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~~TOD~~ GREENSPACE ORIENTED DEVELOPMENT

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+ URBAN DESIGN, PLANNING

Opposite: Greenspace-oriented development correlates urban densification with upgraded parks.

Various landscape and urban design theories have sought to reconcile urban form and green systems in recent decades. For example, Green Urbanism proposes a “city that maximizes landscapes, gardens, biodiversity, and green infrastructure.”¹ In a similar vein, Landscape Urbanism foregrounds landscape as the “ultimate system to which all goes, and from which all comes, a template for urbanism.”² Likewise, Ecological Urbanism proposes an apparently “new sensibility - one that has the capacity to incorporate and accommodate the inherent conflicts between ecology and urbanism.”³ Finally, Biodiversity Sensitive Urban Design provides a protocol for urban design that aims to create a net benefit to native species and ecosystems by providing essential habitat and food resources.⁴

Alongside these sits a mix of planning theories challenging the hegemony of low-density suburban development. So-called “Smart Growth” brings together a broad agenda of development desiderata: planning, natural resource preservation, transportation, housing, community development, and economic development.⁵ The compact city emphasizes “intensification of development and activities, creates limits to urban growth, encourages land use and social mixes, and focuses on the importance of public transportation and the quality of urban design.”⁶ Aspirations for the sustainable city interconnect all these models, notwithstanding the various emphases and nuances brought to bear. The recurring spatial planning strategy that most notably integrates these goals focusing on increasing urban density and enhancing public transport connectivity is transit-oriented development (TOD).

Peter Calthorpe helped codify TOD in the late 1980s, and it quickly became a central tenet of modern planning with the publication of his book *The New American Metropolis*.⁷ TOD has varied definitions but essentially aims to concentrate urban activity in high-intensity mixed-use precincts centered on highly accessible transport nodes to increase public transport use and promote urban infill. Delivering urban infill along with greater densification in greenfield development is a *sine qua non* in Australian urban policies across all levels of government. Since the 1980s, urban consolidation has become firmly established as orthodoxy in Australian spatial planning theory and practice, although the results have been diffuse and contested. The former is reflected in the continued overwhelming dominance of suburbia as the major housing frontier. The latter is echoed in community resistance to the proclivity of Australian planning systems in facilitating higher density as the preferred urban form. A significant concern that has emerged for densifying cities, especially in city centers and inner suburbs, is the under-provision of open space.⁸ While in more capacious outer suburbs, ongoing concerns are raised by the differential quality of open spaces often correlated with critical social parameters such as socio-economic status⁹ and over-dedication to occasional organized sporting use. This is the main setting for our exposition of an alternative model of development weighted to securing a high-quality public realm.

In this essay we advance the idea of greenspace-oriented development (GOD), which prioritizes sustainable suburban renewal around open spaces.¹⁰ The paper has three core sections. First, we scope TOD's goals, benefits, and experience. Next, we outline a case for orientating development around suburban parks and other green spaces, which are often under-utilized as recreation and leisure spaces when of inferior quality.¹¹ Third, we outline a practical step-wise method for delivering greenspace-oriented development. Our conclusion reflects on the broader implications and significance of the pragmatic approach proposed. The main arena for our investigation is the middle-ring suburbs of Australian cities developed unimaginatively as speculative development in the post-war era.¹²

The TOD Approach

TOD proponents believe that compact urban form co-located with public transport nodes—often referred to in planning policies as “activity centers”—is a viable antidote to sprawl, delivering densification and many other benefits. These include making public transportation more economically viable, boosting local services, reducing automobile dependency, and helping achieve lower energy consumption and greenhouse gas emissions. Advocates believe it will provide residents with a diversity of local jobs and encourage economic growth, contributing to a higher quality of life for residents.¹³ As an achievable demonstration of the critical nexus between land use and transport planning, the concept had near-universal appeal, and “now almost every metropolitan region with major public transport infrastructure has adopted some form of high-density TOD scenario.”¹⁴ Indeed, all Australian state and territory capital cities plan to achieve urban densification around public transport nodes as part of their infill agendas. Through such development, these plans attempt to avoid Australian cities sprawling in what is recognized as an unhealthy, socio-economically stratified, unsustainable, and unproductive manner.¹⁵

The reality of urban development in Australian cities, however, contrasts starkly with the theoretical TOD vision.¹⁶ As Jago Dodson has observed, “despite more than two decades of densification policy across Australia's major cities, there are vast suburban regions of low-density development.”¹⁷ Indeed, Australian cities still have some of the lowest population densities globally – Melbourne, Adelaide, Perth, and Brisbane, averaging only 16, 14, 12, and 9 people per hectare, respectively.¹⁸ Moreover, the 2016 Census of Population and Housing found that only 10% of all people in Australia spent census night in an apartment.¹⁹ The evidence shows that despite the planning and design rhetoric, sprawl continues because, among other things, greenfield development remains the focus of profit-seeking developers, and the suburban home remains the preferred choice of most families.²⁰ Suburban employment continues to be “attracted to a complex mix of dispersed locations and specialized clusters, rather than to neatly planned centers.”²¹ Clive Forster points out that the TOD

vision of metropolitan sustainability and policy aspirations is contradicted by the prevailing urban development in Australian cities that “remain differentiated and dispersed rather than neatly multi-nucleated.”²² Given the problems in translating TOD from theory to practice, an alternate pathway more in tune with the realities of middle-ring suburbia deserves consideration.

Greenspace-Oriented Development

Our model spins off TOD, but while TOD co-locates urban densification with public transport hubs, GOD correlates urban densification with significant, upgraded public green spaces and parks that are well served by public transport in middle-ring suburbs. At its foundation, a GOD approach builds upon the well-recognized importance of urban green spaces in delivering a plethora of benefits to urban dwellers, and most importantly, in underpinning approaches for greater sustainability and livability in cities. The central spatial idea is to develop the walkable catchment of upgraded parks (a distance of about 400 m) with new medium-density infill development. The positive aspects of suburban development (such as low- and mid-rise development and access to open space) are woven together with those of urban districts (such as access to public transport, facilities, and good urban design).

Although Australia's middle-ring suburbs currently contain a reasonable number of existing parks, many of these are under-designed, offer minimal amenities, and are typically underutilized. While these open spaces are suitable for organized active team sports, other community and ecosystem benefits (e.g., passive recreation and wildlife habitat) are given less attention and, in consequence, are out of step with changing community values. The focus on active recreation in middle-ring parks is the result of the “recreation movement,”²³ prevalent in the post-war period when what are now Australia's middle-ring suburbs expanded significantly.

A GOD approach could act as a catalyst for the redesign of these often under-utilized landscapes. We base the association between urban densification and quality green spaces on three key principles. First, these spaces can provide a range of social, ecological, and economic benefits, and compensate residents living in medium-density settings for a relative lack of private green space.²⁴ Second, well-designed, densified urban precincts surrounding parks can offer important benefits to the utility of the parks themselves, such as increased local rates and taxes that local governments can direct toward park upgrades and maintenance, more people to activate the park, and concomitant increases in public safety due to passive surveillance.²⁵ Third, by being able to promote the socio-economic rejuvenation of nearby urban areas, namely by increasing their property values, quality green spaces can foster urban redevelopment and densification.²⁶ The GOD idea is not new, indeed examples abound in Europe and Asia of the correlation of urban density and parks. However, where GOD differs is its use of upgraded parks to leverage the densification



- 1 S. Lehmann, *The Principles of Green Urbanism: Transforming the City for Sustainability* (Earthscan, 2010), 233.
- 2 Richard Weller, "Global Theory, Local Practice," *Kerb* 15 [2006]: 67.
- 3 Mohsen Mostafavi, "Why Ecological Urbanism? Why Now?," in Mohsen Mostafavi & Gareth Doherty (eds), *Ecological Urbanism* (Lars Muller Publishers, 2010), 17.
- 4 Georgia Garrard, "Biodiversity Sensitive Urban Design: Creating urban environments that are good for people and good for nature" [2015], <https://ggarrardresearch.wordpress.com/biodiversity-sensitive-urban-design/>.
- 5 Lin Ye, Sumedha Mandpe & Peter B. Meyer, "What is 'Smart Growth'?—Really?," *Journal of Planning Literature* 19, no. 3 [2005].
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- 12 Shane Murray, et al., *Processes for Developing Affordable and Sustainable Medium Density Housing Models for Greyfield Precincts* (Australian Housing and Urban Research Institute, 2015); Simon Pinnegar, Bill Randolph & Robert Freestone, "Incremental Urbanism: Characteristics and implications of residential renewal through owner-driven demolition and rebuilding," *Town Planning Review* 86, no. 3 [2015].
- 13 OECD, *Compact City Policies: A Comparative Assessment*, OECD Green Growth Studies [OECD Publishing, 2012].
- 14 Carlton, "Histories of Transit-Oriented Development," 23.
- 15 Jane-Frances Kelly & Paul Donegan, *City Limits: Why Australian cities are broken and how we can fix them* (Melbourne University Press, 2015).

Previous: Before and after showing densification around upgraded park and surrounding streetscapes.

Right: Zoning (orange) for densification along corridors and around public open space.



in middle-ring suburbs – a strategy that has been largely absent in Australian planning for these areas.

Delivering GOD

Here we explain how practitioners can achieve GOD in a staged process. Alongside discussing key aspects relevant to each stage, we use a hypothetical case study park for illustration. This park is nominally 7.5 hectares in size and is surrounded by suburban housing at 15 dwellings per hectare and minor roads. The park is geared toward active recreation in its existing state and contains three ovals and minimal cover by mature trees and understory plantings. Such a hypothetical park is typical of many Australian middle-ring suburbs.

1 Select Parks for Upgrading Practitioners need to identify the parks that will form the focus of GOD precincts in middle-ring suburbs. Access to public transport and park size are two key criteria that should guide park prioritization. Practical access can be understood as being within a five-minute cycle or a 15- to 20-minute walk (approximately 1,600 m) to a train station. Densification also improves the viability of frequent, free local bus transit between parks and key destinations, including train stations. In terms of size, parks should be greater than one hectare in area, reflecting that larger parks have generally greater potential to provide a wider range of social and ecological benefits than smaller parks. They also can be more multi-functional – appealing to or attracting diverse population groups at different times of the day and night.

2 Rezone Surrounding Urban Precinct Step 2 requires the 400 m urban precinct surrounding the park to be rezoned. This precinct is commensurate with the area where the park's upgrade is likely to lift property values.²⁷ This area would undergo significant infill development through a managed and coordinated process intended to accommodate a diversity of housing types and tenures in ways that avoid the displacement and affordability consequences of gentrification often associated with TOD.²⁸

For the hypothetical case study park, we visualize the rezoning of the surrounding urban precinct into three zones of differing density: 40 dwellings per hectare furthest from the park, 60 dwellings per hectare mid-way, and 80 dwellings per hectare closest to the park. These zoning densities correlate to semi-detached dwellings, rowhouses, and low-rise apartments, respectively.²⁹ If substantially achieved, these zoning densities would increase the hypothetical study area's total population from 1,500 to around 6,500 people (presuming the precinct is 75% redeveloped at the zoned densities and that each dwelling contains a two-person household). To give an idea of the relative capacity of GOD, Perth [the capital city of Western Australia] has 420 suitable parks within the suburban core area, which means if they were developed, GOD could yield well over a million infill dwellings, a figure far exceeding infill targets. We also suggest that areas immediately adjacent to the park be

rezoned to allow mixed uses. The GOD precinct's zoning should permit community services and functions such as retirement homes and childcare centers, which have potential synergies with upgraded green spaces.

3 Upgrade Parks In this step, selected parks are redesigned to increase their attractiveness and the socio-ecological benefits they provide, raising land values and encouraging an appropriate scale and quality of redevelopment of the surrounding urban precinct. Various options present themselves. Focusing on the hypothetical case study park, we propose planting park edges with a diverse palette of suitable native and non-native trees, low shrubs, and herbaceous plants so that they assume a more vegetated and diverse appearance. This planting armature following organic, non-rigid lines could swathe a circuitous promenade, as well as several smaller spaces designed to allow for assorted functions. These spaces could include, for example, drainage swales for filtering and cleansing stormwater flowing off the higher elevation adjacent roads, which in suitable locations would be designed to mimic natural wetlands.³⁰ Designs could also include picnic areas and nature-based play areas for children. These different areas would increase the opportunities for recreational walking, nature-based and passive recreation, and enhance the park's ability to support biodiversity. This "soft shell" of vegetation would also act as a buffer between the proposed active recreation occurring in the park's central areas and the neighboring residences, reducing the potential for noise and sports-lighting-related complaints.³¹

While the heart of the park remains open, we propose that any existing playing fields be consolidated into one space, which would be re-turfed with a hybrid species that allows for greater frequency of sporting and community uses, such as festivals and markets. The oval area's consolidation is not meant to detract from team sports' important social and recreational functions but to provide a greater number of passive (and active) recreational pursuits. The area freed up by the consolidated playing fields would be a flexible space responsive to shifting community preferences. Research has suggested that "loose spaces offer a freedom of choice of activities and more means of carrying them out," and that such spaces are open to appropriation by the local community.³² The exact use of this space could be established after significant residential densification has occurred through a comprehensive needs-based assessment.

4 Catalyze and Facilitate Redevelopment The combined effect of upgrading the parks and rezoning their precincts is likely to catalyze the area's redevelopment due to an increase in adjacent land values, the critical stimulus for redevelopment. Studies using hedonic valuation techniques, which estimate the influence of the locality and house attributes on housing prices, have consistently indicated that high-quality parks

16 Rowan Gray, Brendan Gleeson & Matthew Burke, "Urban Consolidation, Household Greenhouse Emissions and the Role of Planning," *Urban Policy and Research* 28, no. 3 [2010]: 336.

17 Jago Dodson, "In the Wrong Place at the Wrong Time? Assessing some Planning, Transport and Housing Market Limits to Urban Consolidation Policies," *Urban Policy and Research* 28, no. 4 [2010]: 495.

18 Joe Hurley, Elizabeth Taylor & Jago Dodson, "Why has urban consolidation been so difficult?" in Neil Sipe & Karen Vella (eds), *The Routledge Handbook of Australian Urban and Regional Planning* [Routledge, 2017].

19 "Apartment Living," Australian Bureau of Statistics [2017].

20 Ross Elliot, "Australia's Misplaced War on the Australian Dream," in Alan Berger & Joel Kotkin (eds), *Infinite Suburbia* [MIT, 2017], 105.

21 Clive Forster, "The Challenge of Change: Australian cities and urban planning in the new millennium," *Geographical Research* 44, no. 2 [2006]: 174.

22 Brendan Gleeson, Jago Dodson & Marcus Spiller, "Metropolitan Governance for the Australian City: The case for reform," *Issues Paper* 12, no. 1 [2010]: 5.

23 Neil Sipe & Jason Byrne, "Green and Open Space Planning for Urban Consolidation – A review of the literature and best practice" [Griffith University, 2010], 6.

24 Christine Haaland & Cecil Konijnendijk van den Bosch, "Challenges and Strategies for Urban Green-space Planning in Cities Undergoing Densification: A review," *Urban Forestry & Urban Greening* 14, no. 4 [2015]; Anna Chiesura, "The Role of Urban Parks for the Sustainable City," *Landscape and Urban Planning* 68, no. 1 [2004].

25 Tuesday Udell, et al., "Does Density Matter? The role of density in creating walkable neighbourhoods," [National Heart Foundation of Australia, 2014].

26 Ian C. Mell, "Can Green Infrastructure Promote Urban Sustainability?" [paper presented at the Proceedings of the Institution of Civil Engineers-Engineering Sustainability, 2009]; Peter Newton, et al., *Towards a New Development Model for Housing Regeneration in Greyfield Residential Precincts* [Australian Housing and Urban Research Institute, 2011].

27 Margot Lutzenhiser & Noelwah R. Netusil, "The Effect of Open Spaces on a Home's Sale Price," *Contemporary Economic Policy* 19, no. 3 [2001].

28 Miguel Padeiro, Ana Louro & Nuno Marques da Costa, "Transit-oriented Development and Gentrification: A systematic review," *Transport Reviews* 39, no. 6 [2019].

29 Jon Kellet & Matthew Rofe, *Creating Active Communities: How can open and public spaces in urban and suburban environments support active living?* [South Australian Active Living Coalition, 2009].

30 Celina Balderas Guzmán, "Suburban Wetlandia," in Berger & Kotkin, *Infinite Suburbia*, 482.

raise property values in adjacent areas, but that sports fields do not have the same effect.³³ A study in Perth similarly found that bush reserves, lakes, and golf courses positively impacted property prices, but the same was not observed for sports reserves.³⁴ The authors further noted that, on average, the property price premium increased by AU\$14,500 [US\$11,500] for a 10% increase in tree canopy cover on adjacent public space. Upgrading sports-focused suburban parks using a GOD approach should therefore raise nearby real estate values. This uplift will provide local governments with greater resources for park maintenance and should stimulate redevelopment, which in combination with increased residential zoning densities, should deliver greater urban densification.

5 Decentralize Services Infrastructure Step 5 concerns reducing the reliance of the park's densified urban precinct on centralized water, power, and energy- and wastewater-management infrastructure. In this context, decentralized infrastructure could include a precinct-scale renewable energy microgrid and wastewater treatment facilities to clean and recycle wastewater from the densified area. The superficial aquifer could store such water for irrigation in the park, urban precinct, and surrounding streetscapes. Facilities for green waste collection and composting could also be made available. In this respect, the upgraded park and its densified urban precinct would function as a cell of decentralized infrastructure, to some extent free from the inefficiencies of typically aging, centralized infrastructure.³⁵

6 Conduct Needs-based Assessment In this step, timed for when significant densification has occurred in the park's precinct, we suggest local governments or community groups equip the space to provide additional recreational amenities to the local community. At this point, a needs-based assessment should be conducted to establish the recreational facilities and equipment required to activate the park. Such an assessment is important because, as Jason Byrne and Neil Sipe explain, "there is no typical higher density resident."³⁶ Indeed, higher-density residents vary in age, income, race/ethnicity, household composition, and family status. And there is a lack of understanding about how and why they use parks, and their preferences.

The needs-based assessment should lead to the identification of a diverse range of activities and uses for the loose-fit space. Such uses could include food-producing community gardens, skate-able spaces, basketball rings, soccer goals, innovative play areas, fitness equipment, and enclosed dog exercise areas. Complementing these uses are the organized team sports that the retained playing area caters for, and the passive recreation and nature-oriented uses enabled by the park's armature redesign. At this stage, local governments should consider including a private café or kiosk to further activate the place and provide a revenue stream.³⁷

7 Upgrade Surrounding Key Streetscapes The final step involves upgrading adjacent streets and connections to schools, train stations, transport hubs, and main shopping areas. Streets should be conceptualized as shared zones promoting active transport and emerging transport types, such as neighborhood electric vehicles, mobility scooters, e-bikes, and e-scooters while reducing the speed and impact of cars. Connecting streetscapes should also provide shared community facilities, such as small playgrounds, community gardens, benches, and other designed street furniture, as well as appropriate canopy cover and understory plantings.

Conclusion

While TOD principles are well established, suburban cities need complementary strategies for achieving infill development. The GOD concept brings together landscape and planning goals of community, density, accessibility, sustainability, and livability within an integrated model linking the regeneration of parkland with precinct redevelopment. Rethought and redesigned open spaces can operate as multi-functional, communal "backyards" for residents living within a walkable catchment. The need for convivial, appealing, healthy green residential environments has become even more during the COVID-19 pandemic.

GOD provides tools that bridge theory and practice. While theories such as New Urbanism provide various tools (for example, the transect or form-based codes) by which designers can implement theoretical concepts into practice, Landscape Urbanism (for instance) offers no such props for practitioners, leaving them to interpret how the theory should be implemented.³⁸ GOD bridges this divide. This capacity is important because globally, governance and the processes by which things get built are a major stumbling block to equitable and sustainable planning.³⁹

31 Lutzenhiser & Netusil, "The Effect of Open Spaces on a Home's Sale Price."

32 Karen Franck & Quentin Stevens, *Loose Space: Possibility and Diversity in Urban Life* [Routledge, 2007], 10; Catherine Ward Thompson, "Urban Open Space in the 21st Century," *Landscape and Urban Planning* 60, no. 2 [2002].

33 See, e.g., Toke Emil Panduro & Kathrine Lausted Veie, "Classification and Valuation of Urban Green Spaces – A hedonic house price valuation," *Landscape and Urban Planning* 120 [2013]; Luke M. Brander & Mark J. Koetse, "The Value of Urban Open Space: Meta-analyses of contingent valuation and hedonic pricing results," *Journal of Environmental Management* 92, no. 10 [2011].

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35 Peter Newman, Timothy Beatley & Heather Boyer, *Resilient Cities* [Island Press, 2009], 52.

36 Byrne & Sipe, "Green and Open Space Planning for Urban Consolidation," 9.

37 *Ibid.*, 8.

38 Michael Dennis & Alistair McIntosh, "Landscape and the City," in Andres Duany & Emily Talen (eds), *Landscape Urbanism and its Discontents: Dissimulating the Sustainable City* [New Society Publishers, 2013], 51.

39 Alan Berger, Joel Kotkin & Celina Guzmán, "Introduction," in Berger & Kotkin, *Infinite Suburbia*, 20.

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