Mémoire

Concerning

MONTREAL'S URBAN AGGLOMERATION LAND USE AND DEVELOPMENT PLAN

November 18, 2014

Al Hayek

1.3 Le concept d`organisation spatiale

The Lachine side of Meadowbrook is identified to be transformed (Map 2, p. 20). This area must be preserved and zoned as green space.

2.3 Mettre en Valeur les Territories d`ìnteret

Le Patrimoine

Between 1992 to 2002, prior to the Natural Spaces Policy, we lost 1000 hectares of our ecologically valuable heritage equivalent to 2% of the surface area of the Island on Montreal. The Urban Plan must preserve what is left on the Island of Montreal of its natural patrimony.

The grand institutions

The Urban Plan must preserve the Douglas Hospital Grounds in Southwest Borough. Besides their biodiversity potential, they are and essential part of the trame verte linking Meadowbrook, La Falaise St. Jacques, Agrignon Park, and Park des Rapides to the St. Lawrence River.

Protection et mise en valeur du patrimoine

Les secteurs d`ìnteret archeologique

Meadowbrook in Cote-St-Luc and Lachine is part of Montreal's patrimony and for these reasons needs to be protected: 1) It has archeological potential as an Amerindian site. 2) It contains a section of the St.-Pierre River on an Island where most rivers have been channelled underground. 3) It is one of the few areas on the Island of Montreal containing its original topography.

Les Territories d`ìnteret Ècologique

Map 14, page 74 shows the natural spaces that remain on the Island of Montreal. Map 15, page 75 shows areas of ecological interest leaving off some of the smaller areas found on map 14. These smaller areas are found spread across the Island of Montreal. They are important because: "Even small parks in the heart of our cities can protect us from strokes and heart disease, perhaps by cutting stress or boosting exercise."[1] These small parcels of land must thus be reconsidered in the Urban Plan.

A complete list of wooded areas on the Island of Montreal can be found in the "Atlas des bois de Montreal"[2].

On page 72 the Urban Plan makes note to enhance biodiversity ("en rehausser la biodiversite) with a modest increase of protected areas to 8%. As the difference between map 14 and map 15 show, there are green areas of interest such as the lands, for example, to the east of

riviere a l'Anse-a-l'Orme, the northern sector of Ste.-Anne-de-Bellevue, and the southern portion of Angell Woods which are left unprotected and are marked for residential development. The objective of 8% needs to be reconsidered in light of the following facts:

- On the world stage (Nagoya, Japan, 2010)[3] Montreal committed itself that by 2020, "at least 17 % of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services (would be) conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas".
- The biodiversity of some of the present 5.75% protected territory of the Agglomeration is of low quality e.g. Cotes des Neiges Cemetery. For this reason the Sierra Club of Canada estimates the actual percentage of the Island of Montreal that is protected is 4% based on the criteria contained in the *Politique de protection et de mise en valeur des milieux naturels*, de la ville de Montréal (2004) for natural spaces.[4]

While it may seem like a balanced approach to build on just part of the available green areas left on the Island of Montreal and preserve the other half, it is not. As the Island developed, natural spaces were not set aside. As a result Montreal is at the bottom of the list for Canadian and North American cities when it comes to areas of natural spaces preserved. We must preserve what remains of our natural heritage.

We need to be thinking more boldly: a national park within the confines of the CMM. This was proposed in 2006.[5] Such a national park needs to be of adequate size to allow certain ecosystems to thrive.

We need to think ahead to the time when the greater Montreal area will contain even more inhabitants than today. Then, large natural areas such as the La Trame verte de l'Est or riviere a l'Anse-a-l'Orme in close proximity to the population will be considered a treasured part of the Greater Montreal Area.

There are other reasons for preserving what remains of our natural heritage that exists on the Island of Montreal:

- In 2010 in Nagoya, Japan[3] Montreal committed itself to action such that by 2020 the "extinction of known threatened species (would be) prevented and their conservation status, particularly of those in most decline, (would be) improved and sustained".
- The bioclimatic region in southernmost Quebec (of which Montreal is a part) has many, many species in serious or severe decline due to the loss of habitat.[6] For example, the situation of 40% of vertebrate on the Island of Montreal is precarious.[7]
- An overwhelming constituency wants their natural spaces preserved. A survey done for the City of Montreal prior to the launching of the Natural Spaces Policy found that 80% of the population considered it extremely important to conserve our natural milieu and

two thirds judged that not enough was being preserved. As regards natural spaces policy 96% of the population were found to be favourable with 68% very favourable.

The urban plan needs to include concrete objectives to deal with these issues.

It is ironic that while the urban plan recognizes that the open fields on the west of the Island are essential habitat for many species, it is offering up most of the area for development. "Les friches naturelles de l'agglomeration sont souvent le resultat de l'abandon des activites agricoles, comme pour certains terrains en attente de developpement dans l'ouest de l'ile. Les friches sont des habitats essentiels a plusieieurs especes." (p. 77)

La mise en valeur des Territories d`ìnteret Ècologique

Objectif

The objective of 8% must be increased in light of what was said above.

Some further reasons for investing in natural spaces:

- A range of recent studies[8] are showing the considerable health benefits of natural spaces. Persons living in proximity to natural spaces have better mental and physical health, are affected less often by strokes and heart disease and have less risk of fatal diseases.
- Natural spaces are also beneficial for our children. Having access to these spaces ignites our children's curiosity to learn, improves their capacity to focus, and enhances their cognitive abilities.[9,10]
- If Montreal is to retain residents who move to greener areas than it must make itself attractive by providing more natural spaces.
- Many citizens on the Island of Montreal seldom if ever leave the Island. If these citizens are to have the benefits of natural spaces, we must provide it for them on the Island.
- The International Union for the Conservation of Nature (IUCN) recommends a certain number of hectares per 1000 population for the health and well-being of its citizens and the Island is below the norms. Montreal has 1.5 ha per 1000 population. The Urban Plan needs to increase the quantity of natural spaces preserved with particular attention to providing natural spaces within reasonable proximity of all citizens on the Island of Montreal. Again, this may involve reconsidering even small natural spaces.

The percentage of natural space to be preserved on the Island, whatever the percentage, must not be padded with further cemeteries, or landfill sites, consisting of lands of inferior biodiversity and which are preserved by their very nature of what they are.

Particular attention needs to be paid to Meadowbrook in Lachine and Cote St. Luc. It was recommended by the OCPM in 2004 that it become an ecoterritory. In 2009 the Labrecque Commission recommended that it be protected and transformed into a nature park, grand park or

ecoterritory and linked to the Falaise St. Jacques. And then again in 2014 the OCPM, following the consultations on the Development Plan for Montreal, again recommended that it be protected and transformed into a nature park, grand park or ecoterritory linked to the Falaise St. Jacques. For an Island so lacking in adequate natural spaces, this large area (57 hectares), one of the few left on the Island of Montreal, would provide considerable benefits to all citizens in the greater Montreal area.

At present, the Lachine portion of Meadowbrook is listed in the Schema for high density residential development (page 96, map 20). Considering that the cost of the infrastructure would make it unprofitable to build on (see the City of Montreal's defense against the lawsuit brought by Groupe Pacific against the City), considering that it is within the 300 metres of a rail yard making it unsafe to build on (see the FCM and RAC guidelines, p. 18), and considering that there is such a need on the Island of Montreal for green spaces, the Lachine portion of Meadowbrook should be listed in the Schema as large green space or recreational.

While documents indicate that there would be no payback from any investment in infrastructure to allow building on Meadowbrook there would be payback from turning the area into a large urban nature park. Not only would the well-being of citizens be increased by having such a large natural space, but the economic spinoffs from outdoor activities would have considerable benefit to the economy.[11] A Vision for Meadowbrook.[12]

It should also be noted as another motivation for making Meadowbrook a nature park is that parks help narrow health gap between rich, poor.[8]

Meadowbrook could provide the natural space for residential developments on the vast areas in Lachine being cleared of their industrial past.

The setbacks around rail yards and tracks, should be looked upon as an opportunity and not a constraint. Such areas could be re-greened providing beauty and the much needed natural spaces across the Island in proximity to where citizens live.

The table below shows the investment in natural spaces by both Montreal and Quebec over the last thirty-five years.

	Natural Space Investment by the Agglomeration				by Quebec Government			
Years	Amount Spent millions	No. of Years	Avg. per Year millions	Per capita per year (dollars)	Amount Spent millions	No. of Years	Avg. per Year millions	Per capita per year (dollars)
79-92	$153.0	13.0	$11.8	$6.2	$12.5	13.0	$1.0	$0.5
92-2002	$0.0	10.0	$0.0	$0.0		10.0	$0.0	$0.0
2002-2014	$36.6	9.0	$4.1	$2.1	$2.6	9.0	$0.3	$0.2
79-2014	$189.6	32.0	$5.9	$3.1	$15.1	32.0	$0.5	$0.2

The average investment by the Agglomeration (or the previous MUC) on the Island of Montreal per person per year over the last 35 years is about 3 dollars. This is equivalent to a good, but not particularly expensive cup of coffee. For a family of four, the 12 dollars would buy a medium sized pizza once a year.

Over the last 20 years, the investment in natural spaces as a percentage of the capital works budget of one billion dollars has been about 0.2%. Between 1992 to 2002 there was no investment in natural spaces and during that time we lost 1000 hectares of our valuable heritage equivalent to 2% of the Island on Montreal.

There is a very significant imbalance in the investment of our capital budget.

Cities are more than roads and garbage picked up. They are where we spend most of our lives. Thus they have a major impact on our lives. It is documented that citizens are healthier living near even small patches of natural spaces. Children do better in school having proximity to natural spaces. We thus need to invest and provide natural spaces throughout the Island within easy access of where people live.

If we are lucky we can go to our cottages on the weekends. We go there because we enjoy being away from the City and we enjoy being in nature. But many of our citizens are not so lucky; they do not have cottages, and in many cases, not even the resources to leave the City. We must provide natural spaces for them here in the City where they live.

Mayor Coderre wants to make Montreal an intelligent City. Let us also make it a healthy City, a Green City, and a beautiful City and we will do this by preserving and restoring our natural environment.

The Urban Plan needs to reconsider its objectives on natural space preservation, particularly in regards to preserving small natural spaces throughout the Island.

La Trame verte et bleue

Map 19 p. 87 lists the principal routes recreative. Additional trams need to be added and more specific details and routes specified:

1) the interconnection of Meadowbrook, the Falaise St. Jacques, parc du Mont-Royal, parc Agrignon, the Douglas Hospital Grounds, parc des Rapides and the St. Lawrence River.

2) Angell Woods in Beaconsfield and the Riviere a l'Orme forest corridor up to Lake of Two Mountains

3) Promenade Bellerive to the De Montigny Brook in Riviere-des-Prairies.

4) Lac Saint-Louis and la coulee verte du ruisseau Bertrand.

Further details are found in Annexe III, Objectifs de conservation et d`àmenagement des ecoterritories.

The bicycle path along the Lachine Canal, that runs from Old Montreal to Rene Levesque Park in Lachine is an early example of a trame verte. It is a very successful, heavily used trame verte and shows how beneficial these can be to the community.

Hydro lines cut through many corridors on the Island of Montreal and could become part of the Trame verte through the planting of suitable low vegetation thus allowing these paths to become natural corridors for wildlife.

3.1 Les Grandes Affectations du territoire

Dominante residentielle

Map 20 p. 96 shows the southern portion of Meadowbrook, the Lachine side zoned residential. This must be rezoned as large green spaces or recreational.

Reseau ferroviaire

Prior to the additions to the draft Schema modifications of October 30, 2014, there were no standards whatsoever dealing with safety and security near rail yards and rail lines. The

document complementaire considered the proximity to rail yards and lines to involve problems of noise and vibrations only. The modifications addressed security issues, but only to the extent of suggesting that some Island wide minimal standards be formulated, presumably, at some later date. This is totally unacceptable.

We already have minimal standards and these standards have been studied and agreed upon and approved by the FCM and by the RAC. The evaluations of risk have already been done. The minimal standards are 300 metres from rail yards and 30 metres from rail lines. In rare unanimous votes in August of this year, both the Montreal City Council and the Agglomeration moved that these guidelines be included in the Urban Plan. The FCM and RAC recommendations must become part of the Schema as promised.

3.1 Les Sites Contamines

Remediation of Brownfields

Large swats of land across the Island of Montreal remain vacant brownfields, up to 10% of the Island. In addition to providing areas for housing and commercial use, brownfields can be re-naturalized to restore forest cover to the Island of Montreal.

In 2010 in Nagoya, Montreal committed itself to Target 15 of the Convention on Biological Diversity: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Restoration of brownspaces would remove the threat of development on green and natural spaces.

The Urban Plan must include definite objectives for brownfield remediation as it has for natural spaces preservation.

Interventions

The ClimatSol program needs to be re-newed.

The creation of a distinct municipal program needs to be more than a footnote (p. 119, footnote 71); it needs to become an objective in the Urban Plan.

Le transport d`energie

The Urban Plan proposes that servitudes used for the transport of electricity be used for recreation, gardening and urban agriculture. Add that these servitudes should be regreened with native and low growing plants as part of the trame verte and to provide corridors for wildlife.

3.2 La Densite d'occupation

La Densite d'occupation du sol

Maps 30, 31 and 32, pps. 124, 125 and 126 show Meadowbrook as having a density of 60 lodgement per hectare. Meadowbrook should be listed as a large green space or recreational.

Document Complementaire

4.8.3 Bruit et vibrations

Any attempt to establish building standards to meet noise and vibration standards is futile. The noise and vibration around rail yards has increased over the years and is likely to continue to do so.

The recommendations of the FCM and the RAC of 300 metre setbacks from rail yards and 30 metre setbacks from rail lines must be incorporated into the Urban Plan to handle both safety, noise and vibrations considerations.

Conclusions

As you reflect on recommendations to the Urban Plan, it would be helpful to look at the history of previous initiatives taken on the Island of Montreal.

The first is the use of the bicycle. After many demonstrations, and after fierce opposition to bicycle paths and bikes on trains and the metro, we now have an enviable bicycle network with the whole process culminating in the creation of the BIXI.

The second story concerns solid waste. In the early nineties, the goal of a 50% reduction in solid waste was considered as ill-conceived and unattainable. Talks of an 80% reduction were considered pure fantasy. The objective in the draft Urban Plan for solid waste reduction ("Residual Materials", p. 119) is 80%.

So what is vigourously opposed one day becomes our greatest success stories the next. I hope you will consider this when you think of the trame verte et bleue, Meadowbrook, and a national park on the Island of Montreal and other initiatives which are being recommended at these consultations.

Bibliography

1) Dr. Terry Hartig, Professor of Environmental Psychology, Uppsala University, Sweden, "Green Spaces Reduce Health Gap" Appendix 2

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5) Quebec aims to save local green spaces, Andy Blatchford, The Chronical, January 24, 2006, andy.blatchford@transcontinental.ca

6) Les especes menacees ou vulnerable en declin

7) 24 Heure, Lundi 17 mars, 2014, environment, p. 16

8) Appendix 3

'Green' Exercise Quickly 'Boosts Mental Health'

Green Space Helps Reduce Depression and Anxiety

Effect of exposure to natural environment on health inequalities: an observational population study

Parks help narrow health gap between rich, poor: study

9) Natural Curiosity: A Resource for Teachers" "Building Children's Understanding of the World through Environmental Inquiry" . The Laboratory School at the Doctor Eric Jackman Institute of Child Study OISE Ontario Institute for Studies in Education, University of Toronto, 2011.

10) Children and Nature 2009: A Report on the Movement to Reconnect Children to the Natural World." Appendix 4

11) http://www.mmf.gouv.qc.ca/faune/statistiques/nature-chiffres.jsp

12) A Vision for Meadowbrook, Appendix 5

Appendix 1

Nagoya, Japan, October, 2010

IV. STRATEGIC GOALS AND THE 2020 HEADLINE TARGETS

1. The Strategic Plan includes 20 headline targets for 2020, organized under five strategic goals. The goals and targets comprise both: (i) aspirations for achievement at the global level; and (ii) a flexible framework for the establishment of national or regional targets. Parties are invited to set their own targets within this flexible framework, taking into account national needs and priorities, while also bearing in mind national contributions to the achievement of the global targets. Not all countries necessarily need to develop a national target for each and every global target. For some countries, the global threshold set through certain targets may already have been achieved. Others targets may not be relevant in the country context.

Strategic goal A. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society

***Target 1*:** By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

***Target 2*:** By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

***Target 3*:** By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions.

***Target 4*:** By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

Strategic goal B. Reduce the direct pressures on biodiversity and promote sustainable use

***Target 5*:** By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

***Target 6*:** By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

Strategic goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascapes.

Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

Strategic goal D: Enhance the benefits to all from biodiversity and ecosystem services.

Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

Strategic goal E. Enhance implementation through participatory planning, knowledge management and capacity building

Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels

Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred,[1] and applied.

Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan 2011-2020 from all sources and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resources needs assessments to be developed and reported by Parties.

Appendix 2

Green spaces 'reduce health gap'

A bit of greenery near our homes can cut the "health gap" between rich and poor, say researchers from two Scottish universities.

Nature may be good for health

Even small parks in the heart of our cities can protect us from strokes and heart disease, perhaps by cutting stress or boosting exercise.

Their study, in The Lancet, matched data about hundreds of thousands of deaths to green spaces in local areas.

Councils should introduce more greenery to improve wellbeing, they said.

> **This study offers valuable evidence that green space does more than 'pretty up' the neighbourhood**
>
> Dr Terry Hartig
> Uppsala University, Sweden

Across the country, there are "health inequalities" related to income and social deprivation, which generally reflect differences in lifestyle, diet, and, to some extent, access to medical care.

This means that in general, people living in poorer areas are more likely to be unhealthy, and die earlier.

However, the researchers found that living near parks, woodland or other open spaces helped reduce these inequalities, regardless of social class.

When the records of more than 366,000 people who died between 2001 and 2005 were analysed, it revealed that even tiny green spaces in the areas in which they lived made a big difference to their

risk of fatal diseases.

Although the effect was greatest for those living surrounded by the most greenery, with the "health gap" roughly halved compared with those with the fewest green spaces around them, there was still a noticeable difference.

Stress buster

The change was particularly clear in areas such as heart disease and stroke, supporting the idea that the presence of green spaces encourages people to be more active.

However, the researchers, Dr Richard Mitchell from Glasgow University, and Dr Frank Popham, from the University of St Andrews, said that other studies had suggested that contact with green spaces also helped reduce blood pressure and stress levels, perhaps even promoting faster healing after surgery.

They wrote: "The implications of this study are clear - environments that promote good health might be crucial in the fight to reduce health inequalities."

They called for planning authorities to consider making more green spaces available to improve the health and wellbeing of their residents.

In an accompanying article in The Lancet, Dr Terry Hartig, from the Institute for Housing and Urban Research at Uppsala University in Sweden, wrote: "This study offers valuable evidence that green space does more than 'pretty up' the neighbourhood - it appears to have real effects on health inequality, of a kind that politicians and health authorities should take seriously."

David Tibbatts, from GreenSpace, a charity which promotes parks in urban areas, said that they were threatened by "decades of decline" in some areas.

"The study confirms what we have been saying for many years - parks are important for health and everyone should have access to high quality, beautiful and vibrant green spaces. "Unfortunately, despite the benefits green spaces bring to communities, our

research has shown a decline in park services that has spread across more than 30 years.

"Despite increase recognition of their role in areas such as improved health, far too many parks teams find their revenue budgets are still under continuous threat."

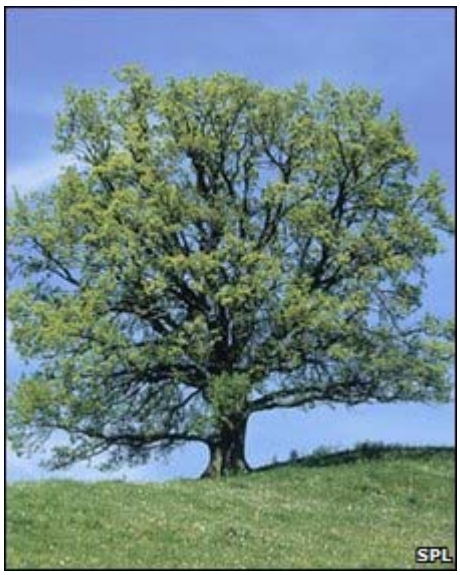
Professor Barbara Maher from the Lancaster Environment Centre said her research had shown that roadside trees improve health by protecting people from pollution.

"Urban and roadside trees may be an under-used resource both in terms of acting as natural 'pollution monitors' and actively screening people, especially, children and the already ill, from the damaging health effects of particle pollution," she said.

Appendix 3

'Green' exercise quickly 'boosts mental health'

Just five minutes of exercise in a "green space" such as a park can boost mental health, researchers claim.



Green space is important for mental health

There is growing evidence that combining activities such as walking or cycling with nature boosts well-being.

In the latest analysis, UK researchers looked at evidence from 1,250 people in 10 studies and found fast improvements in mood and self-esteem.

The study in the Environmental Science and Technology journal suggested the strongest impact was on young people.

The research looked at many different outdoor activities including walking, gardening, cycling, fishing, boating, horse-riding and farming in locations such as a park, garden or nature trail.

The biggest effect was seen within just five minutes.

With longer periods of time exercising in a green environment, the positive effects were clearly apparent but were of a smaller magnitude, the study found.

Looking at men and women of different ages, the researchers found the health changes - physical and mental - were particularly strong in the young and the mentally-ill.

Green and blue

A bigger effect was seen with exercise in an area that also contained water - such as a lake or river.

Study leader Jules Pretty, a researcher at the University of Essex, said those who were generally inactive, or stressed, or with mental illness would probably benefit the most from "green exercise".

> **We would like to see all**

"Employers, for example, could encourage staff in stressful workplaces to take a short walk at lunchtime in the nearest park to improve mental health."

He also said exercise programmes outdoors could benefit youth offenders.

> **doctors considering exercise as a treatment where appropriate**
>
> Paul Farmer, Mind

"A challenge for policy makers is that policy recommendations on physical activity are easily stated but rarely adopted widely."

Paul Farmer, chief executive of mental health charity Mind, said the research is yet further evidence that even a short period of green exercise can provide a low cost and drug-free therapy to help improve mental wellbeing.

"It's important that people experiencing depression can be given the option of a range of treatments, and we would like to see all doctors considering exercise as a treatment where appropriate."

Mind runs a grant scheme for local environmental projects to help people with mental illness get involved in outdoor activities.

** 'Green' exercise 'boosts health' **
Just five minutes of exercise in a "green space" such as a park can boost mental health, say researchers.
< http://news.bbc.co.uk/go/em/fr/-/2/hi/health/8654350.stm >

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Green Space Helps Reduce Depression and Anxiety
http://psychcentral.com/news/2009/10/19/green-space-helps-reduce-depression-and-anxiety/9042.html

By Rick Nauert PhD *Senior News Editor*
Reviewed by John M. Grohol, Psy.D. on October 19, 2009

 A new study documents that people living close to green space have lower rates of anxiety, depression and poor physical health than those living in the concrete jungle.

The research, published ahead of print in the *Journal of Epidemiology and Community Health* is based on the health records of people registered with 195 family doctors in 95 practices across the Netherlands. Between them, the practices serve a population of almost 350,000.

The percentages of green space within a 1- and 3-kilometer (roughly half a mile to two mile) radius of their home were calculated using the household's postcode. On average, green space accounted for 42 percent of the residential area within a 1-kilometer radius and almost 61 percent within a 3-kilometer radius of people's homes.

Green space within a kilometer radius of an individual's home had the most impact on rates of ill health.

The annual rates of 15 of 24 different disease clusters, categorized as cardiovascular disease, musculoskeletal disorders, mental ill health, respiratory disease, neurological disease, digestive disease, and miscellaneous complaints were significantly lower among those living close to more extensive areas of green space.

The impact was especially noticeable on rates of mental ill health.

The annual prevalence of anxiety disorders among those living in a residential area containing 10 percent of green space within a 1-kilometer radius of their home was 26 per 1000, and for those living in an area containing 90 percent of green space it was 18 per 1000. Similarly, the figures for depression were, respectively, 32 and 24 per 1000 of the population.

The association was strongest for those who spent a lot of time in the vicinity – children and those with low levels of education and income – as well as those between the ages of 45 and 65. Exactly how the provision of green space affects health is not clear, but it may indicate better air quality as well as offering opportunities for relaxation, destressing, socializing and exercise, suggest the authors.

"This study shows that the role of green space in the living environment for health should not be underestimated," they conclude, adding that many of the diseases and disorders on which green space seems to exert a positive influence are common and costly to treat.

Source: The Journal of Epidemiology and Community Health

The Lancet, Volume 372, Issue 9650, Pages 1655 - 1660, 8 November 2008

http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2808%2961689-X/abstract

doi:10.1016/S0140-6736(08)61689-X

Effect of exposure to natural environment on health inequalities: an observational population study

Dr Richard Mitchell PhD Frank Popham PhD

Summary

Background

Studies have shown that exposure to the natural environment, or so-called green space, has an independent effect on health and health-related behaviours. We postulated that income-related inequality in health would be less pronounced in populations with greater exposure to green space, since access to such areas can modify pathways through which low socioeconomic position can lead to disease.

Methods

We classified the population of England at younger than retirement age (n=40 813 236) into groups on the basis of income deprivation and exposure to green space. We obtained individual mortality records (n=366 348) to establish whether the association between income deprivation, all-cause mortality, and cause-specific mortality (circulatory disease, lung cancer, and intentional self-harm) in 2001—05, varied by exposure to green space measured in 2001, with control for potential confounding factors. We used stratified models to identify the nature of this variation.

Findings

The association between income deprivation and mortality differed significantly across the groups of exposure to green space for mortality from all causes ($p<0·0001$) and circulatory disease ($p=0·0212$), but not from lung cancer or intentional self-harm. Health inequalities related to income deprivation in all-cause mortality and mortality from circulatory diseases were lower in populations living in the greenest areas. The incidence rate ratio (IRR) for all-cause mortality for the most income deprived quartile compared with the least deprived was 1·93 (95% CI 1·86—2·01) in the least green areas, whereas it was 1·43 (1·34—1·53) in the most green. For circulatory diseases, the IRR was 2·19 (2·04—2·34) in the least green areas and 1·54 (1·38—1·73) in the most green. There was no effect for causes of death unlikely to be affected by green space, such as lung cancer and intentional self-harm.

Interpretation

Populations that are exposed to the greenest environments also have lowest levels of health inequality related to income deprivation. Physical environments that promote good health might be important to reduce socioeconomic health inequalities.

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http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2808%2961689-X/abstract

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From CBC website:

Parks help narrow health gap between rich, poor: study

Last Updated: Friday, November 7, 2008 | 1:16 PM ET *Comments*32*Recommend*56

CBC News

Green spaces encourage people to be physically active and reduce stress. Green spaces like parks and forests help narrow health gaps between the rich and poor living in cities, say researchers who are urging urban planners to invest in greenery.

In Saturday's issue of the Lancet, Richard Mitchell of the University of Glasgow and his colleagues looked at mortality records, income data and the amount of green areas for more than 366,000 people in England who were below retirement age in 2001 to 2005.

In general, studies show that people living in poorer areas tend to be more unhealthy and die earlier because of differences in diet, lifestyle and access to medical care.

Living near open, undeveloped land such as parks, forests, playing fields and river corridors seemed to help reduce this gap, according to the latest study.

The difference in the rate of deaths between the richest and poorest was roughly halved for those living with the most greenery around them, compared with those with the fewest green spaces, the researchers found.

"The size of the difference in the health gap is surprising and represented a much bigger effect than I had been expecting," said Mitchell.

"So the key message is green spaces are another tool for governments to combat this health gap between rich and poor."

Green space `more than pretty'

The difference more than doubled for deaths from circulatory disease such as heart disease and stroke, but there was no effect on suicides, the researchers said.

Green spaces may encourage people to be more physically active, and previous studies have suggested that parks

and open space help people reduce blood pressure and stress levels, and perhaps even heal more quickly after surgery.
"The implications of this study are clear: environments that promote good health might be crucial in the fight to reduce health inequalities," the study's authors concluded.
In a commentary accompanying the study, Terry Hartig of the Institute for Housing and Urban Research at Uppsala University in Sweden agreed: "This study offers valuable evidence that green space does more than pretty up the neighbourhood. It appears to have real effects on health inequality, of a kind that politicians and health authorities should take seriously."
The final report of the World Health Organization's Commission on the Social Determinants of Health also called for wide-ranging improvements in daily living conditions.
Restoring environmental supports to mitigate health inequities could help achieve these goals, Hartig said.

The focus on greening homes and offices is ignoring the wider landscape of our towns and cities, argues Martha Schwartz. In this week's Green Room, she says 21st Century urban spaces must undergo a green revolution.

The landscape is the canvas upon which we live our lives, join together as communities and build our cities

When it comes to environmental concerns, there has been altogether too much fragmented talk of buildings.

We have consistently failed to recognise that buildings are situated in wider landscapes that desperately need greater attention.

As I go about my work as a landscape architect, I regularly deal with our profession's role within the green agenda.

Unfortunately, I have found that we lag behind architects when it comes to participating in the conversation around sustainability; in fact, we are often relegated to presiding over green roof technology.

This is most ironic, because landscape architecture is, in fact, the profession that deals with the "green" part of the agenda.

The reason for the focus on buildings, as opposed to that of the surrounding landscape, is down to the fact that the uses of resources and energy can be addressed with a degree of simplicity and directness.

Meanwhile, landscape architects are left outside looking in on the discussion because our professional remit rests outside these technologically oriented and building-focused discussions.

This is problematic because the nature of our profession is to focus on pressing environmental issues in a holistic fashion, in what I call the Softer Side of Sustainability.

This approach involves creating a sense of place, identity and belonging, in order to develop sustainable communities and - I hope - improve the environment.

Living landscape

We seem to have forgotten that sustainability itself is a cultural notion, and that a building or a place must have value to people if it is to be used sustainably.

It is therefore vital that landscape architects assert this both in our advocacy and in our actual work; for so long as we trail behind the architects by topping their buildings with green roofs, we are simply fiddling while Rome burns.

The landscape is the canvas upon which we live our lives, join together as communities and build our cities.

Embedded and integral to the landscape are the ecological systems that must be understood and respected, as well as the infrastructural systems connecting us all together.

“Encouraging people to live side-by-side more closely will help the local ecology to flourish”

I am not simply referring to gardens and majestic wildernesses; in fact, the most sustainable form of human habitation is the city.

This is where we collectively need focus our activities, and this is also where landscape architects can be of real use.

Encouraging people to live side by side more closely will help the local ecology to flourish, because the community can utilise superior water stations and sewage treatment plants, as well as improving electricity consumption patterns.

Cities also inspire a collectivisation of wealth, allowing local governments to better build and equip schools, libraries, and performing arts buildings.

So the reward of collectivisation can be true sustainability. City inhabitants, from a variety of backgrounds, can be quickly made aware of environmentally friendly ways to live.

> **This planning process should include measures to encourage compaction of the urban landscape, along with more efficient public transportation**

This, in turn, can result in people influencing one another as they incorporate progressive lifestyle changes into the fabric of their diverse daily lives.

Landscape architects ought to help to make cities better places for all who live within them through the establishment of good connectivity and open spaces, the promotion of public transportation and, very importantly, ensuring water is used responsibly, with run-off being managed and put back into the ground.

In addition, landscape architects ought to ensure developers plant as much as possible so that we have an abundance of trees and permeable surfaces.

Careful and inspired design can make all the difference between a place that is viewed as no real significance to anyone, and a place that attracts people, creates vitality, and is cherished by its inhabitants.

The design of Exchange Square in Manchester, UK, is a good example of how careful attention to a community's history and a site's geology can foster the sort of intellectual and emotional investment in a place that leads to real sustainability.

Exchange Square is a wonderful outdoor living room created from a space that was formerly an ignored and ugly traffic intersection, bombed by the IRA in 1996.

The revamped square is now hugely successful; a vibrant and well-used space for everything from watching soap operas during the lunch hour to greeting the Queen.

10-minute rule

Currently, some urban authorities, such as New York, fall short of implementing the issues around the Softer Side of Sustainability, but they are heading in the right direction.

For example, PLAN NYC, the sustainability agenda for the eastern US concrete jungle, includes a proposal to ensure that all New Yorkers live within a 10-minute walk of a park.

But this reference to parks is the only mention of the landscape in the NYC sustainability agenda.

PLAN NYC is certainly a marvellous commitment to improving the lives of citizens by giving them access to fresh, green, open spaces. But it does not push the envelope quite far enough.

It does not advocate the vital commitment to landscapes that reflects the most forward visual thinking, through dynamic, inspirational design, and structured attentiveness to community histories.

New York is one city that is heading in the right direction

The role of landscape architecture is once again one of green embellishment, adding parks here and there, rather than sustainability agenda-setting through thought-provoking design.

Although NYC embraces its image as the centre of the global contemporary art scene, it has supported neither adventurous architecture nor landscape architecture.

For the best examples of this, we have to look to areas like Germany's Duisberg Nord Parc in the Ruhr Valley, or the beautiful green spaces of the Park Andre Citroen in Paris.

So how are we to implement The Softer Side of Sustainability?

First, we should incorporate the expertise of landscape architects into the planning process leading up to the establishment of sustainability agendas such as PLAN NYC.

This planning process should include measures to encourage compaction of the urban landscape, along with more efficient public transportation.

Secondly, we should increase sustainability education for students of landscape architecture, architecture, and urban development.

Finally, American builders should learn from the design overviews used in much European urban planning, but extend their minds to reflect the sophistication of landscape thinking.

Three straightforward steps, but they are key to deciding whether cities can develop effectively for the 21st Century, or remain mired in yesterday's thinking. ”

Martha Schwartz is a US-based landscape architect specialising in master plans, art commissions, urban renewal, reclamation and redevelopment

The Green Room is a series of opinion pieces on environmental topics running weekly on the BBC News website

Appendix 4

"Benefits of outdoor experiential learning

Numerous studies affirm the benefits to children and youth of direct experience with the natural environment (Charles, Louv, Bodner, Guns & Stahl, 2009)

Children's daily exposure to natural settings improved their capacity to focus and enhanced their cognitive abilities.*

Children who played outside everyday, regardless of weather conditions, had better motor coordination and concentration compared to children who did not play outside everyday.*

Academic achievement among youth improved when school curricula was organized around the outdoor environment.*

The regular practice of nature-based, experiential learning at school significantly improved student outcomes in Social studies, Science, Language Arts, and Math.*

Increased "greening" of the everyday environment improved the ability of children with symptoms of Attention-Deficit Disorder to manage their symptoms.*

One study showed that 90 percent of respondents—which included parents, teachers, and principals—reported increased student enthusiasm and engagement in learning that occurred outdoors in comparison to learning indoors. 70 percent of respondents also reported increased motivation for teaching that occurred outdoors in comparison to teaching indoors.*

*Source: Children and Nature 2009: A Report on the Movement to Reconnect Children to the Natural World."

Appendix 5

A Vision of Meadowbrook

I see a renaturalized Meadowbrook with forests, and plains, meadows and wetlands. I see community gardens, play areas, hiking, cycling and cross country ski trails. I see forests and meadows of wild flowers.

I see citizens out for a stroll, relaxing, and enjoying themselves. I see people picnicking in the open fields, enjoying the wild flowers, gardening in the agricultural areas. I see people bird watching. I see children running around and exploring, enjoying the playgrounds, mixing with their friends. I see our future biologists inspired to enter the profession because of their experience on Meadowbrook.

In the winter I see crowds of children tobaggoning down the hills of Meadowbrook. I see families cross country skiing and snowshoing.

I see the health of our children improving because they now have some interesting place to go. I see our children performing better in school because they have been calmed and relaxed by their exposure to natural spaces. I see these natural spaces as igniting our children's curiosity to learn and explore. I see children turned on to learning.

I see school trips organized to explore Meadowbrook. I see the universities conducting research projects on Meadowbrook.

I see the allure of a large natural space to future residents of the vast spaces being recovered from their industrial past nearby in Lachine.

I see 57 hectares of opportunity for Montreal.