

Enriched Heart through Greenery: A Saga of Rejuvenation of the *Satoyama* Landscape in 21st Century Japan

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Abstract

This article aims to provide an account of the changing demands of the *satoyama* landscape in twenty-first century Japan. In analyzing the rejuvenation of *satoyama* this article looks at the historical background of both the destruction and reconstruction of Japanese traditional rural landscape. This study is based on the existing literature, analysis of the statistical data retrieved from the Statistics Bureau, Japan, and a review of the conceptual framework of the Millennium Ecosystem Assessment (MA). This article illustrates that although radical changes in the middle of the twentieth century caused the destruction of the *satoyama* landscape, a sustainable reconsideration of the role of political ecology in conserving natural and traditional resources is crucial. This article claims that the rejuvenation of traditional landscapes, not only in the rural areas, but also close to densely populated urban centers or megalopolises, can stabilize the paralyzed ecosystems of the country and, at the same time, be a gateway for potential ecotourism or green tourism to eventually strengthen the national economy. Given the country's increasing urbanization rate, juxtaposed with the aging society, this study proposes that the rejuvenation of *satoyama* landscape can reform the notion of *satogaeri*, literally going back to village (root).

Keywords: aging society, political ecology, *satoyama*, *satoyama* landscape, sustainable landscape management, urbanization.

Introduction

The concepts 'conservation' and 'biodiversity' often find ready association with landscapes that are considered 'pristine' or landscapes that have been minimally affected by human activities. However, traditional agricultural landscapes that people have cultivated for hundreds or thousands of years can also be enormously rich in species diversity (Kobori and Primack 2003). For example, in Japan, for well over a thousand

years, many human activities have tried to manage nature. Despite this, Japan has retained an astonishingly large number of species and ecosystems of great diversity and unique character.

In traditional agricultural landscapes, the relationship between humans and nature was based on the concept of mutual harmony. The nature of the *satoyama* landscape was well managed, and both humans and nature were integrated with each other in a *satoyama* landscape system, with resulting mutual benefit. The *satoyama* landscape offered benefits for both rural and urban dwellers. As observed in Brown and Yokohari (2003) “massive flooding was the norm when heavy monsoon rains would fall on the steep mountains of Japan”, and “enormous volumes of water would have to traverse short, steep rivers that inevitably ran through urban areas located on the plains below” (Brown and Yokohari 2003: 2). Thus the *satoyama* landscape provided a corridor for channeling and effectively managing water flow, thereby providing flood relief to the urban dwellers settled downstream.

In recent years, however, rapid urbanization juxtaposed with prolific development in farming and large-scale construction, such as dam building and wetland filling, has altered the notion of vernacular *satoyama*, the traditional agricultural and forest landscape of Japan, and the result has been the destruction of secondary nature and the loss of *satoyama* landscape where many species of plants and animals previously thrived. The mid-twentieth century Japan embraced high economic growth that saw activities concentrated in industrial regions and away from the rural belts. This left some areas of *satoyama* landscape partially or wholly abandoned as a result of neglect by owners and neighbors; these landscapes subsequently often became semi-wild areas (Toda 2006). An aging society and depopulation of rural areas compounded the problems of the traditional Japanese landscape. However, given the immense role of traditional landscapes in conserving biodiversity and natural resources, in recent years, sustainable management of *satoyama* landscape has been (re)considered with much fanfare.

This article aims to provide an account of the changing demands of the *satoyama* landscape in twentieth century Japan. This article surveys first the definitions of landscape followed by the conceptual arguments between *satoyama* and *satoyama* landscape. Third, it reviews the Millennium Ecosystem Assessment (MA). Fourth, this article evaluates the four underlying drivers (urbanization, migration, aging society and depopulation) which have caused the destruction of the *satoyama* landscape. The article then looks at the present state, as well as future scenarios, of *satoyama* landscape, and their wider implications for our understanding of rejuvenation of the *satoyama* landscape in twenty-first century Japan.

This study applies a qualitative research method. The conceptual framework of

this study is developed through an assessment of existing literature, analysis of the statistical data retrieved from the Statistics Bureau of Japan and a review of the conceptual framework of the Millennium Ecosystem Assessment (MA).

Defining Landscape

Landscape, theoretically, is an altered physical environment with a socio-political meaning, and this distinguishes the notion of landscape from the notion of environment or space. Furthermore, a landscape is not a static entity but in constant flux. According to Cosgrove (1998):

Landscape represents a way in which certain classes of people have signified themselves and their world through their imagined relationship with nature, and through which they have underlined and communicated their own social role and that of others with respect to external nature (Cosgrove 1998: 15).

Unlike Cosgrove, Jackson (1984) argues that a landscape is:

not a natural feature of the environment but a *synthetic* space, a man-made system of spaces superimposed on the face of the land, functioning and evolving not according to natural laws but to serve a community ... A landscape is thus a space deliberately created to speed up or slow down the process of nature” (Jackson 1984: 8).

For Jackson, therefore, landscape is symbolic and simply the by-product of different people who are always aware of their mutual interdependence as well as accumulated experiences; that is, landscape is anchored in *human life*, not something to look at but to live in, and to live in socially (Meinig 1979: 229 cited in Cosgrove 1998: 36).

On the other hand, Zukin (1991) argues that the late twentieth-century landscape is “a social, cultural, and political product of creative destruction” and defines it as “a fragile compromise between market and place” (Zukin 1991: 5). However, to define landscape we can also say that, a landscape is “... far from being a ‘natural’ relationship, the affinity that humans have for landscape is predominantly a (by)-product of the imagination, shaped by a variety of social and cultural constructs” (Aitchison et al. 2000). Given the huge impact of humans on the natural and social landscapes, this article focuses mainly on changes in a landscape, i.e. the *satoyama* landscape, by humans.

Conceptual Discourses Regarding *Satoyama* and *Satoyama* Landscape

The term *satoyama* is composed of two characters: *sato* meaning land and *yama* meaning mountain. *Satoyama* is not a mere mosaic of mixed community forests, but also an entire landscape used for agriculture. To the Japanese people, as expressed by Takeuchi (2003): “*satoyama* conjures up images of the idyllic rural landscape of fields and woodlands” (Takeuchi 2003: 9). The concept of *satoyama* does not have a precise definition but is conveniently defined as secondary woodland and grassland adjacent to human settlements (Takeuchi 2003: v). Therefore, *satoyama* refers to secondary forests close to human habitations (Toda: 2006).

Kobori and Primack (2003) take a wider view, suggesting the term *satoyama* means:

a mixture of forests, wet rice paddies, cultivated fields, pastures, streams, ponds, and irrigation ditches surrounding a Japanese farming village—the entire landscape necessary to supply the needs of a community (Kobori and Primack 2003: 3).

As a result of recent conservation movements, *satoyama* has become a frequently used term. However, the term *satoyama* was used in a book called *Miscellaneous Stories of Kiso Mountain* as long ago as 1759 by Hyouemon Teramachi, an assistant wood manager of the Kiso area. He described *satoyama* as mountainous landscapes close to rural villages (Tokoro 1980 quoted in Takeuchi 2003: 9). It was Tsunahide Shidei, a forest ecologist, who revived the term in modern times, and proposed the idea of *satoyama* in the early 1960s, which he later explained as a modification of *yamasato* (village in the mountains) to *satoyama* (mountains near the village), so that everybody could easily understand the meaning (Takeuchi 2003: 9).

The traditional *satoyama* looks similar to the primary natural environment; however, it actually is a secondary managed landscape. It has a peculiar pattern of mixed forestry called “*zokibayashi*,” consisting of diverse deciduous trees, such as chinquapin, evergreen oak, konara oak and sawtooth oak (Toda 2006). The term *satoyama* is used in various contexts nowadays but it means a natural environment that is being managed and, therefore, its basic element can be represented as its secondary nature. The general concept of *satoyama landscape* describes the wider conception of secondary management, including *satoyamas*, along with cultivated lands, human habitations, and wetlands (Takeuchi 2003).

The 1994 Basic Environment Plan of the Environment Agency defines the *satoyama* landscape as “an area that has considerable secondary nature and an area that allows wild animals and humans to live together” (Takeuchi 2003: 11). The author further observes: “the natural environment of this area is created through human

interventions such as farming and forestry, and it is what Japanese people have long imagined as their idyllic landscape” (Takeuchi 2003: 11). If the *satoyama* landscape has a secondary nature, then what elements can be included in the category of this secondary nature? Scholars differ in their answers to this question. The treatment of the concept in all its intricacy requires a more broad-based appraisal, as seen by the author: “considering that the traditional rural landscape is formed with coppice, grasslands, farmlands, and settlements, these elements must all be included as a set of landscape elements” (Takeuchi 2003: 10).

A Brief Review of the Millennium Ecosystem Assessment (MA)

The conceptual framework of this study takes the Millennium Ecosystem Assessment (2005) as its basis. The Millennium Ecosystem Assessment framework talks of three agents: constituents of human well-being, both direct and indirect drivers of change and ecosystem services (Millennium Ecosystem Assessment 2005; Cetinkaya 2009). This study applies the first two agents of the framework to explore the questions given below: what can be identified as the reasons for the changes in the *satoyama* landscape and how have the drivers of change caused the destruction of the *satoyama* landscape? Furthermore, how have the changes in the *satoyama* landscape influenced the components of human well-being?

The Millennium Ecosystem Assessment was born of the efforts of the former U.N. Secretary General Kofi Annan in June 2001. The assessment was carried out between 2001 and 2005. It took shape with the

involvement of governments, the private sector, nongovernmental organizations, and scientists to provide an integrated assessment of the consequences of ecosystem change for human well-being and to analyze options available to enhance the conservation of ecosystems and their contributions to meeting human needs” (Millennium Ecosystem Assessment 2005).

The conceptual framework for the Millennium Ecosystem Assessment places “human well-being as the central focus for assessment, while recognizing that biodiversity and ecosystems also have intrinsic value and that people take decisions concerning ecosystems based on considerations of well-being as well as intrinsic value” (Millennium Ecosystem Assessment 2005). It also assumes that “a dynamic interaction exists between people and other parts of ecosystems, with the changing human condition serving to both directly and indirectly drive change in ecosystems and with changes in ecosystems causing changes in human well-being” (Millennium Ecosystem Assessment 2005). Ecosystem services can be defined as the benefits human beings derive from

ecosystems including those that are provisional (e.g. food, water, and timber), regulatory (e.g. climate regulation, water quality, and floods), cultural (e.g. recreation, spiritual fulfillment, and traditional knowledge), and support services (e.g. soil formation, nutrient cycling, and so on) (Millennium Ecosystem Assessment 2005; Cetinkaya 2009: 30). Human well-being, in the Millennium Ecosystem Assessment, is seen as a multi-faceted concept which includes the provision of basic amenities for life (e.g. shelter, income adequacy, food, water), freedom of choice and action (which is given as different options so that a person can live a life of his/her choice), good health (e.g., infant mortality and a feeling of well-being), amiable social relations (i.e. a situation that gives people the ability to realize various components like aesthetic, recreational, spiritual and cultural values, development of social capital through institutional linkages and good personal relations), and security (e.g. personal safety). “[H]uman well-being can be enhanced through sustainable human interactions with ecosystems supported by necessary instruments, institutions, organizations, and technology” (Millennium Ecosystem Assessment 2005).

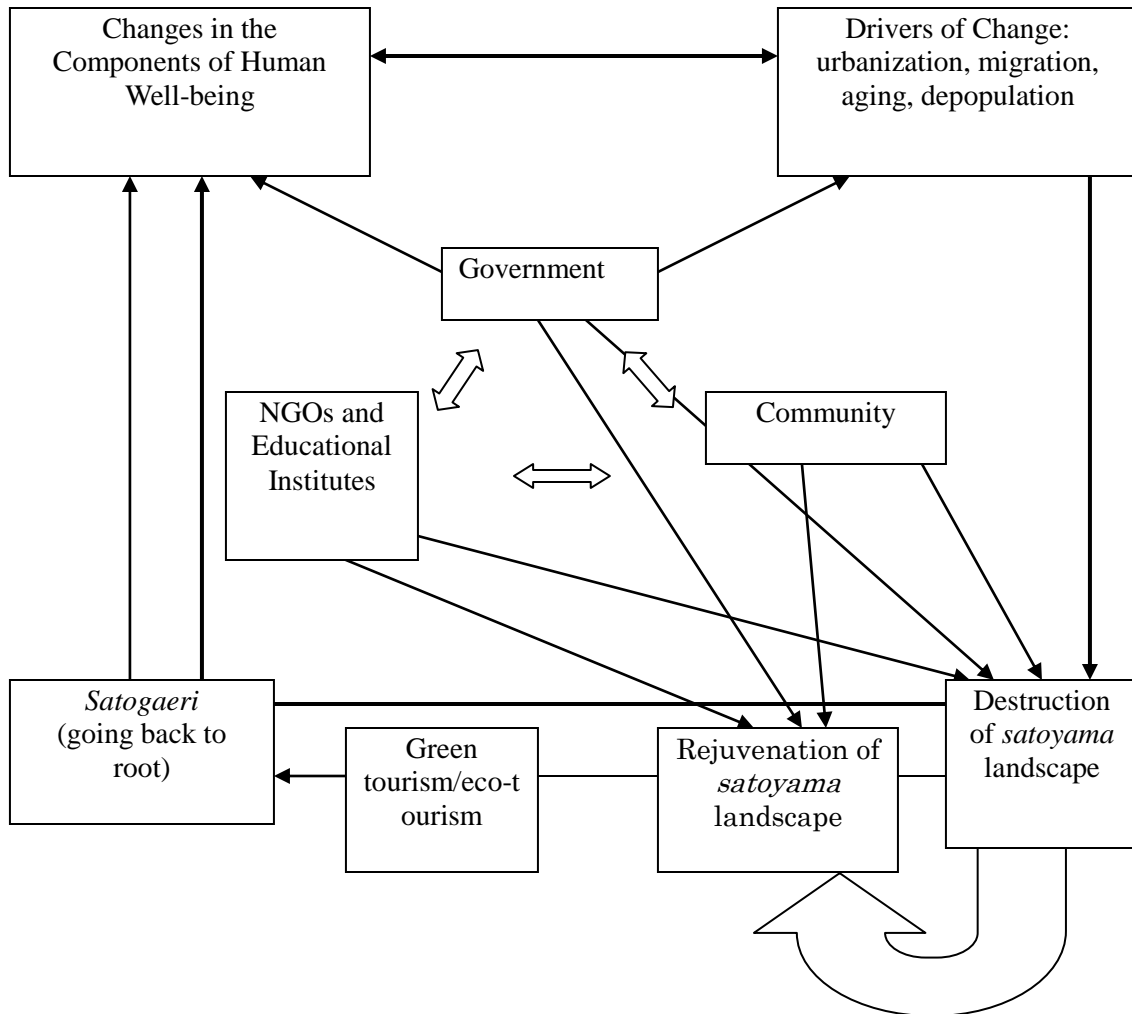
On the other hand, in the Millennium Ecosystem Assessment, a driver is a factor that changes any ecosystem. It can be formed either directly or indirectly. Direct drivers “unequivocally influence ecosystem processes and can therefore be identified and measured to differing degrees of accuracy” whereas an indirect driver “operates more diffusely, often by altering one or more direct drivers, and its influence is established by understanding its effect on a direct driver” (Millennium Ecosystem Assessment 2005). The major direct drivers include “harvest and resource consumption, climate change, external inputs (e.g. fertilizer use), technological adaptation and use, changes in land cover, species introduction, and removal,” whereas the major indirect drivers are a demographic aging society, migration and depopulation, economic (e.g. flows of capital, trade, modernization), socio-political (like democratization), cultural and religious, and science and technology (Cetinkaya 2009: 30).

The interaction among such drivers directly causes the destruction of the *satoyama* landscape. For example, urbanization can cause a decline in traditional rural farming and also can cause the erosion of traditional knowledge, given the fact that it separates local communities from nature. Similarly, changes in the *satoyama* landscape directly affect *human well-being*. For example, the destruction of the *satoyama* landscape can directly affect aspects of well-being such as freedom of choice, livelihood patterns and human development. In addition,

drivers of change and components of human well-being are interrelated—that is, a positive or negative change in a driver directly affects the components of human well-being. For example, the driver of migration can directly affect the component of development of good social relations in an adverse manner, particularly between elders and the younger generations (Cetinkaya 2009: 31).

A conceptual framework (see below) for this study has been developed through the assessment of existing literature, analysis of the statistical data retrieved from the Statistics Bureau of Japan and a review of the conceptual framework of the Millennium Ecosystem Assessment (MA).

Figure 1: Conceptual framework of the study.



Destruction of *Satoyama* Landscape

Robert Fortune (1863), a British botanist, described the traditional *satoyama* landscape:

I often walked into farm communities. The houses were built on cultivated lands at the foot of the mountains. In behind, there were woodlands and in front there were paddy fields. Roofs were thatched, resembling those temples but not as fine and solid. It was a typical view of countryside that there were, without any exception, irises growing on top of the roofs (Fortune 1863 quoted in Tsunekawa 2003: 41).

In 1860 Japan was a rural, agricultural country. Within less than a century farming as an occupation dropped to 45.2 percent (1950) before further plummeting to 6.4 percent of the population in 1990 (Tsunekawa 2003: 41). Japanese traditional agriculture evidently plays a far smaller role in recent times than a century ago.

The concept of a mutual struggle between economic growth and ecological sustenance came to be a common thread in scholarly discussion. Kobori and Primack (2003) observe: “The Japanese are struggling to balance rapid economic growth with protection for their rich cultural and natural heritage and the result has been neglect of *satoyama* landscapes and a reduction of the overall farm area where many species of plants, mammals, reptiles, amphibians, and freshwater fish previously thrived” (Kobori and Primack 2003: 3). About one-third of *satoyama* land was lost nationwide in three decades from 1960 to 1990 (Toda 2006). The major drivers that have caused the destruction of the *satoyama* landscape are: urbanization, migration, aging society and depopulation, and these drivers of change are also shown in Figure 1. Besides, the dimensions of society, economics and population (the three pillars of sustainable development) have been overlooked till recently and these have resulted in the destruction of the *satoyama* landscape.

Urbanization

Japan is one of the most urbanized nations in the world. From Tokyo in the east to Kita Kyushu in the west there is a band of urban centers in the country which can be compared to a gigantic megalopolis comprising some 78 million people or 63 percent of the Japanese population (Karan 1997: 23–5 cited in Knight 2000: 333). Nearly two-thirds of the Japanese population is concentrated on just 3 percent of Japan’s land (Knight 2000: 333). This remarkable density affects rural space and urban domains due to the megalopolis absorbing resources located in the arable part of rural Japan. One of the most important and popular concepts in the economically oriented post-war Japan has been that of *furusato*, which means a constant locus of belonging in a rapidly urbanizing society founded on the concept of affect. The era of the megalopolis can also

be seen as the era of diminishing rural Japan, and this urbanization itself has resulted in glorifying the remoter, upland areas as the new site of the Japanese idyllic landscape.

Apart from this the landscape of Japan is multifarious and intricately structured. Forests occupy about 68 percent of Japan, and their distribution is closely correlated with the mountainous terrain (Mather et al. 1998: 12). However, modern communication facilities are juxtaposed on this natural landscape. New roads and train lines began tracing different communication lines and practices; many mountains were blasted to make roads; and trees were cut down under the onslaught of the quest for rapid industrialization; while massive human movement took place from the countryside to the cities (Grapard in Gaul and Hiltz 2000: 126). These changes eventually altered the notion of landscapes. According to Robertson (1991), “The generic mountainous landscape now associated with *furusato* appears to be at once a gateway *and* the land inside. Current popular memories and interpretations of *furusato* provide a gateway to further understanding of ‘the Japanese’ landscape of nostalgia” (Robertson 1991: 19) [emphasis original]. As a result the traditional conceptions of nature became obsolete, exotic, and romanticized (Grapard in Gaul and Hiltz 2000: 126).

The 1960s saw an onslaught of modernization that encroached upon the rural lands and a wave of suburban economic boom followed (Takeuchi 2003: 9). Woodlands were systematically done away with and the hill slopes were made more hospitable in order to access these areas for an easy life. These have resulted in the destruction of the natural environment in the *satoyama* landscape. The *satoyama* area in Yokohama, for example, has decreased from 10,000 hectares in 1960 to only 3,000 at present (Kobori and Primack 2003). Kerr (1996) describes this phenomenon:

A poem by the T’ang poet Tu Fu includes the famous line, ‘Though the nation is lost, the mountains and rivers remain’. In Japan, the opposite is true: the nation prospers, but the mountains and rivers are lost. The architect Sei Takeyama has pointed out that one reason for this state of affairs is the ability of the Japanese to narrow their focus...Unfortunately, in the case of landscape, the same ability allows the Japanese to concentrate on a pretty green rice paddy without noticing the industrial estate surrounding it (Kerr 1996: 50–51).

Agricultural modernization also shared in spoiling the *satoyama* landscape. Wood and charcoal were replaced by coal and gasoline as the primary source of energy, and trees were no longer cut regularly for fuel (Kobori and Primack 2003). The forests also witnessed a dwindling of a number of animal and plant species as the forests grew more shaded.

The urban population growth in percentage points since the late fifties (Statistics Bureau of Japan 2005). As of 2005, 44.9 percent of the total population was

concentrated in an urban belt, spanning a radius of 50 kilometers from the centers of the three biggest cities: Tokyo, Osaka and Nagoya, respectively (which together occupy only 6.1 percent of Japan's land area) (Statistics Bureau of Japan 2005). Population density in the Tokyo area was 4,158 persons per square kilometer, 2,094 in Osaka area and 1,204 in Nagoya metropolitan area (Statistics Bureau of Japan 2005). These are shown in Table 1.

Table 1: Population of Three Major Metropolitan Areas

Areas	1980	1990	2000	2005
Japan	117,060	123,611	126,926	127,768
Tokyo metropolitan area	26,343	29,200	30,724	31,714
Osaka metropolitan area	15,422	16,210	16,567	16,663
Nagoya metropolitan area	7,828	8,432	8,852	9,046
Total of three major metropolitan areas	49,593	53,842	56,143	57,424
Percentage of the total population (%)	42.4	43.6	44.2	44.9

Source: Statistics Bureau of Japan 2005. Retrieved on October 20, 2008 from http://www.stat.go.jp/english/data/handbook/c02cont.htm#cha2_1

The city officials and urban planners used these decades to rejuvenate the landscapes as well as engage in confining the notion of vernacular *furusato* (Robertson 1991: 14) or *satoyama* landscape inside the parameters of physical space/spatial confinement. Here the concept of political ecology has a vital role to play, given the changing attitudes of the government towards the destruction and reconstruction of this traditional rural landscape.

The term 'political ecology' was first coined by Eric Wolf (1972) in *Ownership and Political Ecology*. Scholars have defined the term in different ways. According to Hempel (1996), political ecology is "the study of interdependence among political units and of interrelationships between political units and their environment ... concerned with the political consequences of environmental change" (Hempel 1996: 150 quoted in Robbins 2004: 6). Besides, Watts (2000) describes political ecology as "to understand the complex relations between nature and society through a careful analysis of what one might call the forms of access and control over resources and their implications for environmental health and sustainable livelihoods" (Watts 2000: 257 quoted in Robbins 2004: 6-7).

However, according to Stottand Sullivan (2000) political ecology "identified the political circumstances that forced people into activities which caused environmental degradation in the absence of alternative possibilities ... involved the query and reframing of accepted environmental narratives, particularly those directed via international environment and development discourses" (Scott and Sullivan 2000: 4

quoted in Robbins 2004: 7). Therefore, ‘political ecology’ is a theoretical framework that seeks to account for the distributional factors in human-environment interaction. Here distributional factors explain how resource exploitations or resource uses are spatially linked to each other. These include political, social and economic factors which are related to each other through feedback loops or feedback chains. Ecological limits and ecological crisis are also two concepts essential to an understanding of the changing *satoyama* landscapes. Ecological limits can be defined (first) ‘passively’, in terms of the carrying capacity of ecosystems relative to anthropocentric effects, and (second) ‘activity’, in terms of the burden imposed on the earth by human production and consumption (Keil et al. 1998: 31). In considering the ecological crisis, on the other hand, it is precisely the multifarious relationships between human beings, nature and society that are profoundly disturbed (Keil et al. 1998: 79). Therefore, a sustainable reconsideration of political ecology in conserving natural and traditional resources becomes crucial.

Assessment of the conceptual framework (see Figure 1) indicates that urbanization adversely affects the components of human well-being and has directly caused changes in the *satoyama* landscape, given that urbanization separates the local communities from nature and also brings the cities closer to the rural landscape. Besides, the government role (i.e. political ecology), the destruction of the *satoyama* landscape and the components of human well-being are therefore interrelated.

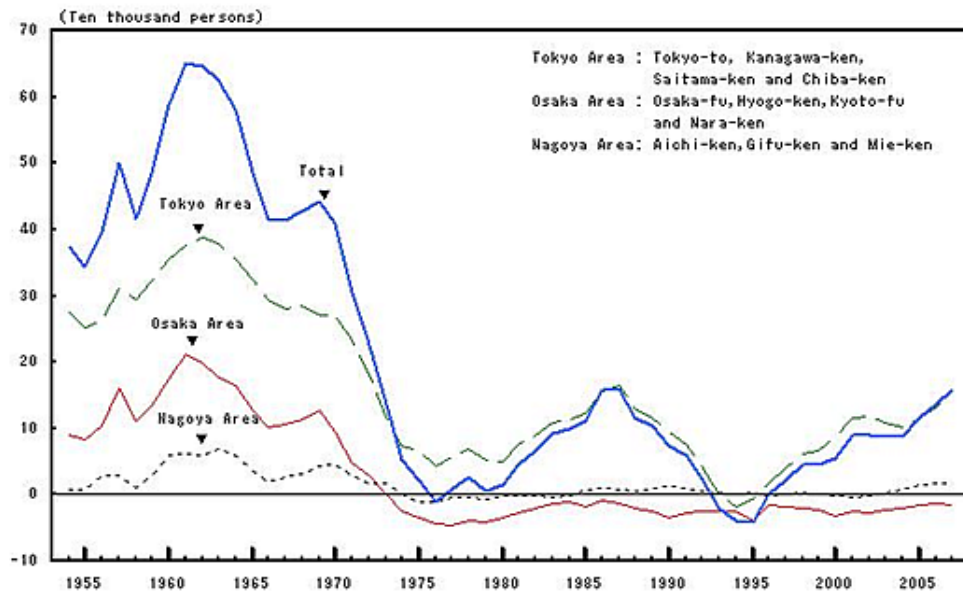
Migration

Across the prefectures, net migration showed positive trends in seven prefectures: Tokyo-*to* (this was the highest rate of 0.76 percent), Kanagawa-*ken* (0.37 percent), Chiba-*ken* (0.33 percent), and so on (Statistics Bureau of Japan 2007c). But in 40 prefectures net migration had a negative trend; for example, Aomori-*ken* (the lowest rate of -0.73 percent), Nagasaki-*ken* (-0.70 percent), Akita-*ken* (-0.61 percent) (Statistics Bureau of Japan 2007c). As far as net migration in the three major urban areas is concerned, the Tokyo area showed a positive trend with a plus value of 155,150 persons, Nagoya area had a plus value of 17,554 persons, and Osaka area had a minus value of 15,646 persons. Interestingly, the Tokyo metropolitan area showed a widespread increase in net migration value, with a plus value of more than 150,000 persons, which was the first time in the two decades since 1987 (Statistics Bureau of Japan 2007c).

The trends in net migration in three major areas are shown in Figure 2. From these statistical data, we can infer that migration has increased in the big cities and the lack of economic capital in the rural areas has pushed the rural people, especially the younger people, to the big cities. Since more younger people live in these big cities, “elders cannot transmit their knowledge and experiences to their children and

grandchildren”, and “within this context, migration leads to a generation gap with regard to TK [traditional knowledge] due to the lack of opportunities for passing knowledge from elders to children and grandchildren” (Cetinkatya 2009: 32). This traditional knowledge, in fact, is essential for the sustainable *satoyama* landscape management.

Figure 2: Changes in net migration for three major areas: 1954 to 2007



Source: Statistics Bureau of Japan 2007c.

Aging

An aging society is another threat to the traditional Japanese rural landscape. The Ministry of Agriculture, Forestry and Fishery (MAFF 1998) claims that “in the 21st century Japan would be characterized by a shift to a gradual downward trend in population growth, a decrease in the percentage of young people and an increase in the ratio of elderly people” (MAFF 1998 quoted in Cetinkaya 2009: 32). This trend can be seen in Table 2. It shows that in 2007 the population from 0 to 14 years (child population) was 17,293 thousand (13.5 percent, which was a record low rate of the total population; a decrease of 0.1 point over the previous year), the population from 15 to 64 (productive-age population) was 83,015 thousand (65.0 percent of the total population; a decrease of 0.5 point over the previous year), and the population aged 65 and over (aged population) was 27,464 thousand (21.5 percent, this was also a record high rate of the total population; an increase of 0.7 point over the previous year) (Statistics Bureau of Japan 1997a). Also, according to the Statistics Bureau of Japan (1997a), except for Okinawa, the aging population percentage always exceeded the percentage value of the young population, and the population consisting of 65 years old and over exceeded the

population of the child population in six prefectures: Akita, Yamagata, Shimane, Yamaguchi, Tokushima and Kochi. This adversely affected the components of human well-being in terms of lack of communication between the young and older generations, and also caused the destruction of the *satoyama* landscape in general.

Table 2: Composition of Population

	Population	(Percentage distribution)	Number of change over the year	(Rate)
Total	127,771	(100.0)	1	(0.00)
Male	62,320	(48.8)	-20	(-0.03)
Female	65,461	(51.2)	21	(0.03)
Population aged 0 to 14	17,293	(13.5)	-142	(-0.82)
Population aged 15 to 64	83,015	(65.0)	-716	(-0.86)
Population aged 65 and over	27,464	(21.5)	860	(3.23)

Source: Statistics Bureau of Japan 2007a. Retrieved on October 20, 2008 from <http://www.stat.go.jp/english/data/jinsui/2007np/index.htm>.

Kobori and Primack (2003) consider this aging phenomenon as a threat to the practice of traditional agricultural farming. They describe:

Outside urban areas, the decline in the rural population and the aging of the remaining farmers make it physically difficult if not impossible—as well as economically unappealing—to maintain *satoyama* as a communal village activity. The individual farmers who remain have introduced modern technology to reduce costs and to compensate for the lack of labor, often with financial support from the central government. All components of the *satoyama* system have suffered from these innovations, but wetlands in particular are rapidly disappearing (Kobori and Primack 2003: 6).

Depopulation

Although depopulation started in the 1960s, in the twenty-first century it still remains one of Japan's major problems. The repercussion of this dilemma onto the *satoyama* landscape is described by some scholars in the following terms: “Because of Japan's *high cost of labor*, its agriculture and forest industries are not able to compete in international markets, making farming less attractive economically, and many farmers have abandoned their *satoyama* to find jobs in cities” (Kobori and Primack 2003: 6) [my italics].

Table 3: Rates of Population Changes for Prefectures

	Prefecture	Rates of Population Change		Prefecture	Rates of Population Change
	Japan	0.00			
1	Tokyo	0.78	43	Wakayama	-0.85
2	Aichi	0.70	44	Nagasaki	-0.88
3	Kanagawa	0.57	45	Kochi	-1.00
4	Shiga	0.52	46	Aomori	-1.10
5	Chiba	0.40	47	Akita	-1.16

Source: Statistics Bureau of Japan 2007b. Retrieved on October 20, 2008 from <http://www.stat.go.jp/english/data/jinsui/2007np/index.htm>.

Table 3 indicates the rates of population changes for prefectures. From this table we can see that the top five prefectures (i.e., Tokyo, Kanagawa, Osaka, Aichi and Saitama) consisted of about 35.1 percent of the total population, and Tokyo predictably had the largest value, covering 10.0 percent of the total population (Statistics Bureau of Japan 2007b). This was the first time in 28 years (Statistics Bureau of Japan 2007b). Population increase was seen in 10 prefectures, of which four prefectures of the Tokyo area (i.e., Tokyo, Kanagawa, Saitama and Chiba) showed extended growth (Statistics Bureau of Japan 2007b). On the other hand, population decrease was seen in 37 prefectures, of which 25 prefectures showed an extended decrease (Statistics Bureau of Japan 2007b). In short, the depopulation in rural areas is gradually increasing and this has caused the erosion of traditional knowledge as well as the destruction of the *satoyama* landscape.

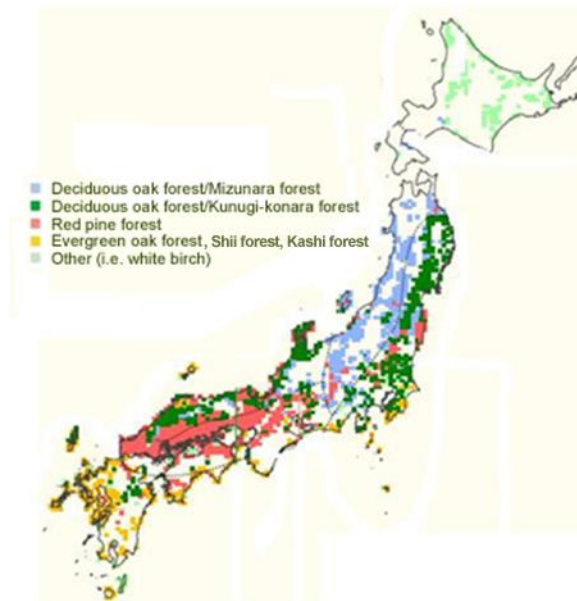
Present State of *Satoyama* Landscape

As discussed earlier, *satoyama* landscape has developed through human intervention in natural systems and has been managed by local agricultural communities over the centuries. During the past two decades public interest in the secondary nature and a demand for an improved quality of life has increased. According to Kitamura (2003): “These concerns have manifested themselves in policies that promote improved human-nature relationships” and “the term *coexistence between nature and humans* reflect this. The Basic Environmental Law, enacted in 1993, which combined the basic policies of the Basic Law for Environmental Pollution Control and the Natural Environmental Conservation Law, indicates the concept of coexistence, which was not included in the past two laws” (Kitamura 2003: 36) [emphasis original]. The Basic Environmental Law addresses *satoyama* landscape and includes *satoyama* landscape

conservation, in the process looking at a synthesis of sustainable development in conserving the *satoyama* landscape which can be surmised from Article 14 (Kitamura 2003: 36).

The complex characteristics of secondary nature in a *satoyama* landscape have made it difficult to ascertain the extent of *satoyama* landscape in Japan. Since the secondary nature itself has a multitude of meanings and interpretations depending on people's perspectives, this article therefore, after reviewing the existing literature, considers that the *satoyama* landscape constitutes approximately 20 percent of total landmass in Japan (approximately 60,000–90,000 square kilometers) (Tsunekawa 2003: 46). However, the Ministry of Environment (2006) has provided an estimate of the community-based forest areas and the surrounding countryside, mostly known as *satochi-satoyama*. *Satochi-satoyama* have resulted out of the interactions between humans and nature, and now occupy approximately 40 percent of Japan's land (Ministry of Environment 2006). The distribution of secondary forests in *satochi-satoyama* can be seen in Figure 3. The Ministry of Environment (2006) has divided these *satochi-satoyama* into five types: bigger oak secondary forest type ('*Mizunara*' in Japanese), deciduous oak secondary forest type (*Quercus serrata*, '*Konara*' in Japanese), Japanese red pine secondary forest type (*Pinus densiflora*, '*Akamatsu*' in Japanese), chinquapin and oak sprout secondary forest type ('*Shi. Kashi*' in Japanese), and finally, the other secondary forests including birch secondary forest etc. ('*Shirakanba*' in Japanese).

Figure 3: Distribution of *satochi-satoyama*



Source: Ministry of Environment 2006.

***Satoyama* Landscape (Re)considered**

Forests play an important role in the conservation of national lands, biodiversity and resources in Japan. Sustainable management in both rural and urban forestry, as a consequence, assumes vital importance in the context of twenty-first-century Japan. Based on the principle of human–nature harmony that is the very basis of the *satoyama* landscape, there has been an appreciation that the role of secondary nature still retains its important place in the landscape of rural Japan. The Japanese forests house a great deal of biological diversity and a late secondary forest is prone to grow in an indistinguishable manner from a forest that is primary in its origin. There are also possible cases where in fact the secondary woodlands actually house more biodiversity than similar tracts of old-growth primary woodlands (Vandermeer and Perfecto 2005: 82).

Additionally, *satoyama* landscape houses a bewildering number of species, and this mosaic comes in many shapes e.g. ponds, rice paddies, grasslands and forests (Kobori and Primack 2003: 4). A minimal and non-interventionist regime of human management, and careful control of these landscapes, depend on human beings, and such human–environment interaction, steadfastly bound by the principles of sustainability, is seen as helpful for the thriving of many endangered species dwelling in the landscapes. *Satoyama* managed by selective logging results in a clear space that can be utilized for the production of edible bamboo shoots (Ministry of Environment 2006). Thus in this century, *satoyama* landscape in Japan is (re)considered as an idyllic landscape or *the nature of the good old days* (Takeuchi et al. 2003: v), a space that allows the sustenance of the principle of human–nature interaction.

The conceptual framework (see Figure 1) of this study illustrates that not only can the drivers of change cause the destruction of the *satoyama* landscape, but also the initiatives and roles of government, the private sector and civil society can adversely affect the *satoyama* landscape. Simultaneously, they can instead help this traditional landscape to be rejuvenated. This alternative of rejuvenation can be achieved by a reciprocal relationship among these three sectors and by creating alternative employment opportunities through green tourism or eco-tourism. This green tourism or eco-tourism eventually attracts the urban residents back to their villages and thereby forms the notion of *satogaeri* (going back to root). Green tourism allows visitors to work with locals to restore paddies and engage in forest management (Cetinkaya 2009: 36). Since the *satogaeri* has a direct relation with the components of human well-being, active participation in green tourism will make a positive change in the components of human well-being, given the fact that traditional knowledge for sustainable landscape management can be transferred through green tourism activities.

Citizens are a vital cog in the mechanism of *satoyama* landscape conservation and citizen participation can be extracted by promising the opportunity of skilled management. In the past *satoyama* was managed by farmers; now the situation has changed due to changes in technology. Takeuchi et al. (2003) argue for the need to support citizen movements, separate from bureaucracy, but with appropriate cooperation and recognition of their roles and abilities (Takeuchi et al. 2003: v). The conceptual framework of this study also indicates the need for community participation to rejuvenate the *satoyama* landscape. There is a triangular relationship among the three sectors: government, community members, and the non-government organizations (NGOs) and educational institutions. These three sectors can prevent the destruction of *satoyama* landscape, as can be seen in the two projects of Saitama and Yokohama.

To counter the steady loss of traditional agricultural landscapes and wildlife habitat, the Totoro Hometown Fund Campaign was founded in 1990 as an effort to safeguard *satoyama* of the Sayama Hills near Tokyo in Saitama Prefecture. This project was initiated by local residents together with a privately funded environmental organization, but eventually received support from the National Environmental Agency and the local government (Kobori and Primack 2003). Another approach to conserving agricultural landscapes has involved cooperation between volunteers and university researchers and this approach can be seen at the Musashi Institute of Technology in Yokohama (Kobori and Primack 2003). These two programs have shown that traditional *satoyama* ecosystems can be restored and maintained close to urban sprawls, and managing *satoyama* is not only a rural phenomenon. Public attention directed to the need for conservation and volunteer opportunities that allow citizens to renew their sense of identification with traditional agriculture has already succeeded in the abovementioned projects (Kobori and Primack 2003).

The changing demands of traditional rural landscapes and ecosystems in twenty-first-century Japan can also be found in recent projects undertaken by the different educational institutions. The United Nations University (UNU), for example, is undertaking a project “Sub-global Assessment (SGA) of the Satoyama and Satoumi Ecosystems.” The SGA will identify the services of *satoyama* and *satoumi* (i.e. the tidelands that offer plenty of seafood with rich diversity, and the zones where human activities follow the norms of sustainability) ecosystems, analyze the present conditions, trends, and scenarios, which will form the basis of future policy formulation (Cetinkaya 2009: 38). This initiative is going to be the first of its kind in Japan, as it provides an integrated assessment which takes social, cultural, economic, and ecological aspects into account (United Nations University 2007). The outcomes of the assessment are expected to be used in the enhancement of local and national plans and strategies, and also for academic and resource purposes (United Nations University 2007).

Conclusion

This study shows that the traditional rural landscapes of Japan have supported a large human population, and at the same time sustainably provided habitats for a great variety of plant and animal species. However, these fragile landscapes have been impacted for generations, not only by the drivers of change but also by political ecology. The destruction of *satoyama* landscape aggravated by the political ecology can cause the erosion of traditional knowledge and consequently will lead to extinction of many wild edible plants and species. The destruction of the *satoyama* landscape has also occurred due to the interplay of economic, social, cultural and ecological factors.

This study points out that the secondary nature is rapidly lost in the process of large-scale urban development (e.g. wetland filling, dam building, road constructions and so forth) but, on the other hand, if it is left in its original state, it will undergo a thorough transition through natural vegetation succession (Takeuchi 2003: 10). To conserve *satoyama* landscape, adequate management is vitally necessary. The richness of the natural environment of *satoyama* landscape not only lies in the original natural diversity, but also results from natural diversity by human intervention (Takeuchi 2003: 10). In addition, this study shows that *satoyama* landscape also plays as model by providing the necessary techniques for a sustainable land use management.

It is quite apparent that human expansion and activities have led to the destruction of the habitats of a great many species of plants and animals. As Jared Diamond (2005) in his book *Collapse* has shown there have been past instances where societies with affluent natural resources have collapsed because they failed to achieve a balance between consumption and the supply of resources (Diamond 2005). The implication drawn from this is that a reconsideration of the sustainable conservation of natural and traditional resources becomes crucial where human interactions with the environment are closely linked to each other and maintain a feedback loop or feedback chain.

As this study shows, through sustainable interaction between nature and humans an alternative conservation method for natural habitats can be recreated, and diverse species, especially endangered flora and fauna, can be saved from slow death. The rejuvenation of traditional landscapes can stabilize the paralyzed ecosystems of the country and, at the same time, also be a gateway for potential ecotourism or green tourism which eventually strengthens the national economy. Given the country's increasing urbanization rate, juxtaposed with the aging society, the rejuvenation of *satoyama* landscape can reform the notion of *satogaeri*, the return to the countryside, as well.

Although, enough doubts remain about whether human beings would, in the

long run, be able to offer a completely objective model of natural conservation, where all the components of rejuvenation of the *satoyama* landscape would be cherished, an environmental conservation approach for natural landscapes with proper guidelines from the policy-makers, in conjunction with collaboration from all levels of society, is requisite. Besides, a holistic approach and research (both scientific and sociological) are both needed to understand the complex relationship between humans and nature in a *satoyama* landscape.

References

- Aitchison, C., MacLeod, N. E., and Shaw, S. J. 2000. *Leisure and Tourism Landscapes: Social and Cultural Geographies*. London and New York: Routledge.
- Brown, R. D., and Yokohari, M. 2003. "Ideological Contribution of Satoyamas." Pp. 1—7 in *Satoyama: The Traditional Rural Landscape of Japan*, K. Takeuchi, R. D. Brown, I. Washitani, A. Tsunekawa and M. Yokohari, eds. Tokyo: Springer.
- Cetinkaya, G. 2009. "Challenges for the Maintenance of Traditional Knowledge in the Satoyama and Satoumi Ecosystems, Noto Peninsula, Japan." *Human Ecology Review* 16(1): 27–40.
- Cosgrove, D. E. 1998. *Social Formation and Symbolic Landscape*. Madison, Wisconsin: University of Wisconsin Press.
- Diamond, J. 2005. *Collapse: How Societies Choose to Fail or Succeed*. Viking: New York.
- Fortune, R. 1863. *Yedo and Peking—A Narrative of A Journey to the Capitals of Japan and China*. London: John Murray.
- Gaul, K. K., and Hiltz, J, eds. 2000. *Landscapes and Communities on the Pacific Rim: Cultural Perspectives from Asia to the Pacific Northwest*. Armonk, N. Y: M. E. Sharpe.
- Grapard, A. G. 2000. "The State Remains, but Mountains and Rivers Are Destroyed." Pp. 108—29 in *Landscapes and Communities on the Pacific Rim*, K. K. Gaul and J. Hiltz, eds. Armonk, N. Y: M. E. Sharpe.
- Hempel, L. C. 1996. *Environmental Governance: The Global Challenge*. Washington DC: Island Press.
- Jackson, J. B. 1984. *Discovering the Vernacular Landscape*. New Haven and London: Yale University Press.
- Karan, P. P. 1997. "The City in Japan." Pp. 12—39 in *The Japanese City*, P. P. Karan and K. Stapleton, eds. Lexington: The University Press of Kentucky.
- Keil, R., D. V. J. Bell, P. Penz, and L. Fawcett, eds. 1998. *Political Ecology: Global and Local*. London and New York: Routledge.

- Kerr, A. 1996. *Lost Japan*. Melbourne, Oakland, London and Paris: Lonely Planet Publications.
- Kitamura, Y. 2003. "Environmental Policy and Satoyama Landscapes." Pp. 35—39 in *Satoyama: The Traditional Rural Landscape of Japan*, K. Takeuchi, R. D. Brown, I. Washitani, A. Tsunekawa and M. Yokohari, eds. Tokyo: Springer.
- Knight, J. 2000. "From Timber to Tourism: Re-commoditizing the Japanese Forest." Pp. 333—350 in *Forests: Nature, People, Power*, M. Doornbos, A. Smith and B. White, eds. Oxford: Blackwell Publishers Ltd.
- Kobori, H., and Primack, R. B. 2003. "Conservation for Satoyama, the Traditional Landscape of Japan." *Arnoldia* 62(4): 3–10.
- Mather, C., Karan, P. P., and Iijima, S. 1998. *Japanese Landscapes: Where Land and Culture Merge*. Kentucky: The University Press of Kentucky.
- Meinig, D. (ed). 1979. *The Interpretation of Ordinary Landscapes*. Oxford: Oxford University Press.
- Millennium Ecosystem Assessment. 2005. "Ecosystem and Human Well-being: Policy Responses." Volume 3. <http://www.millenniumassessment.org/en/Responses.aspx>.
- Ministry of Agriculture, Forestry and Fishery (MAFF). 1998. "The Report Submitted to the Prime Minister by the Investigative Council on Basic Problems Concerning Food, Agriculture, and Rural Areas." <http://www.maff.go.jp/ekihon/main.pdf>.
- Ministry of Environment, Government of Japan. 2006. "Annual Report on the Environment in Japan 2006." <http://www.env.go.jp/en/> (accessed May 21, 2008).
- Robbins, P. 2004. *Political Ecology: A Critical Introduction*. Malden: Blackwell.
- Robertson, J. 1991. *Native and Newcomer. Making and Remaking a Japanese City*. Berkeley: University of California Press.
- Statistics Bureau of Japan. 2005. "Urbanization." http://www.stat.go.jp/english/data/handbook/c02cont.htm#cha2_1.
- Statistics Bureau of Japan. 2007a. "Aging." <http://www.stat.go.jp/english/data/jinsui/2007np/index.htm>.
- _____. 2007b. "Depopulation." <http://www.stat.go.jp/english/data/jinsui/2007np/index.htm>.
- _____. 2007c. "Migration." <http://www.stat.go.jp/english/data/idou/2007np/index.htm>.
- Stott, P., and Sullivan, S. (eds). 2000. *Political Ecology: Science, Myth and Power*. London: Arnold.
- Takeuchi, K. 2003. "Satoyama Landscapes as Managed Nature." Pp. 9—16 in *Satoyama: The Traditional Rural Landscape of Japan*, K. Takeuchi, R. D. Brown, I. Washitani, A. Tsunekawa and M. Yokohari, eds. Tokyo: Springer.
- Takeuchi, K., Brown, R. D., Washitani, I., Tsunekawa, A., and Yokohari, M, eds. 2003. *Satoyama: The Traditional Rural Landscape of Japan*. Tokyo: Springer.

- Toda, Y. 2006. “What is Satoyama”? Ambiki Village and Sculpture.” <http://members.jcom.home.ne.jp/amabiki/e/6th/6satoyama.htm> (accessed May 24, 2008).
- Tokoro, M. 1980. *Kinsei-ringyoshi no kenkyu* (Research on the modern history of forestry). Tokyo: Yoshikawa-kobunkan.
- Tsunekawa, A. 2003. “Transition of Satoyama Landscapes in Japan.” Pp. 41—51 in *Satoyama: The Traditional Rural Landscape of Japan*, K. Takeuchi, R. D. Brown, I. Washitani, A. Tsunekawa and M. Yokohari (eds). Tokyo: Springer.
- United Nations University (UNU). 2007. “Workshop on Sub-global Assessment of Satoyama and Satoumi in Japan.” http://www.ias.unu.edu/sub_page.aspx?catID=8&ddlID=372.
- Vandermeer, J., and Perfecto, I. 2005. *Breakfast of Biodiversity: The Political Ecology of Rain Forest Destruction* (2nd ed.). California: Food First Books.
- Watts, M. J. 2000. “Political Ecology.” Pp. 257—74 in *A Companion to Economic Geography*, E. Sheppard and T. Barnes, eds. Malden: Blackwell Publishers.
- Zukin, S. 1991. *Landscapes of Power: From Detroit to Disney World*. Berkeley: University of California Press.