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London Green Belt: From Health-Scape to Infra-Scape

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Abstract: The idea of a green belt around London emerged in the 19th century in response in large part to the catastrophic urban health conditions of that period. At a time when cholera was believed to be airborne, providing fresh air for the city became a question of public heath. Communal parks and green girdles or belts were installed as a policy response to emergencies such as the cholera outbreak in Soho in 1853-54, to serve as the "green lungs" for the city. The resultant green area around the city protected from urban development was thus conceived of as an urban infrastructure for health. In recent years, however, the Green Belt infrastructure has been foregrounded in the effort to promote environmentally friendly sustainable development; the last two Mayors of London have both declared further protection and extension of London's Green Belt under the banner of sustainability. This paper examines how the discourse around and functionality of London's Green Belt has evolved since its conception as an urban public health strategy, from a health-scape to a variegated infra-scape. The paper concludes with suggestions on how the narrative and management of the London Green Belt could be adapted to contemporary ideas for environmental and social sustainability, including promoting health and liveability.

Keywords: London Green Belt, landscape infrastructure, sustainable development, healthy cities

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1. Introduction

In the current age of urbanization, where space is an increasingly scarce resource, "soft" infrastructural strategies involving land-use and planning policies are key for ensuring long-term sustainability at the urban and regional scales. Such "soft" infrastructural strategies are especially important in rapidly urbanizing regions, where there are often significant financial and logistical constraints to implementing "hard" infrastructural strategies or technology-based (and thus more costly) solutions.

This paper examines the case of how a piece of open landscape—the London Green Belt—has evolved as such a soft infrastructure since its conception to its present-day condition. An exploration of the discourse surrounding the Green Belt, at its conception and as it stands today, reveals how this entity has evolved from an urban infrastructure for public health and for containing urban sprawl, to an infrastructural landscape hosting a new and unforeseen catalogue of urbanistic peripheral possibilities, ultimately supporting the urbanization of a metropolitan region.

The fundamental conceptions for a green belt around London were conceived in the 19th century in the context of the exponential growth and the industrialization of London. The motivations for this green belt transformed and adapted to meet new objectives as they arose. Three periods representing three dominant discourses of the Green Belt can be identified: the conception and establishment period (-1955), the maturation and national replication period (-1970s), and the revisions and international replication period (-2000). During each of these periods, the objectives for maintaining the London Green Belt underwent significant revisions, and with it, its functions and form as a landscape.

The concept of a green belt around London has always inspired both strong supporters and critics throughout its history, each group with their own very specific interests. Today, health issues are no longer the primary argument for preserving the Green Belt. Rather, its benefits in promoting sustainable or environmentally friendly development are foregrounded in public and political discourse. In light of justified appeals to control or limit urban growth worldwide, now particularly relevant in rapidly urbanizing regions in Asia, South America, and Africa, it is important to investigate the London Green Belt as a historical model, to understand the impact of such strategies on the cities and regions, and their contribution to the overall sustainability of the region. The green belt as a strategy has been exported to and employed in numerous other cities and regions around the world. Thus, an understanding the impact and effectiveness of the green belt as a planning tool for sustainability has wide-ranging relevance.

2. Origins of the London Green Belt

2.1 A rapidly urbanizing region: 19th century London

London was the largest city in the world at the beginning of the 19th century, with a population of one million. By 1851, when the first World Exhibition opened in Paxton's Crystal Palace, its population had grown to 2.5 million inhabitants. Fifty years later, in 1901, 4.5 million inhabitants were counted in the County London (established in 1888, encompassing an area of 300 km^2). An additional estimated 2 million people is thought to have settled just outside the borders of the county, bringing the total population of the agglomeration to and estimated 6.5 million. By 1921, the population of London was 7.5 million, and by the onset of Word War II in 1939, almost 9 million [1]. Thus, in less than 100 years,

the population of the London agglomeration had quadrupled. The extreme dynamics within which the city developed cannot be understood independently from its location in the heart of the British Empire, which in 1921 circumscribed an area the size of 37 million km^2 and ruled over 500 million people—one third of the world's population at that time [2].

2.2 The emergence of the idea of a green belt around London

The problem of this fast-growing population in London was being discussed by a network of politicians, planners and high-ranking civil servants by the early 1900s [3] [4] [5]. Lord Meath, the first chairman of the London County Council's 'Parks and Open Spaces Committee', proposed a green belt as early as 1901, focussing on escaping from the city, rather than improving the conditions within the city. During a visit to the United States, Lord Meath had been much impressed with the work of Frederick Law Olmsted, in particular New York's Central Park and the broad boulevards around Chicago and Boston [6]. According to Thomas, Bull who was a Member of the Parliament, also proposed a "green girdle round London" in 1901 [7]. Pepler, Webb and Purdom also suggested solutions for the improvement of conditions in London in 1911, 1918, and 1921, respectively [8] [9] [10].

By the 1920s, in the inter bellum period, concern over urban growth had become much more widespread, with much of the concern directed at the rate of suburban development in London [11]. By 1944, town planner Patrick Abercrombie proposed a green belt in his "Greater London Plan" [12]. The belt was generally understood as a remedy that could tackle many of the problems that came as side effects of a fast expanding metropolis.

One decade later, in 1955 the Ministry of Housing and Local Government introduced the 'Metropolitan Green Belt', or 'London Green Belt', as the first statuary green belt in Britain [13]. This green belt is still more or less intact today. The ministry's much cited "Green Belt Circular" stated the official motivation for installing the green belt: "It could be used to check the growth of a large built up area, it could prevent the merging of two neighbouring towns, or it could assist in preserving the special character of a town." [13] The circular proposed that, if possible, the green belt should be sufficient in size to ensure the preservation of a substantial rural zone. Except in very special circumstances, no new buildings, or changes in the use of existing buildings, were permitted, other than to allow for agriculture, sports, cemeteries, institutions standing in extensive grounds, or other uses deemed appropriate for rural areas. Its intended effect was simple: apart from infills and rounding off of towns (i.e. densification of existing built areas), towns and villages should not grow. The circular underlines that the focus lay not with the Green Belt as a landscape in itself, but upon the effect it would have on London, as well as the cities and towns in the London agglomeration. Thus, originally, it was not necessarily the protection of the countryside that was intended, but rather the provision of certain amenities and rural scenery for the city.

Figure 1. London Green Belt, near Welwyn Garden City. Photograph by V. M. Carlow.

2.3 Green Belt as tool for health

As much as the Green Belt was a response to the unruly growth of 19th century London, it was also a response to the partially catastrophic health conditions that ruled London, and many other cities, during that time. Ideas of communal parks, green girdles, and green belts were conceived of to function as the "green lungs" for the city [14]. The populations of large cities—the working poor in particular—were enslaved to periodic epidemic outbreaks of cholera, typhus, smallpox and even the plague. In London, the largest city in the world at that time, the direness of the conditions as well as the search for relief were most pressing.

At the time of the large cholera outbreak in Soho, London in 1853-54, it was still believed that epidemic diseases were airborne. Even though people like the physician John Snow and cleric Henry Whitehead had discovered that the majority of this epidemic's victims had drunk water from the same pump on Broad Street, it was as yet unknown that there were invisible microbes and bacteria in the water that caused such diseases [15]. Many influential people believed that harmful fumes emanated from the pump, causing so many fatal victims—literally, that the air of London was killing people. In contrast to today, it was not believed that the industrial exhausts were harmful, but rather the stink, which was caused by bad drainage and the lack of sanitary sewage systems. As Edwin Chadwick declared in his testimony to a parliamentary committee investigating the problems of London's sewage in 1846 "... all smell is disease." [16] The Public Health Act was passed in 1848 to tackle theses issues, and Chadwick was appointed to the 'Poor Law Commission' and the General Board of Health.

Friedrich Engels also wrote in 1872: "... cholera, typhus, typhoid fever, small-pox and other ravaging diseases spread their germs in the pestilential air and the poisoned water of these working-class quarters. In these districts, the germs hardly ever die out completely, and as soon as circumstances permit it they develop into epidemics and then spread beyond their breeding places also into the more airy and healthy parts of the town inhabited by the capitalists." [17] Engels knew all too well what he was talking about. His friend Karl Marx lived with his family in one of London's poorer quarters, in the very Soho neighbourhood that was so ravaged by the 1853-54 cholera epidemic. Marx lost one of his daughters to the epidemic. Even though Engels had already acknowledged that the provision of clean water was a social question—which is still an issue in many parts of the world today—–he also attributed the emergence of the diseases to the bad air, like so many others. Therefore, the main route to public health was believed to be to remove the noxious smells in London. Thus, providing for fresh air became a question of public health, a course to which many influential people, among them also the supporters of green belt, committed. [15]

This belief is reflected also in the work of the highly influential planner, Ebenezer Howard. He was referring to the smoke, foul air and slums in the city in his seminal book, *Garden Cities of Tomorrow,* when he wrote: "... the Country (is) the source of all beauty and wealth... there are... beautiful vistas, lordly parks, violet-scented woods, fresh air..." [18] Miasmic theories—those theories that propagated the distribution of diseases via foul air—were so entrenched in the scientific establishment that only after Robert Koch isolated the Cholera bacterium in 1883 were they eradicated from public discourse, bit by bit. It is in this light that the communal parks and green girdles, or open spaces in general, should be understood, as essentially spatial strategies to ensure public health. This is an aspect often overlooked or misunderstood today when the words 'light and air' are used as an argument for low-density developments. Even until recently this idea found repercussion in many utopian visions for city life as the call for 'light, air, sun' [19].

3. The London Green Belt today

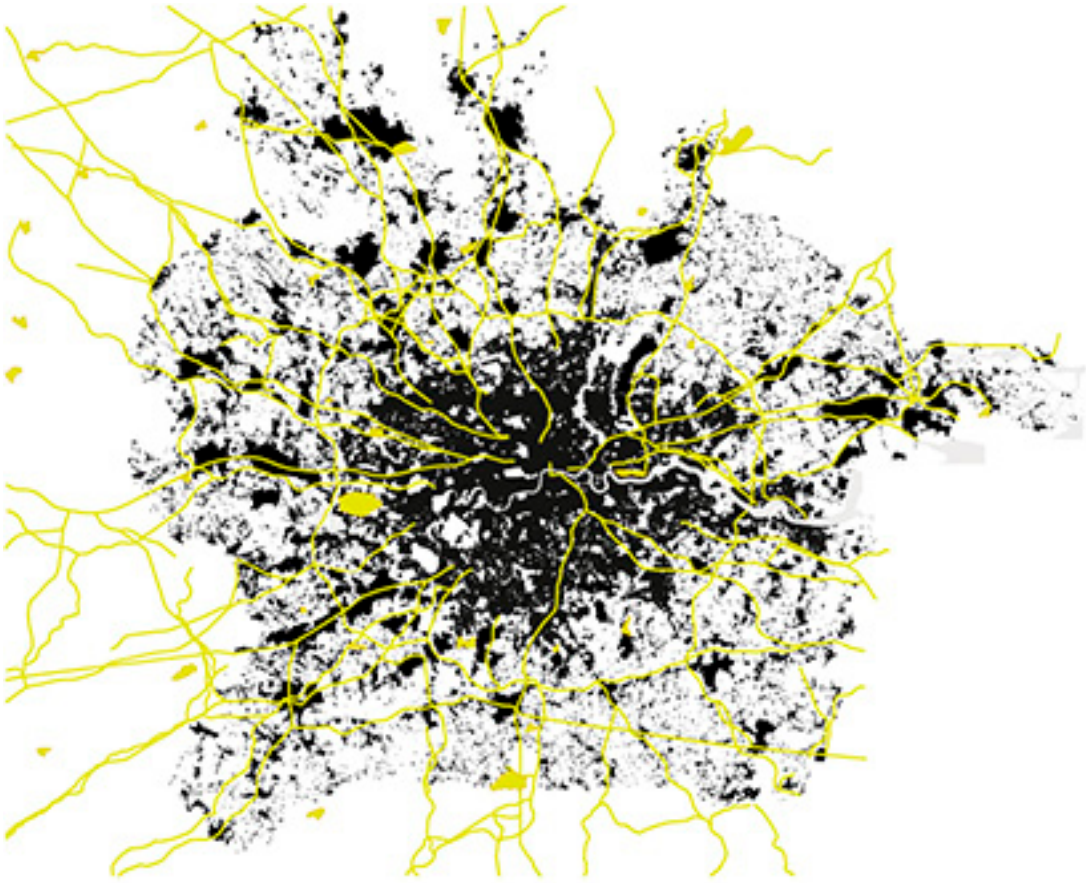
3.1 The Green Belt today – a programmatic analysis

Figure 1. London Green Belt, official map. Graphics by V.M. Carlow.
Data source: London Greenbelt Council
(http://londongreenbeltcouncil.org.uk/lgbc%20website/pdf/mapgreenbelt.pdf) and
Magic.gov (http://www.magic.gov.uk/staticmaps/maps/gn_belt_bw.pdf).
Both accessed Aug 24, 2009.

The Green Belt today, contrary to the image its name might conjure—that of open, vegetated parks—is actually a variegated landscape of varying degrees of urbanization, serving the modern city of London with the very infrastructure that reinforces its status as a global city [20]. A detailed analysis of the 2011 land use of the areas of the London Green Belt, using satellite images from Google Earth and cross-referenced with the vector-based official map of the Green Belt (provided by the London Green Belt Council and the British Government in 2009), reveals that the Green Belt is only slightly more green (or vegetated) than it is built-up. The programmatic analysis reveals that approximately 15.7% is forest (comprised of roughly 5,400 patches); 2% is water; 2.9% is golf courses; and 35% is agricultural land, which includes fields, grazing land, and meadows. Together, this adds up to 57% of open land. The remaining 43% is sealed, or built-up land, and its various functions include: mega-highways; the high-speed train corridor; nineteen civilian or military airports; areas used by large-scale industries; and large sports venues, like horse racing tracks. In addition, some of the spaces that are categorized as "green" land can be argued to be heavily under influence of the built-up land: the landing and approach paths of the city's four major airports, Heathrow, Stansted, Luton and Gatwick, lie above the area of the statutory Green Belt. This means that, legally, housing cannot be located in these noise-burdened areas. All together, these built-up areas within the Green Belt add up to be one third larger than the land covered by Greater London itself.

Figure 2. London Green Belt, open land use. Graphics by V.M. Carlow.

Figure 3. London Green Belt, built up area and major roads and rail lines. Graphics by V.M. Carlow.



Thus, the London Green Belt today can be characterized as a belt of infrastructure around the region, or infra-belt, supporting the very infrastructural functions that the global city of London requires [20] [21]. Furthermore, it is clear that despite the original intent, the city was, in pieces, allowed to expand into this area. It would be more accurate to say that what was specifically not allowed to expand into this area was housing, but even that has exceptions. There are 773 distinct land patches of legal regulation exemptions in the Green Belt—some of them New Towns like Harlow, Hemel Hempstead, or Ascot.

3.2 Contemporary challenges to the London Green Belt

The Green Belt remains today a topic of politicking and contention. Although population growth in London is no where near the explosive rates it held in the 19th century, development pressure remains high, as London maintains its dominant role amid shifts in globalization and as it continues to receive in-migration to its urban areas.

The last two mayors of London have both declared the protection and maintenance of the Green Belt, under the banner of (environmental) sustainability [22] [23]. The former mayor Livingston's 2002 report states, "... to support sustainability in the UK as a whole, London must accommodate its growing population within its existing boundaries— proposals to build over the Green Belt are environmentally unacceptable." [22] The report issued by current mayor Boris Johnson in 2009, updated in March 2015, states, "In short, the Mayor will seek to manage growth to ensure it takes place in the most sustainable

way possible—within the existing boundaries of Greater London, and without encroaching on the Green Belt or London's other open spaces." [23] The Green Belt is now presented as an important element of London's "multifunctional green infrastructure", its functions and purpose in the region associated with "human health, biodiversity and improve overall quality of life." [23] What is noticeable in these documents is that the discourse around the protection of the Green Belt is now framed around the needs of environmental sustainability, with financial and sociological implications even at the national scale.

While London is no longer the rapidly growing metropolis of its 19th century days, it is still nonetheless facing a significant population growth, as it maintains its globally dominant position in the financial and cultural industries. It faces significant housing shortages, as domestic and international in-migration continues. To add to this, London, as with other global cities, faces challenges in rising housing prices, growing socio-economic inequality, difficulty maintaining housing affordability for the lower and middle- income groups, growing socio-economic inequality—driven in part by a globally charged real estate market and speculation. Though the last two mayors of London have declared continued protection, the Green Belt thus faces significant development pressures today by the city's outsourcing of vital infrastructures into the Green Belt. This includes not only (air)ports, but also retail outlets, recreational, waste handling or water management facilities.

3.2 The Green Belt and sustainability

So what about the London Green Belt makes it particularly sustainable? Currently, national and local policy objectives for the use of land in the Green Belt include: providing access for formal and informal recreation, for outdoor sports, the conservation and enhancement of the landscapes, improving damaged and derelict land, securing access to nature, enhancing the appearance of towns and settlements, and retaining land for agricultural, forestry and related uses close to the urban population [23]. Yet, it also houses many high-emission functions, such as airports, and functions that foster car use and low bio-diversity quotients, such as golf courses. What about it contributes to greater sustainability of the region?

Firstly, it promotes denser built environments, which are associated with lower emissions and more efficient delivery of services. Secondly, it protects much needed pervious, vegetated spaces, and therefore its biodiversity and natural cycles. Thirdly, the landscape that could take on entirely new meanings and functions, informed by contemporary ideas about environmental and socially sustainable practices, even as they evolve. For example, one can imagine that the Green Belt could host water retention areas, carbon sinks, or spaces for renewable energy or local food production.

It is exactly that openness to transformation that is the very quality of the London Green Belt. Many functions and meanings can be inscribed to it, as an open development. Even though simple rules orchestrate the appearance and use of the Green Belt, it lends itself to a wide range of possible uses currently not used to its full potential. Today, the Green Belt is widely argued to promote sustainable urban development. Yet, it is not clearly defined or demonstrated why that is in London's current situation. In particular with regard to future developments under the umbrella of sustainability, many more objectives could be implemented in the Green Belt landscape.

4. Conclusions

There were clear objectives for which the idea of Green Belt emerged, for which it was established, and for which it is still protected today. In retrospect, it becomes clear that the Green Belt narrative has changed from that of providing health to the unruly industrial metropolis, to supporting a more sustainable development for the region. This paper has undertaken a description and analysis of the beginnings of the discourse surrounding the conception of the London Green Belt as a spatial strategy for public health, and how it has evolved into quite another thing today. As an urban design and planning strategy conceived in part from health concerns and from the rapid, unconstrained growth of 19th century London, this study finds resonance with many contemporary urban conditions, particularly in the currently rapidly urbanizing regions in developing economies.

As demonstrated in this paper, the discourse surrounding the London Green Belt can and was adapted to evolving ideas for environmental and social sustainability. Today, this definition of sustainability includes the provision of local food production, installation of renewable energy facilities, and the promotion of healthy lifestyles and better liveability for Londoners. It is precisely this ability for the Green Belt to adapt to changing discourse and ideas that makes it an important tool in urban planning.

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Conflict of Interest

The authors declare no conflict of interest.

References and Notes

1. Benevolo, L. *Die Geschichte der Stadt*; Campus Verlag: Frankfurt/Main, New York, 1975, 2000; transl. by author.
2. Wende, P. *Das Britische Empire. Geschichte eines Weltreichs*; C. H. Beck: München, Germany, 2008.
3. Lord Meath. *The Green Girdle Round London*. 1901. The article is reprinted with some omissions in *The Garden City 1906-7*.
4. Geddes, P. *City Development: a Study of Parks, Gardens and Culture Institutes*; Geddes & Comp.: Edinburgh, 1904.
5. Unwin, R. *Nothing Gained by Overcrowding*; Garden Cities and Town Planning Association: London, 1912.
6. Thomas, D. London's Green Belt: The Evolution of an Idea. *The Geographical Journal*, Vol. 129, No. 1, pp. 14-24, Mar. 1963.

7. Cited after: Thomas, D. *London's Green Belt*. Faber & Faber: London, 1970. p.47.
8. Pepler, G. *A Green Belt Round London.* In Garden Cities and Town Planning NS 1; 1911. pp. 39-43, pp. 64-68
9. Webb, A. The London Society's Map, with its Proposals for the Improvement of London. *Geogr. J., 1918,* vol. 51; pp. 273-293.
10. Purdom, C. Ed.; *Town Theory and Practise.* Benn: London, 1921.
11. Unwin, R. Some Thoughts on the Development of London. In *The Future of London*; Aston Webb, Ed.; Dutton: London, 1921; pp. 177-192.
12. Abercrombie, P. *Greater London Plan 1944. A Report Prepared on Behalf of the Standing Conference on London Regional Planning by Professor Abercrombie at the request of the Minister of Town and Country Planning.* H.M. Stationery Office: London, 1944.
13. Ministry of Housing and Local Government. Green Belts. H.M.S.O.: London, 1955. Circular No. 42/55
14. Beveridge, C.; Rocheleau, P. *Frederik Law Olmsted. Designing the American Landscape*. Rizzoli: New York, 1995. That parks should be the "green lungs" of cities was probably coined by Frederick Law Olmsted in the context of his and Calvert Vaux's design for New York's Central Park.
15. Johnson, S. *The Ghost Map: The Story of London's Most Terrifying Epidemic – and How It Changed Science, Cities, and the Modern World*. Riverhead Books: New York, 2006.
16. Edwin Chadwick cited after Johnson, S. *The Ghost Map: The Story of London's Most Terrifying Epidemic – and How It Changed Science, Cities, and the Modern World.* Riverhead Books: New York, 2006. p. 114
17. Engels, F. *Zur Wohnungsfrage.* Internationaler Arbeiter-Verlag: Berlin, 1873, 1930; transl. by author. This was not the first testimony Engels gave of cholera and other disease. Already in his first work "The Condition of the Working Class in England in 1844" he touched on the subject of poor living conditions and diseases.
18. Howard, E. *Garden Cities of Tomorrow*. Faber & Faber: London, 1898, 1974.
19. Aalto, A. *Sketches. The Dwelling as a problem*. Schildt, G., Ed.; MIT Press: Cambridge, MA, 1930, 1978.
20. Carlow, V. M. From greenbelt to infrabelt—London's green belt as model for a sustainable landscape? " In *specifics*; Sörensen, C.; Liedtke, K., Eds.; Jovis: Berlin, 2014. pp. 212-215.
21. Carlow, V. M. *Limits: Space as resource*. The Royal Danish Academy of Fine Arts: Copenhagen, 2011.
22. Greater London Authority. Planning for London's Growth: Statistical Basis for the Mayor's Spatial Development Strategy. Greater London Authority: London, 2002.
23. Mayor of London. The London Plan: The Spatial Development Strategy For London Consolidated With Alterations Since 2011. Greater London Authority: London, 2015.