ACADEMIA | Letters

# *Post-Pandemic Urban Living: Back to the Stone Age?*

Gustav Milne

---

In December 2020, the World Health Organisation (WHO) published its arresting statistics collating the top ten causes of global death in 2019: Covid-19 was nowhere to be seen. However, when the figures for 2020-21 are finally published, it will be listed as one of the top three global killers, having already claimed over 3million lives. Such a trauma will leave a long legacy. Life after the pandemic will be different socially, economically and politically: the new normal, when it finally arrives, will dramatically differ from the old. This essay suggests how lessons from deep prehistory might provide greater urban wellbeing in that post-pandemic period.

For the first time in human history, more people now live in towns than in rural communities, a key factor which underpinned the all too rapid transmission of that virus. To cope with a projected global population increase from 7.2bn to 9.6bn by 2050, many more cities must be built and, indeed, are being built. Although there are great benefits to modern urban living, there also great costs: the impact of Covid-19 stands as a dreadful example. Alas, there are other "Diseases of Urbanisation" that are taking their toll: Ischaemic Heart Disease has the unfortunate distinction of currently leading the WHO's global killer table, with 8.9m deaths *per annum*, followed by Stroke (over 6m) and Chronic Obstructive Pulmonary Disease with some 3m. Then add to these there the seemingly unstoppable rise in Type 2 diabetes, obesity, coronary issues, lower respiratory infections, and various cancers. The projected new towns should be designed to contain or constrain the epidemic of these "Lifestyle Diseases' that currently plague today's cities.

But how might this be achieved? There has been considerable research on aspects of urban health[1]. Studies have considered the relationships between individuals and society as well as between the natural and the built environment, consideration of cultural, age and wage differentials[2] of building design[3] access to green space[4] air quality[5], public transport

 ©2021 by the author — Open Access — Distributed under CC BY 4.0

**Corresponding Author:** Gustav Milne, gmilne@mola.org.uk
**Citation:** Milne, G. (2021). Post-Pandemic Urban Living: Back to the Stone Age? *Academia Letters*, Article 1717. https://doi.org/10.20935/AL1717.

and excessive car use[6] and many other issues and complex interactions which impact on our urban wellbeing.

To begin to make real progress, we must first take a giant step backwards into the realms of human evolution. The *Evolutionary Determinants of Health* programme[7] initiated at University College London considers, not so much *how*, but *why* so many elements of urbanisation have a negative effect on our health. It then argues for proactive, upstream preventive strategies that address this challenge in a major publication that presented much of the evidence based research underpinning the concept[8]. Some of the fundamental issues considered relate to our basic biology, which simple **cannot** be changed, and urban morphology, which, being an artificial creation, indeed **can** be changed. A new paradigm is therefore suggested that underpins positive forward thinking on town-planning and city lifestyles to create healthier urban environments.

## NORMAL LIVES

Some 7m years ago, our human lineage began diverging from that of the chimpanzee, with whom we still share 98% of our genome and thus a common ancestor[9]. For the majority of the subsequent period, our basic biology gradually evolved, as our various direct ancestors lived off the land, developing into tribally-based 'hunter-gatherer-style' communities. That protracted period in our human evolution is stamped deep into our DNA as our genetic 'normal'.

Such active 'hunter-gatherer-style' cultures, robustly refined by the rigours of natural selection, are well adapted to our bi-pedal physiology, while our dentition, metabolism and digestive system are likewise well suited to a diet of fresh fruit, vegetables, roots, nuts, berries, meat and fish[10]. There have been many detailed studies of the benefits afforded by 'ancestral' diets, beginning with the pioneering approach taken by Weston Price[11], by Melvin Konner and S. Boyd Eaton [12] and by Staffan Lindeberg[13], for example.

The human race is genetically adapted for a life of routine light to moderate activity essential for survival (walking, lifting, carrying, bending, climbing), rather than for long sedentary periods[14]. The actual tasks accomplished in a "normal" hunter-gatherer's day depended on the level of hunger, seasonality, weather or terrain. Nevertheless, it seems that the typical daily distance covered by human locomotion would be in the range of three to ten miles. The necessary daily activities would require an average energy expenditure of between 3,000 and 5,000 kj, up to five times greater than many modern sedentary adults[15]. For today's city dwellers, regular walking or cycling at least part of the way to and from work/school each day would be a modest evolutionary-concordant compromise, given an encouraging townscape to


©2021 by the author — Open Access — Distributed under CC BY 4.0

**Corresponding Author:** Gustav Milne, gmilne@mola.org.uk
**Citation:** Milne, G. (2021). Post-Pandemic Urban Living: Back to the Stone Age? *Academia Letters*, Article 1717. https://doi.org/10.20935/AL1717.

move within[16].

In addition, the lives of hunter-gatherers were lived outdoors within a natural environment. Crucially, we are not born with a fully-functioning immune system, since this co-evolved with us over the long as Professor Graham Rook's ground breaking studies have shown[17]. It is now clear that it is from direct contact with plants, animals and other humans that we obtain the macro-organisms, microorganisms and microbiota that live and thrive on our skin and in the gut, managing our immune system within our own personal ecosystem. We are not born with these microbiota: initially, we derive them initially from our mother's birth canal (but not, alas, from a Caesarean section[18]). Subsequently we absorb these organisms, from the soil, plants, trees and animals, or the air. Without them, we are increasingly susceptibility to allergies, autoimmunity and inflammatory bowel disease. Consequently, reduced contact with nature is bad for our physical health: we still need the microorganisms that only the natural environment can provide. Living in sterile urban areas, however, decreases our exposure to nature (and thus a less effective immune system) while urban life increases exposure to crowd infections.

## DISEASES OF URBANISATION

Culturally, the human race has seen dramatic and rapid transformations. Genetically, however, our evolution has been much more gradual: anatomically we remain much as we were before extensive agriculture and urbanisation were gradually developed in the Neolithic period, some 5,000 to 10,000 years ago. Although there are major benefits in city living, there are also major costs, such as the seemingly unstoppable rise in obesity, coronary-related problems, Type 2 diabetes, Alzheimer's and various types of cancer. According to the World Health Organisation, these are all listed in the ten most common causes of death in modern, urbanised societies. Do these deaths represent that mismatch between human biology and urban culture, or are they just an inevitable result of the ageing process?

There is, however, compelling research that challenges the inevitability of death by 'the diseases of urbanisation'. The major long-term study by Dr Staffan Lindeberg, has shown that ALL those fatal conditions are rare or non-existent in un-urbanised communities still maintaining an 'ancestral' life-style. His detailed research, included results from a long-term study of a large community in Kitava, Papua New Guinea, where some of those people lived well into old age[19].

Archaeological research supports this assumption, following the many studies of ancient cemeteries and related research graphically showing how the transformation from ancestral practices to farming and urbanisation damaged our collective wellbeing. The domestication


©2021 by the author — Open Access — Distributed under CC BY 4.0

**Corresponding Author:** Gustav Milne, gmilne@mola.org.uk
**Citation:** Milne, G. (2021). Post-Pandemic Urban Living: Back to the Stone Age? *Academia Letters*, Article 1717. https://doi.org/10.20935/AL1717.

of plants and animals during the Neolithic period, for example, heralded major changes in the human diet and activity regimes (and thus in our wellbeing) with a noted increase in dental caries, trauma, metabolic and joint disease, the first evidence of tumours, anaemia, diffuse idiopathic skeletal hyperostosis (DISH, a proxy for obesity) and osteoporosis, as well as osteitis and periostitis of sinuses, ribs and skull. The Romans not only introduced the civilising concept of urbanisation to these islands, but also scurvy, osteomalacia (rickets), Reiter's syndrome, gout, ankylosing spondylitis, rheumatoid arthritis, psoriatic arthritis, septic arthritis, tuberculosis, poliomyelitis and leprosy. Arguably, urbanisation was -and often remained- a mixed blessing[20].

Certainly un-urbanised or pre-urbanised populations suffered from malaria, childbirth complications, predators, seasonal food or water shortages and serious accidents. But what they did NOT suffer from were many of the aliments straining our health services today: these were arguably introduced by urbanisation through its culture and its townscapes.

We have to accept that our basic physiology, metabolism and mindset are all determined by our long human evolution. This dictates what we were (and still are) genetically best adapted for, and, just as crucially, what we were not best adapted for. We are well-adapted, for example, to eat fresh food and take daily exercise. Our overburdened National Health Service is all too well aware of the complications that arise from an urban population that ignores these fundamental evolutionary determinants of health, as the incidence of obesity, diabetes, cardiovascular problems and several forms of cancer all too painfully prove. It is salutary to note that some 50% of all hospitalised Covid 19 patients in England were classified as being overweight or clinically obese, 21% were diagnosed with hypertension, 20% suffered from asthma or had chronic respiratory disease and 7.6% had Type 1 or Type 2 diabetes. To repeat, all of those diseases and conditions were rare or non-existent in the Kitava population following an ancestral life-style in Steffan Lindeberg's long-term study. Such an evolutionary concordant life-style adopted by 21st-century urbanites would not cure Covid-19 but it could at least contain or constrain its worst manifestations. Better urban wellbeing is a goal to be progressed in the post-pandemic world: the New Normal could begin with an evolutionary-concordant very old normal

# REFERENCES

[1] von Szombathely et al 2017 von Szombathely, M., Albrecht, M., Antanaskovic, D., Augustin J., Augustin, M., Bechtel, B., Bürk, T., Fischereit, J., Grawe, D., Hoffmann,P., Kaveckis. G., Krefis. A., Oßenbrügge. J., Scheffran. J. and Heinke Schlünzen. K.A Conceptual Modeling Approach to Health-Related Urban Well-Being. *Urban Sci*. 2017,

 ©2021 by the author — Open Access — Distributed under CC BY 4.0

**Corresponding Author:** Gustav Milne, gmilne@mola.org.uk
**Citation:** Milne, G. (2021). Post-Pandemic Urban Living: Back to the Stone Age? *Academia Letters*, Article 1717. https://doi.org/10.20935/AL1717.

*1*, 17; https://www.mdpi.com/journal/urbansci

[2] Liddle, B. Urbanization and Inequality/Poverty *Urban Sci. 2017.*, *1(*4), 35; 27 Nov 2017

[3] Smith, L.; Ucci, M.; Marmot, A.: Spinney, R.: Laskowski, M.; Sawyer, A.; Konstantou, M.; Hamer, M.; Ambler, G.; Wardle, J.;Fisher, A. 'Active Buildings: modelling physical activity and movement in office buildings- an observational study protocol', *BMJ Open.* 2013;3:e004103. Doi:10.1136/bmjopen-2013-004103

[4] Mitchell, R.; Popham, F. Effect of exposure to natural environment on health inequalities: an observational population study, *The Lancet.*2008, *372*(9650), 1655–1660

[5] DEFRA. *Improving Air Quality in the UK: Tackling Nitrogen Dioxide in Our Towns and Cities.* 2015 *UK Overview Document*. London: Department for Environment, Food andRural Affairs

[6] Hynes, M. At a Crossroads: Investigating Automobility and Its Implications for Local Urban Transport Policy Design. *Urban Sci.* 2017, *1*(2), 14; https://www.mdpi.com/2413-8851/1/2/14. Published: 5 May 2017

[7] Milne, G. The Evolutionary Determinants of Health Programme: urban living in the 21st century from a human evolutionary perspective. *Archaeology International* 2015, *18,* 84-96 DOI: http://dx.doi.org/10.5334/ai.1809)

Milne, G, *Containing Child Obesity through the School Curriculum: a Project Blueprint*. Evolutionary Determinates of Health mono no. 1 2020

[8] for further details, case studies and references, see Milne, G. *Uncivilised Genes: human evolution and the urban paradox.* 2017Crown House Publications, Carmarthen

[9] Stringer, C.; Andrews, P. *The Complete Word of Human Evolution*. 2011, London: Thames & Hudson

[10] Kelly, R. *The Lifeways of Hunter-Gatherers: The Foraging Spectrum*. 2013,Cambridge: Cambridge University Press; see also Milne, G.*Uncivilised Genes: human evolution and the urban paradox.* 2017,225-228

[11] Price, W.*Nutrition and Physical Degeneration: A Comparison of the Primitive and Modern Diet and Their Effects*. 1939, Redlands, CA

[12] Konner, M; Eaton, S. B. Palaeolithic nutrition: 25 years later., *Nutrition in Clinical*

 ©2021 by the author — Open Access — Distributed under CC BY 4.0

**Corresponding Author:** Gustav Milne, gmilne@mola.org.uk
**Citation:** Milne, G. (2021). Post-Pandemic Urban Living: Back to the Stone Age? *Academia Letters*, Article 1717. https://doi.org/10.20935/AL1717.

*Practice.* 2010,25, 594–602

[13] Lindeberg, S. *Food and Western Disease: Health and Nutrition from an Evolutionary Perspective.* 2010

[14] O'Keefe, J.; Vogel, R.; Lavie, C.; Cordain, L. Exercise like a hunter-gatherer: a prescription for organic physical fitness, *Progress in Cardiovascular Diseases.* 2011, 53, 471–479

[15] Cordain, L.; Gotshall, R.; Eaton, SB. Physical Activity, energy expenditure and fitness: an evolutionary perspective. 1998, *Int J Sports Med* 19: 328-335.

[16] Eg Marshall, S.; Milne, G.; Rook, G.; Tinnerman, R. Walking: a step-change towards healthy cities. *Town and Country Planning Journal*. 2015, 125-129. Wang, L.; Wen, C. The Relationship between the Neighborhood Built Environment and Active Transportation among Adults: A Systematic Literature Review *Urban Sci.* 2017, *1*(3), 29; doi:10.3390/urbansci1030029 Published: 27 Aug 2017

[17] Rook, G. Hygiene hypothesis and autoimmune diseases.*Clinical Reviews in Allergy & Immunology.* 201242(4), 1–15;

Rook, G. Regulation of the immune system by biodiversity from the natural environment: an ecosystem service essential to health.*Proceedings of the National Academy of Sciences of the USA*. 2013, 110(46), 18360–18367

DOI: 10.1073/pnas.1313731110; Rook, G.; Raison, C.; Lowry, C. 'Childhood microbial experience, immunoregulation, inflammation and adult susceptibility to psychosocial stressors and depression in rich and poor countries', *Evolution, Medicine, and Public Health.* 2013,1, 14–17. DOI:10.1093/emph/eos005; Rook, G., Raison, C. and Lowry, C.Microbial "old friends", immunoregulation and socio-economic status. *Clinical and Experimental Immunology.* 2014*,* 177, 13–23. DOI: 101111/cei.12269

[18] Yuan, C.; Gaskins, A.; Blaine, A.; Zhang, C.; Gillman, M.; Missmer, S.; Field, A.; Chavarro, J. Association between cesarean birth and risk of obesity in offspring in childhood, adolescence, and early adulthood. *JAMA Pediatrics*. 2016, Published online 6 September. DOI: 10.1001/jamapediatrics.2016.2385

[19] Lindeberg, S. *Food and Western Disease: Health and Nutrition from an Evolutionary Perspective.*2010

[20] see eg Roberts, C.; Cox. M. *Health and Disease in Britain, from Prehistory to the Present*

 ©2021 by the author — Open Access — Distributed under CC BY 4.0

**Corresponding Author:** Gustav Milne, gmilne@mola.org.uk
**Citation:** Milne, G. (2021). Post-Pandemic Urban Living: Back to the Stone Age? *Academia Letters*, Article 1717. https://doi.org/10.20935/AL1717.

*Day*. Stroud: Suton Publishing; Hassett, B. *Built on Bones:15,000 years of life and death*. 2017, London. See also see Milne, G. *Uncivilised Genes: human evolution and the urban paradox.* 2017*229-232*

 ©2021 by the author — Open Access — Distributed under CC BY 4.0

**Corresponding Author:** Gustav Milne, gmilne@mola.org.uk
**Citation:** Milne, G. (2021). Post-Pandemic Urban Living: Back to the Stone Age? *Academia Letters*, Article 1717. https://doi.org/10.20935/AL1717.