

Growing Up: Lessons learned and future innovations for green infrastructure

Dr Tony Matthews

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Lessons to date

- A quiet revolution
- 15 years of insight

- Unsettled definition
- Amenity vs necessity
- Need for evidence



Coldridge Street, Brisbane

Values of GI

Ecological

- regulate ambient temperatures, reduce noise, lower wind speeds, sequester carbon, attenuate runoff, enhance/augment habitats



Malvern urban forest, Victoria

Values of GI

Social

- relieve stress, reduce morbidity and mortality, foster active living, encourage social interaction, moderate incivility



Southbank Parklands, Brisbane

Values of GI

Economic

- reduce stormwater costs, reduce cooling costs, decrease health-care expenses, increase property values



Planchonella House, Cairns

GI Disservices

Ecological

- human-wildlife conflict, weeds and/or pest species, lower groundwater

Social

- eco-gentrification, health impacts (e.g. asthma, allergies), change character of an area, fear of crime, animal attacks

Economic

- increase property values, damage infrastructure, increase maintenance and insurance costs; thermal inequality

Looking ahead

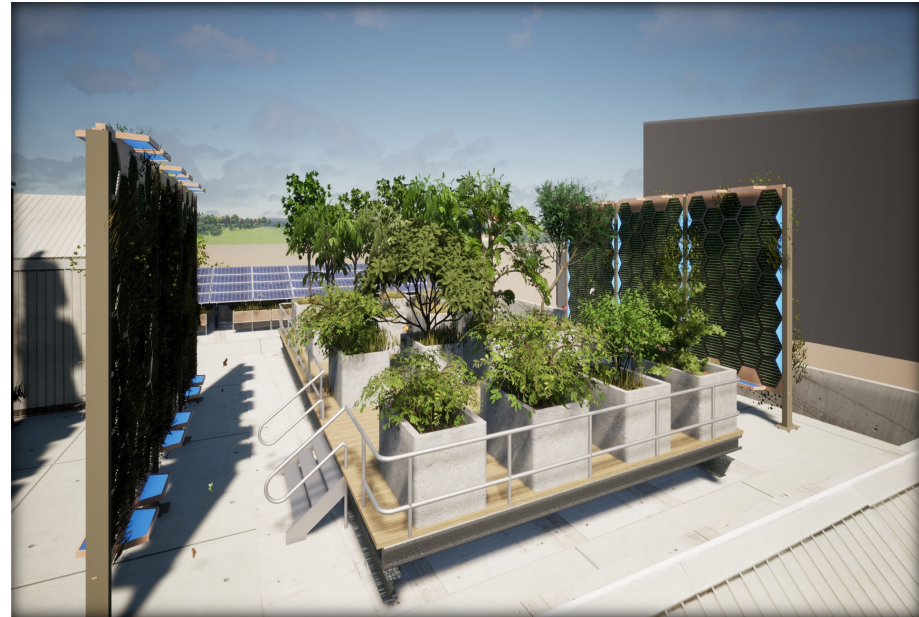
- Proper species selection
- Governance uncertainty
- Monetary valuation
- Cohort experience (seniors & children)



Bencoolen Street, Singapore

Proper species selection

- Lack of scientific knowledge on species selection, location and performance
- Needed to grow business case
- Regional climate, soils, irrigation, planter types, pests
- Wrong greenery can be worse than none



Long-cycle green infrastructure testing facility, Griffith University, Nathan campus (under construction)

Governance uncertainty

- Broad awareness of GI
- Biggest barrier is lack of experience
- Worry re biophysical challenges
- Liability concerns
- Political context and funding
- Public involvement



EVA Lanxmeer eco-village, The Netherlands

Monetary valuation

- Non-traditional intervention
- Value; cost; develop; leave undeveloped?
- \$ value on un-priced resources
- Common currency
- Pragmatics



Outlook Parade Park, Ormiston

Cohort experience

Seniors

- Slower mobilities, co-morbidities
- Active, aging in place

Children

- Vulnerable to adverse effects of cities
- Influence of green-space on health and development



Wellington Street, Ormiston

Future proves past

- 15+ years of GI research, practice
- Benefits documented and proven
- Learning as we go
- Evolving science and data
- Governance concerns persist
- New frontiers emerging



The Urban
Forest,
South
Brisbane

(Proposed
by Aria
Property
Group)

We now know with certainty that green infrastructure brings many benefits to cities.

References & Further Reading

- Ambrey, C., Byrne, J., Matthews, T., Davidson, A., Portanger, C. and Lo, A. (2017) Cultivating climate justice: green infrastructure and suburban disadvantage in Australia. *Applied Geography* 89, 52-60.
- Baldwin, C., Matthews, T. and Byrne, J. (2020) Planning for older people in a rapidly warming and ageing world: The role of urban greening. *Urban Policy and Research* 38, 3, 199-212
- Bendict, M.A., McMahon, E.T. (2006) *Green infrastructure: Linking landscapes and communities*. Island Press, Washington, DC.
- Burley, B.A. (2018) Green infrastructure and violence: Do new street trees mitigate violent crime? *Health & Place* 54, 43-49.
- Byrne, J., Ambrey, C., Lo, A., Portanger, C., Matthews, T., Baker, D. and Davidson, A. (2016) Could urban greening mitigate suburban thermal inequity? Role of residents' dispositions and household practices. *Environmental Research Letters* 11, 9.
- Byrne, J.A., Gleeson, B., Howes, M. and Steele, W. (2009) The limits of ecological modernization as an adaptive strategy, in: Davoudi, S., Crawford, J., Mehmood, A. (Eds.), *Planning for Climate Change: Strategies for Mitigation and Adaptation for Spatial Planners*. Earthscan, London, pp. 136-154.
- Horwood, K. (2011) Green infrastructure: reconciling urban green space and regional economic development: lessons learnt from experience in England's north-west region. *Local Environment* 16, 963-975.
- Hunter, R.F., Cleland, C., Cleary, A., et al. (2019) Environmental, health, wellbeing, social and equity effects of urban green space interventions: A meta-narrative evidence synthesis. *Environment International* 130, 104923.
- Islam, M.Z., Johnston, J. and Sly, P.D. (2020) Green space and early childhood development: A systematic review. *Reviews of Environmental Health* 35, 2, 189-200.
- Lo, A.Y. (2012) The encroachment of value pragmatism on pluralism: The practice of the valuation of urban green space using stated-preference approaches. *International Journal of Urban and Regional Research* 36, 121-135.
- Mell, I.C. (2013) Can you tell a green field from a cold steel rail? Examining the "green" of green infrastructure development. *Local Environment* 18, 152-166.
- Plant, L., Rambaldi, A. and Sipe, N. (2016) Evaluating revealed preferences for street tree cover targets: A business case for collaborative investment in leafier streetscapes in Brisbane, Australia. *Ecological Economics* 134, 238-249.
- Roy, S., Byrne, J. and Pickering, C. (2012) A systematic quantitative review of urban tree benefits, costs, and assessment methods across cities in different climatic zones. *Urban Forestry & Urban Greening* 11, 351-363.
- Shepley, M., Sachs, N., Sadatsafavi, H., Fournier, C. and Peditto, K. (2019) The impact of green space on violent crime in urban environments: An evidence synthesis. *International Journal of Environmental Research and Public Health* 16, 5119.
- Wright, H. (2011) Understanding green infrastructure: the development of a contested concept in England. *Local Environment* 16, 1003-1019.

Questions or
comments?

t.matthews@griffith.edu.au

[@drtonymatthews](#)