday life. In this new social medium of existence, the front lawn and the necessary work upon it becomes an object which has created a relationship of estrangement for the householders as they become increasingly squeezed 'betwixt and between' the forces of nature and the forces of society. However, a number of strategies can be adopted to release one from the 'iron cage' of 'doing the lawn' and thereby act as countertendencies to this process of estrangement. One can hire a gardener to do the gardening for you. Also, one could construct a symbolic lawn garden by paving over the garden area of the front yard. Finally, one could retire from work, where the retirement age sees an increase in people's enthusiasm for gardening. But the choice of these strategies is very much determined by the lawn maintainers position in their own 'natural' life cycle or by their ability to buy in labor and thereby avoid dealing with the combined forces of nature and society on the front lawns of suburbia.

Conclusions

The apparent paradox of the mowed lawn is that its appearance in the immediacy of viewing creates the impression of it as a reified entity, which belies (and even denies) its ecological essence of being a living process, a modified ecosystem determined by a metabolized unity of natural and social laws of motion. And further more as an aesthetic object, with its veneer, it tends to be a space of representation, representing the ideal of perfect harmony between nature and society where the lawn is perceived as the pinnacle of the evolutionary relationship

between nature and society, a social order imposed upon nature's chaos! The lawn as a medium for representing this utopian union further distracts our attention away from the reality that its production is increasingly determined by chemical inputs and the risk that this trend may be damaging the health of the 'natural' entities on both sides of the socio-ecological metabolic divide. Therefore, the front lawn should be seen as a typical cultural product of late modernity, an object, which extols the highest virtues of nature and art, but is increasingly dependent on the use of more and more artificial means of production, especially chemicals. In this light, the global front lawns of suburbia, to paraphrase Benjamin, can best be summarized as an estranged work of art and nature in this age of chemical reproduction!

Having completed our conceptual odyssey into the abstract moments of the metabolized processes of the front lawn, and returning to the particular grass growing systems of Ireland we now possess the conceptual tools to challenge the apparent dominance of 'naturalism' in interpreting the grass growing abilities of Ireland. In Ireland grass appears 'natural' because it is so extensively grown that it forms a physical mantle that covers most of the landmass. This mantle effect is according to the 'naturalist' interpretation determined by the dampness of the climate (Engels 185). But dampness has to be considered as part of the natural content of the various types of grass systems of Ireland, in that it determines the propensity at which grass grows but not why and how it grows. This is determined by social form under which the grass content is allowed to grow. Our investigation of the front lawn uncovered how the specific social form of the aesthetic engulfs the grass ecosystem of the lawn. However, the other grasslands of the 'Emerald Isle' and their specific social forms await to be uncovered and subsequently analyzed.

The dialectical analysis of this paper has led us to the conclusion that because of the global propensity of the differing suburban inhabitants of the earth to engage with nature in their respective front lawns, the social form of this engagement will be by necessity itself globalised. All that is different with regard to the 'Emerald Isle' is that the grass content of the front lawn grows quicker and longer but the social form of its lawn aesthetic is the same as the suburban enclaves within the Nevada desert.

Endnotes

¹. Marx in the following captures the necessary sense of movement involved in a totality which is an organic system/process:

This organic system itself, as a totality, has its presuppositions, and its development to its totality consists precisely in subordinating all elements to itself, or creating out of it the organs which it still lacks. This is historically how it becomes a totality.

2. With regard to the American emerging suburban middleclass, it was an outgrowth of a desire to achieve the European aristocratic ideal of a tamed and beautiful open space (Teyssot 20) as had been obtained by the robber barons of the Gold coast. (Baxandall and Ewen). The grass lawn was introduced into Ireland by the Anglo-Irish landed elite as they create 'Little Englands' in their parklands and thus demonstrating that colonialism can operate not only on the cultural level but also within the ecological (Slater, 2007).

Works Cited

- Baxandall, R. and Ewen, E. *Picture Windows. How the suburbs happened*. Boulder Col.: Basic Book 2001.
- Beck, U. *Ecological Politics in an Age of Risk*, London, Sage 1995.
- Benjamin, W. 'The Work of Art in the Age of Mechanical Reproduction,' *Illuminations*, London, Fontana Press 1992.
- Bernard, T. 'New Homes for Sixty Dollars a Month,' *American Magazine*, (April) 1948
- Bhatti, M. and A. Church 'Cultivating natures and gardens in Late Modernity,' *Sociology*, 35,2. 2001.
- Chevalier, S. 'From woollen carpet to grass carpet: bridging house and garden in an English suburb,' in *Material cultures. Why some things matter*, edited by D. Miller, London, University of London Press, 1998.
- Bormann, H. et al. *Redesigning the American Lawn: A Search for Environmental Harmony*, New Haven, CT; Yale University Press, 1993.
- Clark, C.E. *The American Family Home, 1800-1960*. Chapel Hill, North Carolina, University of North Carolina, 1986.
- Constantine, S. 'Amateur Gardening and Popular Recreation in the 19th and 20th Centuries,' *Journal of Social History*. Vol.14, 1981.
- Crandell, G. *Nature Pictorialized: 'The View' in Landscape History*. London, John Hopkins University Press, 1993.
- Engels, F. 'A History of Ireland,' in Marx, K, and Engels, *Ireland and the Irish Question*, London, Lawrence and Wishart 1971.
- Ewen, S. *All Consuming Images: The Politics of Style in Contemporary Culture*, Boulder Col., Basic Books, 1988.
- Feagan, R. and Ripmeester, M. 'Contesting Natural(ized) Lawns: A geography of private green space in the Niagara Region,' *Urban Geography*, vol.20, no.7 1999.
- Feehan, J. et al, *The Grasses of Ireland*, Teagasc 2012
- Fishman, R. *Bourgeois Utopias: The Rise and Fall of Suburbia*, New York; Basic Books 1987.
- Foster, J.B. 'Marx's Theory of Metabolic Rift: Classical Foundations for Environmental Sociology', *American Journal of Sociology*, 105,2:1999, 366-405.
- Fulford, R. 'The Lawn: North America's Magnificent Obsession', *Azure*, July-August 1998.
- Goonewardena, K. 'The Urban Sensorium: Space, Ideology and the Aestheticization of Politics', *Antipode* 2005.
- Groening, G. and Schneider, U. 'Design versus Leisure: Social implications of functionalist design approaches in urban private gardens of the twentieth century,' in *Leisure/Tourism Geographies-Practices and Geographical Knowledge*, edited by David Crouch, London, Routledge 1999.
- Helmreich, A. 'Re-presenting Nature: Ideology, Art and Science in William Robinson's 'Wild Garden'', *Nature and Ideology: Natural Garden Design in the Twentieth Century*, edited by J. Wolschke-Bulmahn, Washington, D.C. Dumbarton Oaks, 1997.

- Hoyles, M. *The Story of Gardening*, London, Journeyman Press. 1991.
- Jackson, K.T. *Crabgrass Frontier: The Suburbanization of the United States*. New York, Oxford University Press 1985.
- Jenkins, V. *The Lawn: A History of an American Obsession*, Washington, Smithsonian Institution Press 1994.
- Kaplan R. and S. Kaplan, *The Experience of nature: a psychological perspective*, New York, Cambridge University Press, 1989.
- Lowen, S. 'The Tyranny of the Lawn,' *American Heritage*, (September), 1991.
- Mc Carty, L. et al. *Florida Lawn Handbook*, Gainesville; University of Florida, IFAS 1995.
- Marald, E. 'Everything Circulates: Agricultural Chemistry and Recycling Theories in the Second Half of the Nineteenth Century', *Environment and History*, vol.8 2002.
- Marx, K. and Engels, F. *Marx and Engels Correspondence*, London, Lawrence and Wishart 1868.
- Marx, K. and Engels, F. *The German Ideology*, London, Lawrence and Wishart 1964.
- Marx, K. *Grundrisse*, Middlesex, Penguin Press. 1973
- Marx, K. 'Economic and Philosophical Manuscripts (1844),' *Early Writings*, Middlesex, Penguin Books Ltd 1975.
- Marx, K. *Capital, vol.1*, Middlesex, Penguin Books Ltd 1976.
- Marx, K, and Engels, *Ireland and the Irish Question*, London, Lawrence and Wishart 1971.
- Meaney, Mark. *Capital as Organic unity: The Role of Hegel's Science of Logic in Marx's Grundrisse*, Dordrecht, Kluwer Academic Press, 2002.
- Messia, R. 'Lawns as Artifacts: The Evolution of Social and Environmental Implications of Suburban Residential Land Use', *Suburban Sprawl: Culture, Theory and Politics*, edited by M. Lindstrom and Hugh Bartling: Lanham, Maryland, Rowan & Littlefield 2003.
- Mumford, Lewis. *The City in History*, New York: Harcourt, Brace and World 1961.
- Murphy, R. 'Sociology as if nature did not matter: an ecological critique', *British Journal Sociology*, vol.46, no.2 1995.
- Ravetz, A and Tuckington, R. *The place of home: English domestic environments 1914-2000*, London, E. and F.N. SPON 1995.
- Robbins, P. and Sharp, J. 'Producing and Consuming Chemicals: The Moral Economy of the American Lawn,' *Economic Geography*, vol.79, no.4 2003.
- Schor, J. *The Overworked American: The Unexpected Decline of Leisure*, Basic Books 1993.
- Sennett, R, *The Conscience of the Eye*, London, Faber and Faber 1991.
- Sime, J. 'What makes a house a home: the garden?' in M.Bulos and N. Teymur (eds), *Housing: Design, Research, Education*, Aldershot, Avebury 1993.
- Slater, E. 'Reconstructing 'Nature' as a Picturesque Theme Park: The Colonial Case of Ireland', *Early Popular Visual Culture*. Vol.5 (3) 2007.
- Slater, E and Peillon, 'The Suburban Front Garden: A Socio-Spatial Analysis', *Nature +Culture*, vol.4, no.1 2009.
- Teyssot, G. *The American Lawn* Princeton, N.J. Princeton Architectural Press 1999.
- Stein, S. *Noah's Garden*, Boston, Houghton Mifflin Co 1993.
- Veblen, T. *The Theory of the Leisure Class*. New York: Random House 1934.
- Viney, D, *The Irish Times* (newspaper), April 20th 2002.
- Weiger, A. *Self, Interaction, and Natural Environment: Refocusing Our Eyesight* Albany, State University of New York Press 1997.
- Weigert, A. 'Lawns of Weeds: Status in Opposition to Life,' *The American Sociologist* (Spring) 1994

Wilson, A, *The Culture of Nature: North American Landscape from Disney to Exxon Valdez*, Oxford, Blackwell Press, 1993.

Young, A. *A Tour of Ireland -1776-1779*, London, Cassell and Company 1897.